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**DRAFT BASIC ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

DMR REF NO: LP 30/5/1/3/2/ 11708 MP

PREPARED FOR LM3 BROTHERS (PTY) LTD

PREPARED BY TPR MINING RESOURCES (PTY) LTD

"Makhura A Ngwana kego Rongwa"



DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT 1998 (NEMA), AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT 2008 (NEMWA) IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCE DEVELOPMENT ACT 2002 (MPRDA) AS AMENDED

NAME OF APPLICANT: LM3 Brothers

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FILE REFERENCE NUMBER SAMRAD: LP 30/5/1/3/2/ 11708 MP



BAR and EMP for mining permit on the remaining extent of farm 11111111 KS

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resource Development Act as amended, the Minister must grant Mining or Mining right if among others the mining will not result in unacceptable pollution, ecological degradation or damage to the environment”.

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

In terms of section 16(3)(b) of the EIA Regulations, 2017, 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 are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental 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 is located and how the activity complies with and responds to the policy and legislative context;
- (b) Identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) Describe the need and desirability of the proposed alternatives;
- (d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - (i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) The degree to which these impacts –
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated
- (e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –
 - (i) Identify and motivate a preferred site, activity and technology alternative;
 - (ii) Identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) Identify residual risks that need to be managed and monitored.

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PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1 Details of the EAP

Table 1-1: Details of the EAP

| | |
|----------------|--|
| Name | TPR Mining Resources (Pty) Ltd |
| Tel no: | 087 980 5800 |
| Fax no: | 086 599 3318 |
| E-mail address | info@tprmining-resources.co.za |
| Postal address | No. 29J Woltemade Street Witbank 1035 |

1.2 Expertise of the EAP

TPR Mining Resources (Pty) Ltd is a mining environmental consulting firm established in 2015 by a group of young professionals with extensive experience in mining environmental management. It originated in Limpopo Province and has grown to offer consulting services in Mpumalanga, North West, Gauteng and Northern Cape Provinces.

1.2.1 Project Team Members

Mr. Thato Ramoraswi.

Qualification: BEnvSc (Bachelor of Environmental Science)

Ms. Pheladi Mphahlele

Qualification: BESMEG (Bachelor of Earth Sciences in Mining & Environmental Geology)



2. LOCATION OF THE OVERALL ACTIVITY

The area where mining operation will be conducted is located approximately 32km along the mohlala route connecting to lekentle street and queen gadifele route from Jane-Furse to Ga-Mahlanya on remaining extent of the farm 11111111 KS. The proposed mining will be commissioned within Makhuduthamaga Local Municipality, Sekhukhune District in the Limpopo Province. Table 2-1 depicts site coordinates while table 2-2 shows the description of the locality.

Table 2-1: Site Co-ordinates of the application area

| X | Y |
|---------------|-----------|
| A. -24.588358 | 29.971156 |
| B. -24.587450 | 29.972489 |
| C. -24.587553 | 29.973125 |
| D. -24.589625 | 29.973147 |
| E. -24.590378 | 29.971847 |

Table 2-2: Locality Description

| | |
|---|---|
| <i>Farm name</i> | Remaining extent of the farm 11111111 KS |
| Application area(Ha) | 5 Ha |
| Magisterial district | Sekhukhune |
| Distance and direction from nearest town | Approximately 32km on the eastern side of Jane-Furse to Ga-Mahlanya |
| 21 digit Surveyor general code for each farm portion | T0KS00001111111100000 |

3. LOCALITY MAP

Refer to Figure 3-1 below and Appendix A for the locality Map of the application are



BAR and EMP for mining permit on the remaining extent of farm 11111111 KS

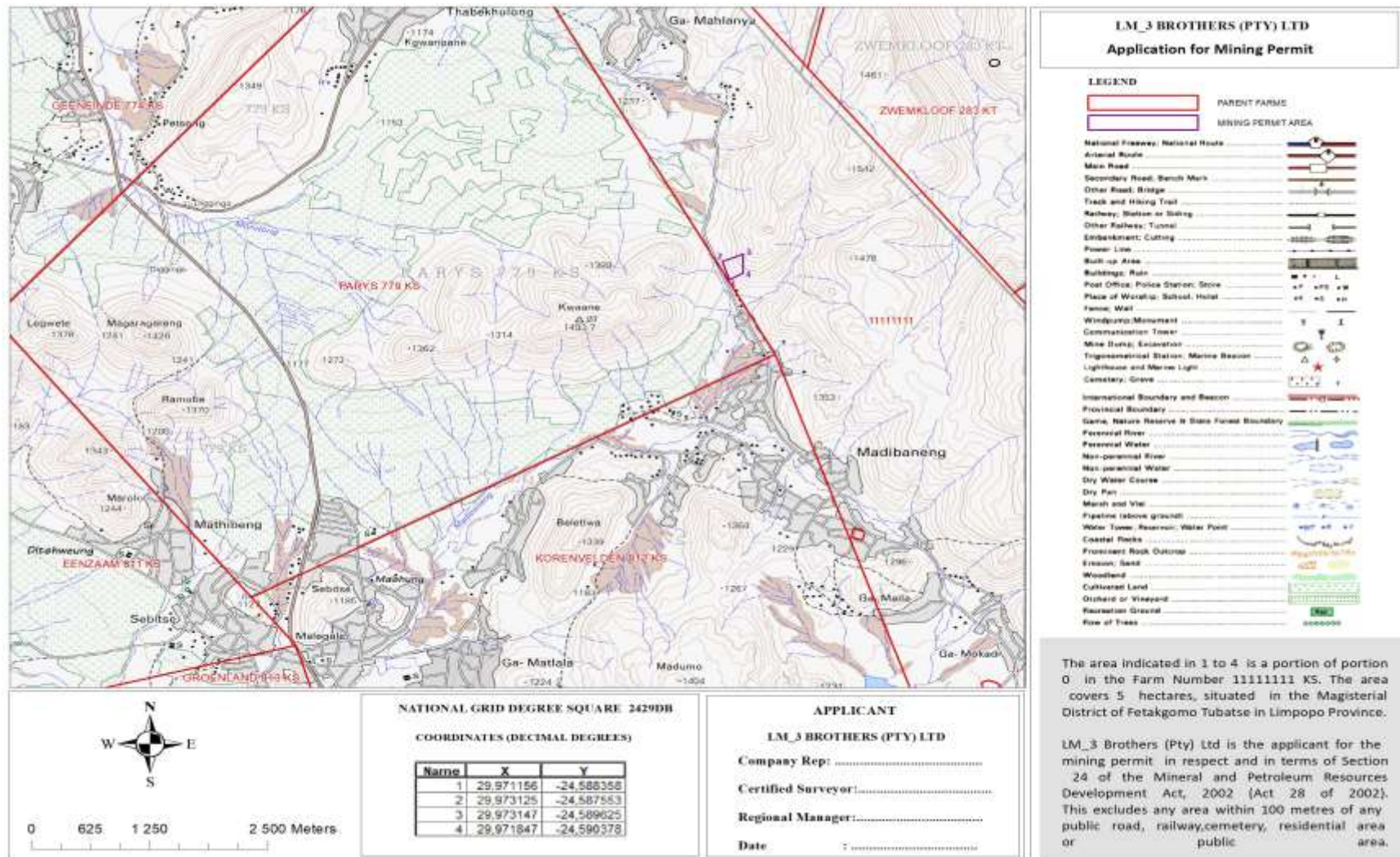


Figure 3-1: Locality Map

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

4.1 Listed and specified activities

The legal requirement for Environmental Authorisation for a Mining Permit came into effect after the promulgation of the NEMA 2014 EIA Regulations on the 8th December 2014. Prior to this, Mining Permits were subjected to the provisions of the MPRDA (2002). In this regard, a Mining Permit and Environmental Authorisation are required in terms of the MPRDA (2002) and NEMA 2014 EIA Regulations (as amended), respectively. The applicable NEMA listed activities anticipated to be triggered by this project are outlined in Table 4.1.

Table 4-1: Listed and preferred activities

| Name of activity E g. for mining, excavation site, site camp | Aerial extent of the activity Ha or m ² | Listed activity mark with an X where applicable or affected. | Applicable listing notice (GNR 983,984.985) |
|--|--|---|---|
| Mining site (indicated by circular dots) | 5Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Pit area(strip 1,2,) | 2,99 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Rom Stockpile | 0,2 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Overburden stockpile | 0,07 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Topsoil stockpile | 0,05 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Mobile toilets & sanitation | 0,01 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Mobile office | 0,06 Ha | X | GNR 983 Listing Notice No:1 (Activity 21) |
| Access road | 0 | X | GNR 983 Listing Notice |



BAR and EMP for mining permit on the remaining extent of farm 11111111 KS

| | | | |
|--|--|--|--------------------|
| | | | No:1 (Activity 21) |
|--|--|--|--------------------|

4.2 Description of the activities to be undertaken

4.2.1 Mining Method

An Iron and Vanadium ore mining operation can be viewed as being made up of some, or all, of the following sub-activities:

- Construction of Access road
- Removal of topsoil and overburden and stockpiling.
- Establish mobile office, mobile toilets & sanitation
- Excavation of an open cast (including strip 1, 2)
- Blasting
- Temporary stockpiling of material (Topsoil stockpile, overburden and ROM)
- Crushing and Screening of Ore
- Loading and hauling to the stockpile area and
- Rehabilitation

4.2.2 Description of Site Activities

The method that will be employed is a very basic form of open cast mining, and a 5 ha area will be demarcated for mining activities. Blasting and subsequent mining of the orebody utilising a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks to be transported to the end-user. The project infrastructure and activities will include site clearance, removal of topsoil and overburden and stockpiling, site establishment, including the establishment of an access route, mobilisation of equipment and preparation of area for mining, excavation of an open cast, blasting, loading zone, loading and dust control, crushing and screening of ore, hauling and transporting of ore, ablution facilities and waste storage area and rehabilitation of site.



Figure 4.1: An illustration of a Mining method

4.2.1.1 Maintenance of Access Roads

Any additional temporary roads created in the mining site will be rehabilitated on completion of the Mining Permit operations, to the satisfaction of the relevant landowner.

4.2.1.2 Water Supply

It is anticipated that water will be brought to site. The water will be sourced from the Local Municipality and it will be trucked in. An on-site water storage tank will be required for potable water supply to employees and workers. Additional water will also be required for dust suppression in order to prevent dust pollution on the untarred temporary roads. In this regard no surface or ground water will be utilized during the mining operation.

4.2.1.3 Temporary Ablution and maintenance of existing offices

Ablution facilities will be required on site. This may involve the installation of drum or tank type portable toilets. The toilets should be emptied twice every week through the services of a registered sewage waste service provider in order to prevent ground or surface water pollution. The ablution facilities must be provided at a ratio of 15 :1, i.e. 15 people per 1 toilet. Since the mining operation will take place on a previously mined area so there is an existing site office and it is established distant from the water drainage lines.

4.2.1.4 Excavation of commodities

This is where the commodities will be excavated using equipment's such as a truck and shovel. A front-end loader will be utilised to load the material into haulage trucks and then be transported to the crushing and screening plants.

4.2.1.5 Crushing and Screening of the commodities

Crushing is a dry process which involve particle size reduction of large material into smaller rocks. Equipment's used for crushing of commodities are jaw crusher or cone crusher. Screening is a practice of taking granulated ore material and separating it into multiple grades by particle sizes so commodities will be screened and stockpiled in the mining area.



Figure 4.3: Illustration of Crushing and Screening of commodities

4.2.1.6 Waste

Waste generated from the mining areas will include minimal construction and domestic waste, some hydrocarbon and explosive waste and sewage. These will be collected and disposed of as part of the waste management plan and/or will be managed by contractors. Waste will be recycled as far as possible. Portable toilets will be used at the mining areas and will be retained for a minimum of 5 years and must be available at any authority.

4.2.1.7 Stockpiles

Various stockpiles will be required on site. Long-term stockpiles will include topsoil, subsoil, soft overburden and hard overburden stockpiles, all of which will be erected as close as possible to the final void to aid in infilling and rehabilitation of final voids. In addition, the mine will have product and ROM stockpiles which will be temporary in nature.

4.2.1.8 Site Rehabilitation

When mining ceases, mine facilities and the site is reclaimed and closed. The goal of mine site reclamation and closure should always be to return the site to a condition that most resembles the pre-mining condition. Mines that are notorious for their immense impact on the environment often made impacts only during the closure phase, when active mining operations ceased. These impacts can persist for decades and even centuries.



Figure 4.4: Illustration of rehabilitation before and after the mining activities

| Phase | Activity | Expertise Required | Duration |
|--------------|---|-------------------------------|-----------|
| Construction | Logistical consultation with land owner. Construction of Access road Establish mobile office and security dwellings Establish mobile ablution facility Establish mobile screening Construction of berm | Project Manager Contractor | 2 Months |
| Operational | Clearance of vegetation Mining area Temporary stockpiling of material (Topsoil stockpile, overburden and Iron and | Project Manager Surveyor | 20 months |

| | | | |
|--------------------------|---|--------------------------------|----------|
| | Vanadium ore stockpiles) Loading and hauling to the stockpile area and Rehabilitation | | |
| | | | |
| Decommission and closure | Removal of mine infrastructure Rehabilitation of excavations and disturbed land Re-vegetation of land Closure report and application for closure certificate | Contractor Environmentalist | 2 Months |
| Post closure monitoring | Monitor rehabilitation sustainability and liaising with land owner on matters requiring action. | Project manager | 2 years |

5. POLICY AND LEGISLATIVE CONTEXT

A description of the policy and legislative context within which the development is proposed is displayed in table 5-1 overleaf.

Table 5-1: Policy and legislation Context

| Applicable legislation and guidelines used to compile these report | Reference where applicable | How does this development comply with and respond to the legislation and policy context |
|--|--|---|
| National Environmental Management Act 107 of 1998, GNR 983 Listing Notice 1, Activity 21 | Government gazette No: 10328, 07 April 2017, No 38282, Department of Environmental Affairs | An application for Environmental Authorisation has been lodged in terms of the NEMA Act (107 of 1998) EIA Regulations, 2014 as amended |
| National Environmental Management: Biodiversity Act (No 10 of 2004), Sections 57, 65-69, 71, 73 and 75 | Department of Environmental Affairs | An application for a permit for removal of indigenous plant has not been lodged, if by any means there is existing indigenous plants within the proposed mining area, an application will be lodged with the department of environmental Affairs prior to removal |
| National Heritage Resources Act (No 25 of 1999), Section 34- 36 | South African Heritage Resource Agency | An application for a permit to demolish old structures that are more than 60 years old or presence of graves has not been lodged, if there |

| | | |
|---|---------------------------------|--|
| | | is presence of archaeological remains within the proposed mining area, such will be done in accordance with prescribed legislation. |
| Mineral Petroleum Resource Development Act 28 of 2002 (MPRDA) | Department of Mineral Resources | An application for a mining permit has been lodged with the Department of Mineral Resources in terms of section 27 of the MPRDA (28 of 2002) |
| National Water Act (36 of 1998) | Department of Water affairs | Any watercourses that will affected by the proposed mining activity which triggers a listed activity in terms of section 26 |

6. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

The socio-economic status of the area where mining will take place requires such establishment for mining, which will in turn contribute to the local economy through creation of job opportunities. The type of commodity proposed to be mined is in high demand due to that it is used mostly for wiring, and also an excellent conductor of heat, used in cooking utensils and heat sinks. The proposed mining of Iron and Vanadium ore will be established along the mohlala route connecting to Iekentle street and queen gadifele road from Jane-Furse to Ga-Mahlanya.

The study area is located within Makhuduthamaga Local Municipality. The total population of Makhuduthamaga Local Municipality is 274 358 whereby unemployment runs at 62,7% while youth unemployment rate is 74%.

Introduction of mining operations will attract businesses to invest within the surrounding area, as a result bring development of parks and other recreational facilities. This will improve social cohesion for the local communities. The spatial structure is characterised with a business core branching out along the main roads surrounded by a strong residential component.

The loss of jobs and the decline in new job opportunities in neighbouring urban areas such as Polokwane and Burgersfort towns exacerbate the unemployment rate.

6.1 Socio economic

Jane Furse is surrounded by shopping malls and crop production and much of its economy originated from this sources. It taps from several sources of revenue. The town is fully serviced and contains tertiary social services which meet local, municipal as well as regional needs.

6.2 Location suitability

The geology of the farm area indicates presence of basaltic rocks material around the area. The area where mining will take place is located on a disturbed land. The area is located far away from the nearby town, and the affected communities have welcomed the establishment of a mine in their area. The area is dominated by tropical bush and savannah vegetation and trees in a mountainous area.

7. MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVES

7.1 Preferred site

The geological characteristics of the farm where mining will take place comprises of The Rustenburg Layered Suite of the Bushveld Complex of South Africa which is a vast layered accumulation of mafic and ultramafic rocks such as basaltic rocks. There is less vegetation and grasslands on site. It is located in a mountainous area far from residential areas. The farm 11111111 is characterised by bushveld complex group associated with the world's largest reserves of platinum-group metals (PGMs) or platinum group elements (PGEs)—platinum, palladium, osmium, iridium, rhodium, and ruthenium along with vast quantities of iron, tin, chromium, titanium and vanadium.



7.2 Activities and Technology alternatives

The mining method which is safe and environmental friendly is Open-cast mining method which describes vertical levels. Only technological assessment can be made due to the fact that preferred site is determined by the availability of the mineral of interest.

Activities – It will be Open cast mining method

Technology alternatives – the applicant proposes to mine utilizing the following;

- Bulldozer
- Hydraulic excavator
- Dump trucks
- Motor grader
- Water bowser

8. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

8.1 Details of the development footprint alternatives considered

Due to the size of the mining area; some of the activities to be undertaken will rotate with the mining direction. In that, only the clean water and dirty water trenches are permanently placed around the mining operation including the pollution control dam. Other activities such as mobile offices, mobile security houses, mobile ablution and mobile screening machinery will definitely rotate with the operation. The mining direction has been dictated by the depth of the Iron and Vanadium ore. In that, the mining operation will commence on the shallow side and continue through con-current rehabilitation (strip mining) in order to ensure that all the Iron and Vanadium ore deposit is mined out.



8.2 The type of activity to be undertaken

- Construction of Access road
- Construction of berms
- Construction of Pollution Control dams
- Construction of dirty water trench
- Establish mobile offices
- Establish mobile toilets
- Benches
- Pit mining area
- Rehabilitation

8.3 The design or layout of the activity

The layout plan outlined depicts activities to be constructed within the mining area (See attached appendix C)

- Construction of roads
- mobile offices
- Stockpiles area
- Benches
- Pit mining area

8.4 The technology to be used in the activity

Open-cast mining method is the best applicable method through strip mining type which describes the vertical levels of the hole and the interval of the benches depends on the deposits being mined.

8.5 The operational aspects of the activity and Stockpile

- Electricity (Diesel Generator)
- Roads (Mine and Provincial)
- 1X Komatsu D155 Bulldozer



BAR and EMP for mining permit on the remaining extent of farm 11111111 KS

- 1 X Volvo 460 Hydraulic Excavators
- 2 X Volvo A30 Articulated 6X6 Dump truck
- 1 X front end loader 966 CAT

8.6 The option of not implementing the activity

The Iron and Vanadium ore mine should be approved so that it may results in creating job opportunities.

8.7 Details of the public participation process followed

8.7.1 Confirmation of consultation

The interested and affected parties have been confirmed to this matter. Site notices were placed on and around the site. A newspaper advertisement was placed on the **23th of June 2022** on the **Sekhukhune Times newspaper** to inform interested and affected parties of the Open-cast mining activities, any possible concerns in terms of possible impacts were communicated directly to the proponent. As directed on the acceptance letter from the competent authority, the applicant has informed and requested comments from landowner, See attached **Appendix D**

8.7.2 Record of the public participation and the results thereof

8.7.2.1 Identification of interested and affected parties

Landowner and their contact details were identified through a Title Deed search and through the public participation for the properties falling within the proposed mining area. Site notices were put on site on the 3rd April 2022 to allow members of the surrounding community to comment on the proposed mining application. **See Appendix D**

8.7.3 The details of the engagement process

8.7.3.1 Description of the information provided to the community, landowners, and interested and affected parties

BAR and EMP for mining permit on the remaining extent of farm 11111111 KS



The landowner of the affected property being Tswako Lekentle Traditional Council has been consulted and has granted permission to conduct mining operation on their land and adjacent landowners were also consulted and provided with the following information;

LM3 Brothers is planning to establish Open-cast mining operations of Iron and Vanadium ore on the remaining extent of 11111111 KS along the mohlala route connecting to lekentle street and queen gadifele road from Jane-Furse to Ga-Mahlanya. The mining operation will be done on a two-year period upon renewal for another-three years depending on the availability of the Iron and Vanadium ore deposits applied for, as per Minerals and Petroleum and Resource Development Act, 2002 (Act 28 of 2002).

Mining method to be used will be Open-cast as determined by the shallow depth of the Iron and Vanadium ore deposits. The applicant will engage with the landowner and members of the community during the initiation phase of the operation with regard to positive and negative impacts to be introduced as result of the proposed mining operation.

8.7.3.2 List of which parties identified in above that were in fact consulted, and which were not consulted

Table 8-1: Landowners and I&APs of the proposed area have been consulted.

| Name of Interested /affected parties | Contact Details | How did the Consultations take place? | What were His /her concerns about the operation? |
|--|--|---------------------------------------|--|
| Tswako Lekentle Traditional Council | P O Box 160, Sekhukhune, 1124 | Documents were submitted | Received comments |
| Makhuduthamaga Local Municipality | Stand 1, Groblersdal Road, Jane Furse, 1085 preciousm@makhuduthamaga.gov.za | Emails were sent | Still waiting for comments on the proposed mining operations |
| Department of Rural Development and Landform(Land claims Commission) | Email: pleasant.gavhi@dalrrd.gov.za | Emails were sent | Still waiting for response |
| Department of Water & Sanitation | 49 Genl Joubert Street Polokwane, Azmo Building NthangeniC@dws.gov.za | Emails were sent | Still waiting for response |
| Department of Economic Development, environment and Tourism | 20 Hans Van Rensburg St Polokwane Central Polokwane 0700 Nkanyane@ledet.gov.za | Emails were sent | Still waiting for response |
| SAHRA | www.sahris website | Documents were uploaded. | Still waiting for response |
| ESKOM Holding | 'MatameTE@eskom.co.za' | Emails were sent | Still waiting for response |

8.7.3.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

No response from the interested and affected parties has been received regarding the socio-economic and biophysical environment.

8.7.3.4 Confirmation that minutes and records of the consultations are appended.

See attached **Appendix D** for records of consultation.

8.7.3.5 Information regarding objections received.

Currently there are no objections registered.

8.7.3.6 The manner in which the issues raised were addressed

The interested and affected parties were given an opportunity to raise their concerns and meetings were held with landowners and lawful occupiers with regards to their issues.

8.8 SUMMARY OF ISSUES RAISED BY I&APS

Table 7-2 below depict the table summarising comments and issues raised, and reaction to those responses.

Table 8-2: Summary of issues raised by I&APs

| Interested and Affected parties List the names of persons consulted in this column Mark with an X where who must be consulted were in fact consulted | | Date comments received | Issues raised | Eap 's response to issues as mandated by the applicant | Section and paragraph reference in this report where the issues or responses were incorporated |
|--|---|------------------------|---|--|--|
| Affected parties | | | | | |
| Landowner/s | X | | | | |
| Tswako Lekentle Traditional Council | X | | Granted the applicant permission to mine and sell iron ore and vanadium ore on their farm | The EAP acknowledged the comments. | Appendix D |
| Lawful occupier/s of the land | | | | | |
| N/A | | | | | |
| Landowners or lawful occupiers of adjacent properties | | | | | |
| | X | | | | |

| | | | | | |
|--|-----|--|-----------------------------------|--|-------------------|
| Municipal Councillor | | | | | |
| | X | | | | |
| Municipality | | | | | |
| Makhuduthamaga Local Municipality | X | | We are still waiting for response | | Appendix D |
| Organ of state(Responsible for infrastructure that may be affected Roads department, Eskom, Telkom, DWA | N/A | | | | |
| | | | | | |
| | | | | | |
| Communities | | | | | |
| N/A | | | | | |
| Department of Land Affairs | | | | | |
| Department of Rural Development and land reform(Office of the Land claims Commissioner) | X | | Waiting for response | | Appendix D |
| Traditional Leaders | | | | | |
| N/A | X | | | | |

| | | | | | |
|--|-----|--|----------------------------|--|-------------------|
| Other Competent authorities affected | X | | | | |
| Department of Water & Sanitation region Limpopo province | | | Still waiting for response | | Appendix D |
| Other affected parties | | | | | |
| | X | | | | |
| Interested parties | N/A | | | | |
| | | | | | |

8.9 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

8.9.1 Baseline environment

8.9.1.1 Type of environmental affected by the proposed activity

The topography is that of strongly undulating plains which link into the Springbok Flats of the Waterberg District towards the west. The Klein Drakensberg mountain range covers the entire north-eastern and eastern extents of the Municipality. This mountain range is a very strong structuring element in the Sekhukhune District as it limits east-west movement in the central and northern parts of the District – especially between areas like Burgersfort, Jane Furse, Groblersdal and Marble Hall. The Olifants, Moses and Elands Rivers enter the District from the southwest from where these converge and run in a north-north-eastern direction along the District Municipality border as the Olifants River.

Jane Furse's climate is a local steppe climate. There is a little rainfall throughout the year. The temperature average is 19.1°C and it is about 626mm of precipitation falls annually. Precipitation is the lowest in July, with an average of 4mm. The greatest amount of precipitation occurs in December, with an average of 112mm. An average temperature of 23.5°C, January is the hottest month of the year. The lowest average temperature in the year occurs in June, when it is around 12.9°C.



Figure 8-1: The view of the site terrain and vegetation that is currently existing within the proposed mining area

(a) Geology and Mineral Potential

The geological characteristics of the farm where mining will take place comprises of The Rustenburg Layered Suite of the Bushveld Complex of South Africa which is a vast layered accumulation of mafic and ultramafic rocks such as basaltic rocks. There is less vegetation and grasslands on site. It is located in a mountainous area far from residential areas. The farm 11111111 is characterised by bushveld complex group associated with the world's largest reserves of platinum-group metals (PGMs) or platinum group elements (PGEs)—platinum, palladium, osmium, iridium, rhodium, and ruthenium along with vast quantities of iron, tin, chromium, titanium and vanadium.

The Sekhukhune District holds one of the largest reserves of Platinum Group Metals (PGMs) in the world. The renowned Bushveld Complex which features the eastern limb of the Merensky Reef is found towards the north and north-eastern parts of the District. (The western limb is found in the area between Rustenburg and Northam in North West Province). Furthermore, the Springbok Flats coal fields are found along the western boundary of the SDM

indicates that the majority part of land (soil) located along the eastern escarpment of the District is deemed to be highly sensitive. Although the District features a substantial availability of land comprising of good arable soils, the hot and dry climate limits the extent of agricultural production within the District to areas adjoining the Olifants, Elands, Ngwaritsi, and Tubatse Rivers. Consequently, land adjoining these rivers should be reserved for agricultural purposes.

Vegetation

Sekhukhune's vegetation is mostly tropical bush and savannah. More specifically, the dominant vegetation type (which has also been classified as sensitive) is Sourish Mixed Bushveld which contains the false grassveld types.

(b) Fauna and Flora

Vegetation type of the proposit site is mostly tropical bush and savannah that is characterised by the prominence of *Dichrostachys cinerea* and *Terminalia sericea* (Mucina & Rutherford 2006). More specifically, the dominant vegetation type (which has also been classified as sensitive) is Sourish Mixed Bushveld which contains the false grassveld types. The area is classified as savannah with various *Acacia* species present and occurs on the upland areas.

8.9.1.2 Description of the current land uses

The remaining extent of the farm 11111111 KS is located along the mohlala route connecting to Iekentle street and Queen Gadifele road from Jane-Furse to Ga-Mahlanya, most of the areas are characterised by low-lying areas. The large portions of the farm were covered by crop farming activities long time ago, however some portions are covered grassland, few thorn and aloe trees and tall trees. The applicant intends to prevent impacts on the valleys, as we have assessed and identified species and habitats that will be potentially impacted by the proposed activities.

Screening Tool Report

According to the Screening Tool Report, the site comprises of the very high sensitivity of terrestrial themes, high sensitivity in civil aviation, medium sensitivity in Agriculture, animal species, plant species, defence and palaeontology and low sensitivity in archaeological and

Aquatic biodiversity themes So, no Ecological Assessment were conducted because according to the EAP's observation during site inspection, the area is a disturbed area and contains of grasslands and few aloe trees which will not be affected by the mining operation as there will be avoided.

8.9.1.3 Description of specific environmental features and infrastructure on the site

The proposed mining area is surrounded by cultivated farmlands, diggings, mountains, few aloe trees and grazing sites. The area also enjoys access from the mohlala route connecting to lekentle street and queen gadifele road from Jane-Furse to Ga-Mahlanya, which will be used for access road for transporting the product to the end user. Below is the aerial image of the surroundings;



Figure 8.2: Aerial map

8.9.1.4 Environmental and Current land use Map

Refer to Appendix A of this Report for the Environmental and Current Land Use Map

8.10 Impacts and risks identified including the nature, significance, consequences, extent, duration and probability of the impacts, including the degree of these impacts

8.10.1 Assessment of impacts and identified risk of Open-cast mining activities

Table 8-1 overleaf shows a list of the potential impact identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultation with affected parties together with the significance, probability, and duration of the impacts, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.

Table 8-8-3: Impact Assessment

| Activity | Environmental Impact | Environmental aspect | Measures to prevent, mitigate, minimize or manage the impacts |
|---------------------------|----------------------|--|--|
| CONSTRUCTION PHASE | | | |
| Access road | Noise | Movement of vehicles during the creation of road | Equipment and vehicles equipped with standard exhaust systems which minimize the amount of emissions Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place. |
| | Air | Dust caused by Clearance of vegetation | Dust suppression measures such as spraying with water Dust monitoring must be undertaken in accordance to monitoring program |
| | Water | Disturb the smooth flow of surface water | Water monitoring program will take place and management of water will be conducted and contained within the mining area |
| | Soil | Clearance of vegetation | Managed and monitored |

| | | | |
|------------------------------------|-------|--|---|
| | | | |
| Mobile toilets | Noise | None | None |
| | Air | None | None |
| | Water | None | None |
| | Soil | None | None |
| | | | |
| Construction of dirty water trench | Noise | To prevent the noise emanating from construction machinery from impacting on the sensitive receptors | Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place. |
| | Air | Dust Clearance of vegetation and topsoil | Dust suppression measures such as spraying with water |

| | | | |
|--|-------|--|--|
| | | | |
| | Water | <p>Disturb smooth flow of surface water</p> <p>To protect existing users of surface water impacts on water quality</p> | <p>Area of disturbance must be in line with the mine plan provided to minimize the loss of catchment area</p> <p>The area excavated should have berms that are vegetated in order to separate dirty and clean water systems, and an erosion control measure</p> |
| | Soil | <p>Clearance of vegetation and topsoil</p> | <p>The soil will be managed accordingly with the mining area</p> |
| Construction of Pollution control dams | Noise | <p>To prevent the noise emanating from construction machinery from impacting on the sensitive receptors</p> | <p>Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated. Noise monitoring to take place.</p> |
| | Air | <p>Dust</p> <p>Clearance of vegetation</p> | |

| | | | |
|------------------|-------|---|---|
| | Water | Prevent contamination of surface and ground water | The area excavated should have berms that are vegetated in order to separate dirty and clean water systems, and an erosion control measure |
| | Soil | Clearance of vegetation and topsoil | The soil will be managed accordingly within the mining area |
| Waste facilities | Noise | None | None |
| | Air | None | None |
| | Water | Prevent contamination of surface water by disposing on the wet land | Storage facility with bonding must be constructed Debris will be removed and disposed off in approved sites |
| | Soil | None | Place waste receptacles at strategic points Monitor housekeeping behaviour and insist on corrective action Waste will be disposed off in approved sit |
| | | | |

| OPERATIONAL PHASE | | | |
|--|-------|---|--|
| Preparation of mining area(Benches, strip 1,2) | Noise | Prevent the noise emanating from the construction machinery from impacting on the sensitive receptors | The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control .Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition |
| | Air | Dust | Dust suppression measures such as spraying with water |
| | Water | Land degradation, land-use and capability | Siltation of surface water resources will be minimized by road wetting. The areas excavated should be have berms that are vegetated in order to separate dirty and clean water systems while enhancing the maximization of clean and minimization of dirty areas and water systems respectively, and as an erosion control measure. The stockpiles must be vegetated to prevent erosion and subsequent siltation of clean and dirty water streams as well as surface water resources. Upslope diversion and down slope silt containment structures will be constructed. Monitoring of surface water resource pre-mining and during construction must be implemented in order to be used during operation, decommissioning and post-closure as per the monitoring programme |
| | Soil | Limit the soil disturbance outside the mining area | Movement of vehicles will be restricted to designated areas. |

| | | | |
|------------------------------------|-------|--|---|
| | | | |
| Waste facility | Noise | None | None |
| | Air | None | None |
| | Water | Water pollution | Container will be placed on a designated area, waste will be disposed in approved site |
| | Soil | None | Place waste receptacles at strategic points Monitor housekeeping behavior and insist on corrective action Waste will be disposed off in approved site |
| Overburden, stockpile topsoil, ROM | Noise | To prevent the noise emanating from the construction machinery from impacting on the sensitive receptors | A noise barrier in the form of a berm should be constructed on proposed area of disturbance (as per current mine plan) so that it is situated between the main noise source and sensitive noise receptor, as close to the noise sources as possible. The berm will help with the attenuation of noise produced by the mining activities |
| | Air | Reduction of dust fallout levels and particulate matter | Vegetation needs to be encouraged on all soil stockpiles to reduce dust levels. |
| | Water | Contamination | Prevent soil erosion and keep water channel clean, monitor groundwater Siltation of surface water resources will be minimized by road wetting. The areas excavated should be have berms that are vegetated in order to separate dirty and clean |

| | | | |
|--|-------|--|--|
| | | | water systems while enhancing the maximization of clean and minimization of dirty areas and water systems respectively, and as an erosion control measure |
| | Soil | Reduction of area of soil compaction | Ensure all activities occur within designated areas. Compile accurate soil map showing classification, thickness, fertility status. Remove and stockpile topsoil in berms or heaps less than 2 – 3 m high. Do not use as storm water control feature. Vegetate with diverse grass mix to control erosion. Wetland soils should only be stockpiled at heights of 1 – 2 m. Subsoil stockpiles can be bigger but must be protected against erosion similar to topsoil stockpile |
| Loading and hauling of material | Noise | Movement of vehicles | |
| | Air | Dust | Dust suppression by watering |
| | Water | Water pollution | Operate outside 100 m distance from stream or any water body Control and manage storm water Prevent soil erosion and keep water channel clean, monitor groundwater |
| | Soil | Reduction of area characterised by soil compaction | All vehicles must remain on haul roads and within demarcated area |
| DECOMMISSIONING AND CLOSURE PHASE | | | |

| | | | |
|--|--------------------|-------------------------------|--|
| Activity: De-establishment / removal of infrastructure | Noise | Movement of vehicles | <p>The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control</p> <p>Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition</p> |
| POST CLOSURE | | | |
| Ground water monitoring | Water(ground water | Contamination of ground water | <p>Existing boreholes will be utilized to monitor the quality of the underground two years after closed</p> <p>Sealing of the pit at mine closure to prevent decant at pit, allow groundwater levels to recover and base-flow to be reinstated. Water will then be discharged via the natural/present ways (e.g. springs). The water quality of the springs must be monitored; and</p> <p>The monitoring programme and data should be reviewed by an independent hydrogeologist annually and routinely amended if necessary;</p> <p>Investigate the vertical profile of hydraulic conductivities specifically in relation to the Iron and Vanadium ore seams in shallow and deep Iron and Vanadium ore seam areas including Iron and Vanadium ore seam, seam roof and - floor;</p> <p>Carry out a recharge investigation to quantify specifically (i) stream loss on high ground and (ii) direct infiltration;</p> <p>Conduct further geochemical testing, including testing of country rock and field testing, to provide more confidence in the current results which are not statistically robust. Subject to the results of these tests, it is recommended</p> |

| | | | |
|--|--|--|--|
| | | | that the mine residue management strategy be reviewed, when necessary. |
|--|--|--|--|

8.11 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of environmental impacts and risks

8.11.1 Definitions and concepts:

(a) Environmental significance

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognized from the various interpretations:

- Environmental significance is a value judgment

The degree of environmental significance depends on the nature of the impact

- The importance is rated in terms of both biophysical and socio-economic values

Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. Intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEA (2002) Impact Significance, Integrated Environmental Management, Information Series 5)

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realized (Environment Australia (1999) Environmental Risk Management).

(b) Impact Description

It provides the assessment impacts related to mining for the operational phase. The potential geological impact is the collapse of overlaying strata and creation of voids due to the historical high extraction of Open-cast mining. Furthermore, due to the extraction of the aggregate seam and the removal of associated geological material for the open –cast passages and through fare, voids are created. This results in a permanent effect on geology.

The predicted surface subsidence within historical areas of high extraction will vary between 0.8 and 1.5m. Undisturbed strata or bord and pillar mining areas area highly unlikely to experience subsidence. As in the case of geology, topography is also permanently changed by Open-cast high extraction mining. The general landform of the areas within which high extraction mining has taken place will not change from the existing gently sloping landform. In the short term some localised changes to drainage patterns will occur, however on a micro

level topography will be punctuated by surface undulations or humps, surface cracking and the formation of sub-surface cracks.

(c) Impact

The positive or negative effects on human well-being and / or the environment.

(d) Consequence

The intermediate or Final outcome of an event or situation or it is the result, on the environment, of an event.

(e) Likelihood

A qualitative term covering both probability and frequency.

(f) Frequency

The number of occurrences of defined event in a given time or rate.

(g) Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

(h) Environment

Surrounding in which an organization operates, including air, water, land, natural, resources, flora, fauna, humans and their interrelation (ISO 14001, 1996).

(i) Methodology

The environmental significance assessment methodology is based on the following determination:

- Environmental Significance = Overall Consequences x Overall Likelihood

(j) Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: Severity/Intensity, Duration and Extent/Spatial Scale. Each factor is assigned a rating of 1 to 5, as described in the tables below.

(k) Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

Table 8-3 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 8-8-4: Rating of Severity

| Type of criteria | Rating | | | | |
|---|---|--|---|--|---|
| | 1 | 2 | 3 | 4 | 5 |
| Quantitative | 0-20% | 21-40% | 41-60% | 61-80% | 81-100% |
| Qualitative | Insignificant / non-harmful | Small potentially harmful / | Significant / harmful | Great / harmful | Disastrous Extremely harmful |
| Social/community response | Acceptable/I&AP satisfied | Slightly tolerable/possible objections | Intolerable/sporadic complaints | Unacceptable Widespread complaints | Totally unacceptable/possible legal actions |
| Irreversibility | Very low cost to mitigate/high potential to mitigate impacts to level of insignificance/easily reversible | Low cost to mitigate | Substantial cost to mitigate/potential to mitigate impacts/potential to reverse impacts | High cost to mitigate | Prohibitive cost to mitigate/little or no mechanism to mitigate impact irreversible |
| Biophysical (Air quality, water quantity and quality, waste production, fauna and flora) | Insignificant change deterioration or disturbance | Moderate change/deterioration or disturbance | Significant change/deterioration or disturbance | Very significant change/deterioration or disturbance | Disastrous change/deterioration or disturbance |

(I) Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5 as described below and in tables 8-4 and 8-5.

(m) Determination of frequency

Frequency refers to how often the specific activity related to the event, aspect or impact is undertaken.

Rating of Frequency:

Table 8-8-5: Frequency rating

| Rating | Description |
|--------|---|
| 1 | Once a year or once/more during operation |
| 2 | Once/more in 6 months |
| 3 | Once/more a month |
| 4 | Once/more a week |
| 5 | Daily |

(n) Determination of probability

Probability refers to how often the activity or aspect has an impact on the environment.

Rating of probability:

Table 8-8-6: Probability rating

| Rating | Description |
|--------|---------------------------------|
| 1 | Almost never/almost impossible |
| 2 | Very seldom/highly unlikely |
| 3 | Infrequent/unlikely/seldom |
| 4 | Often/regularly/likely/possible |
| 5 | Daily/highly likely/definitely |

(o) Overall likelihood

Overall likelihood is calculated by adding the factors determined above and summarized below, and then dividing the sum by 2.

Table 8-8-7: Example of calculating overall likelihood

| Consequence | Rating |
|---|-----------|
| Frequency | Example 4 |
| Probability | Example 2 |
| SUBTOTAL | 6 |
| TOTAL LIKELIHOOD (Subtotal divided by 2) | 3 |

Determination of overall environmental significance.

8.12 Potential impact of each main activity in each phase, and corresponding significance assessment

(a) Stripping and stockpiling of topsoil:

Visual intrusion associated with the establishment of the mining area.

Rating: Low Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 1 | 2 | 4 | 1 | 2.5 | 5 |

Dust nuisance caused by the disturbance of soil

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 3 | 2 | 2.6 | 4 | 3 | 3.5 | 9.1 |

Noise nuisance caused by machinery stripping and stockpiling the topsoil

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 2 | 2.3 | 4 | 3 | 3.5 | 8.1 |

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 1 | 2.3 | 4 | 2 | 3 | 6.9 |

Loss of topsoil due to incorrect storm water management

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |

| | | | | | | | |
|---|---|---|-----|---|---|-----|-----|
| 3 | 4 | 1 | 2.6 | 4 | 3 | 3.5 | 9.1 |
|---|---|---|-----|---|---|-----|-----|

Contamination of area with hydrocarbons or hazardous waste material

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 3 | 1 | 2.3 | 4 | 3 | 3.5 | 8.1 |

(b) Excavations:

Visual intrusion associated with the excavation activities

Rating: Medium-High

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 5 | 2 | 3 | 5 | 5 | 5 | 15 |

Dust nuisance due to excavation activities

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 5 | 4 | 4.5 | 13.5 |

Noise nuisance generated by excavation equipment

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 2 | 2.6 | 4 | 4 | 4 | 10.4 |

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 4 | 3 | 3.5 | 10.5 |

Unsafe working conditions for employees

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|--|--|--|-------------|--|--|------------|--------------|
|--|--|--|-------------|--|--|------------|--------------|

| Severity | Duration | Extend | | Probability | Frequency | | |
|----------|----------|--------|-----|-------------|-----------|---|-----|
| 3 | 4 | 1 | 2.6 | 3 | 3 | 2 | 5.2 |

Negative impact on the fauna and flora of the area

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 5 | 3 | 4 | 10.4 |

Potential damage or cultural or heritage aspects

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 1 | 1 | 1 | 1.6 |

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 4 | 3 | 3.5 | 9.1 |

(c) Stockpiling and Transporting of material

Visual intrusion the associated with the stockpiled material and vehicles transporting the material

Rating: Medium-high

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 5 | 5 | 5 | 15 |

Loss of material due to ineffective storm water handling

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 4 | 3 | 3.5 | 9.1 |

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 4 | 2 | 3 | 7.8 |

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 4 | 5 | 4.5 | 13.5 |

Degradation of access roads

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 4 | 4 | 4 | 12 |

Noise nuisance caused by vehicles

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 2 | 2.6 | 4 | 5 | 4.5 | 11.7 |

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 4 | 3 | 3.5 | 9.1 |

Weed and invader plant infestation of the area to the disturbance of the soil

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 1 | 2.6 | 4 | 2 | 3 | 7.8 |

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 4 | 2 | 3 | 4 | 5 | 4.5 | 13.5 |

(d) Sloping and Landscaping:

Visual intrusion associated with sloping and landscaping activities

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 2 | 2 | 4 | 1 | 2.5 | 5 |

Soil erosion

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 5 | 1 | 3 | 4 | 2 | 3 | 9 |

Health and safety risk posed by un-sloped areas

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 4 | 5 | 1 | 3.3 | 4 | 5 | 4.5 | 14.9 |

Dust nuisance caused during sloping and landscaping activities

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 4 | 1 | 2.5 | 3.3 |

Noise nuisance caused by machinery

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 4 | 1 | 2.5 | 3.3 |

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 4 | 1 | 2.5 | 3.3 |

(e) Replacing the Topsoil and Re-Vegetation of the disturbed area

Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area.

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 2 | 1 | 1.5 | 2 |

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 1 | 2 | 3 | 1 | 2 | 4 |

Infestation of the area by weed and invader plants

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 1 | 2 | 4 | 2 | 3 | 6 |

8.12.1 Assessment of potential cumulative impacts

The proposed mining activity will entail establishment of a mining area within a natural environment. The disturbance of the natural areas will however be contained within the boundaries of the site.

The cumulative impacts associated with the establishment of the industrial area could be the following:

Additional traffic on the local roads during construction and operational phases.

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 2 | 2.6 | 4 | 4 | 4 | 10.4 |

The influx of people in the area during construction and operational phases

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 1 | 4 | 1 | 2 | 4 | 5 | 4.5 | 9 |

Additional water supply to the areas

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 1 | 4 | 1 | 2 | 5 | 5 | 5 | 10 |

8.13 THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

8.13.1 Positive impacts

The area applied for constitutes numerous mining activities which all apply similar mining method including the mining type. As a result, the mining commences at the shallow areas of the Iron and Vanadium ore deposit and continue with con-current rehabilitation applied at the same time.

Mining activities will be commissioned only within the 5ha as planned on site, which appears that alternatives were not possible. In many cases, the mine design takes into consideration the control on the storm water as well as the groundwater which also dictates the mining operation.

8.13.1.1 Economic development

The Project will create an income stream for the business that operates within the proposed farm area and the beneficiaries of the project especially the Makhuduthamaga Local Municipality residents as well as those of the municipalities within the

Sekhukhune District. Acceleration of infrastructural developments in the area and the other rural under developed areas.

8.14 MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

8.14.1 Proposed mitigation measures to minimize adverse impacts.

8.14.1.1 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation

(a) Stripping and stockpiling of topsoil:

- Visual intrusion associated with the establishment of the mining area.
- Dust nuisance caused by the disturbance of the soil
- Noise nuisance caused by machinery stripping and stockpiling the topsoil
- Infestation of the topsoil by weed or invader plants
- Loss of topsoil due to incorrect storm water management
- Contamination of area with hydrocarbons or hazardous waste materials

(b) Excavations:

- Visual intrusion associated with the excavation activities
- Dust nuisance due to excavation activities
- Noise nuisance generated by excavation equipment
- Contamination of surface or groundwater due to effluent runoff from excavation area
- Unsafe working conditions for employees
- Negative impact on the fauna and flora of the area
- Contamination of the area with hydrocarbons or hazardous waste materials

(c) Stockpiling and Transporting of material

- Visual intrusion associated with the stockpiled material and vehicles transporting the material
- Loss of material due to ineffective storm water handling

- Weed and invader plant infestation of the area due to the disturbance of the soil
- Dust nuisance from the stockpiled material and vehicles transporting the materials
- Degradation of access roads
- Noise nuisance caused by vehicles
- Contamination of area with hydrocarbons or hazardous waste materials

Sloping and landscaping

- Visual intrusion associated during stockpiling and landscaping activities
- Soil erosion
- Health and safety risk posed by un-sloped areas
- Dust nuisance caused during sloping and landscaping activities
- Contamination of area with hydrocarbons or hazardous waste materials

Replacing the Topsoil and Re-Vegetating of the disturbed area:

- Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area.
- Loss of reinstated topsoil due to the absence of vegetation
- Infestation of the area by weed and invader plants

8.14.1.2 Concomitant list of appropriate technical or management options

(Chosen to modify, remedy, or stop any action, activity or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

(a) Visual Mitigation:

- The site is screened by alien trees and the permit holder will need to protect the trees on the road side to mitigate the visual impact.
- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure the site needs to be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum

(b) Dust Handling

- The liberation of dust into the surrounding environment should be effectively controlled by the use of, inter alia, water spraying and /or other dust-allaying agents.
- The site manager should ensure continuous assessments of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access roads should be limited to 30km/h to prevent the generation of excess dust.
- Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.
- All stockpiles should be thoroughly soaked to ensure dust suppression on the site

(c) Noise Handling:

- The applicant should ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours
- All mining vehicles should be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

(d) Management of weed and invader plants:

- A weed and invader plant control management plan should be implemented at the site to ensure eradication of all listed plants in terms of Conservation of Agricultural Act (Act no 43 of 1983)
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
 - "The plants can be uprooted, felled or cut off and can be destroyed completely"
 - The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with directions for the use such as herbicide"
 - The temporary topsoil and overburden stockpiles need to be kept free of weeds

(e) Storm water Handling:

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

(f) Management of Health and Safety Risks:

- Workers should have access to the correct personal protection equipment (PPE) as required by law
- All operations should comply with the Occupational Health and Safety Act.

(g) Waste Management

- No processing area or waste pile may be established within 100m of the edge of any river channel or other water bodies.
- Any vehicle repairs may only take place within the temporary service bay service bay area and all waste products must be disposed of in a 200 litre closed container/bin found inside the emergency service area.

- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil by disposing of the at a recognized facility
- Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognized landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Biodegradable refuse generated should be handled as indicated above.

(h) Management of Access Roads

- Newly constructed access roads (if applicable) must be adequately maintained so as to minimize dust, erosion or undue surface damage.
- Storm water should be diverted around the access roads to prevent erosion,
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas.

(i) Topsoil Handling

- Where applicable the first 300m of topsoil should be removed in strips and stored at a demarcated and signposted stockpile area. Stockpiling of topsoil must be done to protect it from erosion, mixing with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles of each removed strip should be kept free of weeds.
- Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.
- Topsoil heaps should not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Storm and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

(j) **Protection of fauna and flora:**

- The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers should be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young
- No plants or trees may be removed without the approval of the ECO.
- A search and rescue exercise should be conducted prior to any mining taking place at the site, to ensure that all protected and or sensitive plants is removed from the mining area.

8.15 Review the significance of the identified impacts.

(After bringing the proposed mitigation measures into consideration)

(a) **Stripping and stockpiling of topsoil**

Visual intrusion associated with the establishment of the mining area

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 1 | 1.6 | 3 | 1 | 2 | 3.2 |

Dust nuisance caused by the disturbance of the soil

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 3 | 2 | 2.5 | 3.3 |

Noise nuisance caused by machinery stripping and stockpiling the overburden

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 3 | 2 | 2.5 | 3.3 |

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

Loss of topsoil due to incorrect storm water management

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 2 | 1 | 1.5 | 2.4 |

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

(a) Excavations:

Visual intrusion associated with the excavation activities

Rating: Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 1 | 2.3 | 4 | 5 | 4.5 | 10.4 |

Dust nuisance due to excavation activities

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

Noise nuisance generated by excavation equipment

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 1 | 2.3 | 2 | 3 | 2.5 | 5.8 |

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 2 | 2 | 2 | 1 | 1.5 | 3 |

Unsafe working conditions for employees

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 2 | 1 | 1.5 | 2.4 |

Negative impact on the fauna and flora of the area

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 2 | 2 | 2 | 2.6 |

Potential damage to cultural or heritage aspects

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

(b) Stockpiling and Transporting of Material

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 1 | 2 | 4 | 5 | 4.5 | 9 |

Los of material due to ineffective storm water handling

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |

| | | | | | | | |
|---|---|---|-----|---|---|-----|-----|
| 3 | 1 | 1 | 1.6 | 2 | 1 | 1.5 | 2.4 |
|---|---|---|-----|---|---|-----|-----|

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 2 | 2 | 2 | 2.6 |

Degradation of access roads

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 2 | 1.6 | 3 | 2 | 2.5 | 4 |

Noise nuisance caused by vehicles

Rating: Low-Medium

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 4 | 1 | 2.3 | 3 | 3 | 3 | 6.9 |

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 3 | 1 | 1 | 1.6 | 3 | 2 | 2.5 | 4 |

(c) Sloping and landscaping

Visual intrusion associated with sloping and landscaping activities

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |

| | | | | | | | |
|---|---|---|-----|---|---|-----|-----|
| 1 | 2 | 1 | 1.3 | 2 | 1 | 1.5 | 2.4 |
|---|---|---|-----|---|---|-----|-----|

Soil erosion

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 2 | 1 | 1.5 | 2 |

Health and safety risk posed by un-sloped areas

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 3 | 1 | 2 | 2 | 1 | 1.5 | 3 |

Dust nuisance caused during sloping and landscaping activities

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 3 | 1 | 2 | 2.6 |

Noise nuisance caused by machinery

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 4 | 1 | 2.5 | 3.3 |

Contamination of area with hydrocarbons or hazardous waste material

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 3 | 1 | 2 | 2.6 |

(d) Replacing the Topsoil and Re-Vegetation of the disturbed area:

Visual intrusion associated with the replacing of the topsoil and re-vegetation of the mining area

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|--|--|--|-------------|--|--|------------|--------------|
|--|--|--|-------------|--|--|------------|--------------|

| Severity | Duration | Extend | | Probability | Frequency | | |
|----------|----------|--------|-----|-------------|-----------|-----|---|
| 2 | 1 | 1 | 1.3 | 2 | 1 | 1.5 | 2 |

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 2 | 1 | 1.6 | 3 | 1 | 2 | 3.2 |

Infestation of the area by weed and invader plants

Rating: Low

| | | | Consequence | | | Likelihood | Significance |
|----------|----------|--------|-------------|-------------|-----------|------------|--------------|
| Severity | Duration | Extend | | Probability | Frequency | | |
| 2 | 1 | 1 | 1.3 | 3 | 2 | 2.5 | 3.3 |

All impacts are deemed to be of low significance due to the establishment of the proposed mining area in a formerly disturbed area. The above mentioned mitigation measures will however be implemented to ensure that the activity is managed to have the lowest possible impact on the surrounding environment. Removal of vegetation during the operation can also expose land to erosion, particularly during the rainy season. Given proper mitigation this is a short term impact of low – medium significance.

8.16 Motivation where no alternative sites were considered

The mining (Open-cast) methods to be used will minimize potential impacts to the preferred site. Although the applicant has applied for a size is 5 Ha area, it is only the specified excavated points that will be disturbed. The excavation methods to be used will provide reduction of spillages.

8.17 Statement motivating the alternative development location within the overall site

The Sekhukhune District holds one of the largest reserves of Platinum Group Metals (PGMs) in the world. The renowned Bushveld Complex which features the eastern limb of the Merensky Reef is found towards the north and north-eastern parts of the District. (The western limb is found in the area between Rustenburg and Northam in North West Province). Furthermore, the Springbok Flats coal fields are found along the western boundary of the SDM indicates that the majority part of land (soil) located along the eastern escarpment of the District is deemed to be highly sensitive. Although the District features a substantial availability of land comprising of good arable soils, the hot and dry climate limits the extent of agricultural

production within the District to areas adjoining the Olifants, Elands, Ngwaritsi, and Tubatse Rivers. Consequently, land adjoining these rivers should be reserved for agricultural purposes.

9. DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS, AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE.

The type of mining method to be used that will be applied for is Open-cast mining, are non-invasive as such, there is minimal expectations of impacts for the proposed activity on the preferred site. The following steps best describes the process:

Risk Classification

The risks associated with the mining were assessed and ranked according to their environmental significance. The ranking process coded each activity as high, moderate or low risk in accordance with the following process:

The activities were assessed against two criteria: the likelihood of environmental harm occurring and the level of the environmental impacts.

The likelihood of environmental impact was determined by assessing the following:

- Past environmental performance
- Current environmental performance
- Potential contributing factors

The level of environmental impact was assessed by considering factors such as the quantity and toxicity of the material and the sensitivity of the receiving environment.

Environmental Non-Compliance Matrix(Compliance colour coding)

| Level of Non-Compliance | Certain | Likely | Less Likely |
|-------------------------|---------|--------|-------------|
| Moderate - High | | | |
| Low - Moderate | | | |
| Compliant | | | |

9.1 Assessment of each identified significant impact and risks

Table 9-1: Assessment of each identified significant impact and risks

| Name of Activity | Potential impact | Aspects affected | Phase | Significance | | Mitigation type | Significance (if mitigated) |
|--|---|------------------|---|----------------|----------|----------------------------------|-----------------------------|
| Site Clearance, removal of topsoil, initial strip | Dust generation | Air quality | Construction phase | Minimal impact | negative | Dust suppression | Negligible negative |
| | Loss of topsoil | Soils | Construction phase | Minimal impact | negative | Soil stripping | Negligible negative |
| | Loss of fauna & flora | Fauna & flora | Construction phase | Minimal impact | negative | Limited infrastructure footprint | Negligible negative |
| | Sedimentation of wetlands | Wetlands | Construction phase Operational phase | Minimal impact | negative | Buffer zones | Negligible negative |
| | Sedimentation & contamination of surface watercourses | Surface water | Operational phase | Minimal impact | negative | Limited infrastructure footprint | Negligible negative |
| | Groundwater contamination | Groundwater | Operational phase | Minimal impact | negative | Avoidance and spillage attention | Negligible negative |
| | Noise generation | Noise | Decommission phase/closure phase | Minimal impact | negative | Adhering to operating hours | Negligible negative |

| | | | | | | | |
|--|---------------------------------------|-------------------------------------|--------------------|----------------|----------|--|---------------------|
| Establishment of Benches, strip 1,2 | Soil compaction and erosion | Soils | Operational phase | Minimal impact | negative | Vegetation, restrict access | Negligible negative |
| | Sedimentation of wetlands | Wetlands | Operational phase | Minimal impact | negative | Buffer zones | Negligible negative |
| | Contamination of groundwater | Groundwater | Operational phase | Minimal impact | negative | Consent from landowners from water usage | Negligible negative |
| Rehabilitation and closure | | Traffic(transport of loading trucks | Operational phase | Minimal impact | negative | Establishment of speed humps, | Negligible negative |
| | Sedimentation of surface watercourses | Surface water | Decommission phase | Minimal impact | negative | Rehabilitation of sumps | Negligible negative |
| | Soil compaction & erosion | Soils | Decommission phase | Minimal impact | negative | Backfilling and topsoil levelling | Negligible negative |
| | Dust generation from trucks | Air quality | Decommission phase | Minimal impact | negative | Dust management plan, vegetation | Negligible negative |

10. SUMMARY OF SPECIALISTS REPORTS

Table 10-1: Summary of Specialists Report

| List of studies undertaken | Recommendations of specialists reports | Specialists recommendations that have been included in the EIA report | Reference to applicable sections where specialists recommendation have been included in the EIA report |
|-----------------------------------|--|---|--|
| Soil Impact Assessment | Not applicable | X | Individual specialists report was not conducted |
| Fauna & flora | Not applicable | | Individual specialists report was not conducted |
| Wetlands Impact Assessment | Not applicable | | The are no wetlands existing within 500m from the proposed mining area |

| | | | |
|--------------------------------------|--|---|--|
| Groundwater impact assessment | Drill ground water monitoring boreholes. Update the ground water flow model | X | Detailed mitigation measures are outlined in the attached Geohydrological report(appendix E) |
| Heritage impact assessment | Not applicable | | Individual specialist reports were not conducted due to the minimal impacts of the proposed activity. There has not been any archaeological features discovered that would prompt assessment of heritage resources that could be impacted by the proposed mining operations. |

11. ENVIRONMENTAL IMPACT STATEMENT

11.1 Summary of the key finding of the environmental impact assessment

Table 11-1: Summary of key findings of the EIA

| Project phase | Receiving environment | Impact description | Pre-mitigation significance | Post-significance |
|--------------------------------------|----------------------------|--|-----------------------------|-------------------|
| Construction phase | social | Nuisance impacts due to heavy vehicles transporting construction materials | Insignificant negative | Minor negative |
| | Soil, land capability | Loss of topsoil resources and capability through removal of topsoil for establishment of Benches, initial strip | Minor negative | |
| | Fauna & flora | Loss of fauna & flora through clearance of vegetation for establishment of PCDs, Mobile offices, mobile toilets & sanitation | Minor negative | |
| | Surface water | Sedimentation& contamination of surface water | Major negative | |
| | Groundwater | Groundwater contamination | Major negative | |
| Operational phase(| social | Nuisance impact due to earthworks, heavy vehicles and transporting trucks loading ROM | Minor negative | |
| | Soil ,land-use& capability | Soil compaction | Minor negative | |
| | wetland | Contamination of wetlands | Minor negative | |
| | Surface water | Contamination of surface watercourses | Major negative | |
| Rehabilitation /closure phase | Air quality | Elusive dust generation | Minor negative | |
| | Soil ,land-use &land | Soil contamination, restoration of land capability | Major negative | |

| | | | | |
|--|---------------|--|----------------|--|
| | capability | | | |
| | Fauna & flora | Destruction of suitable habitat | Minor negative | |
| | Surface water | Contamination & sedimentation of surface watercourse | Major negative | |

11.2 Final site Map

See attached Final site Map **Appendix A**

11.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

| Phase –activity | Impact/risk | Alternatives |
|---|--|--|
| <p>Construction</p> <ul style="list-style-type: none"> - Access road - Mobile structure - Trench - Pollution control Dam <p>Operational</p> <ul style="list-style-type: none"> - area - Hauling and Loading - Stockpiling - screening <p>Closure</p> <ul style="list-style-type: none"> - Removal of foreign material - Scruping and contouring - Rehabilitation - Retrenchment | <p>Increased ambient noise levels resulting from mining activities.</p> <p>Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on environmental resources utilized by communities, landowners and other stakeholders.</p> <p>Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.</p> <p>Increased vehicle activity within the area resulting in the possible destruction and disturbance of fauna and flora.</p> <p>Poor access control to farms which may impact on cattle movement, breeding and grazing practices.</p> <p>Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.</p> | <p>Due to the size of the operation, minimal alternative could be identified</p> |

12. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND IMPACT MANAGEMENT OUTCOMES

Compilation of the EMPs assist in determining the manner in which impact realised and suggest mitigation, monitoring and management strategies in turn developing greater outcomes of the proposed project

Recommendations that derived from the impact management

- Avoidance of detrimental negative impacts of the sensitive areas
- Prevention of long term effect/impacts from the proposed project
- Restore the proposed areas of interest to its natural form
- Provide sufficient information to strategically plan the mining activities as to avoid unnecessary social and environmental impacts. In that, monitoring boreholes as recommended by Groundwater Study
- Provide sufficient information and guidance to plan mining activities in a manner that would reduce impacts (both social and environmental) as far as practically possible.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance. Provide a management plan that is effective and practical for implementation.
- Through the implementation of the proposed mitigation measures, it is anticipated that the identified social & environmental Impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that: Noise impacts can be managed through consultation and through the restriction of operating hours;
- The pollution of soil and water resources can be effectively managed through containment by water management infrastructure.
- Ecological impact can be managed through the implementation of pollution prevention measures, minimizing land clearing, restricting working hours (faunal disturbance) and rehabilitation.
- Concerns regarding access control to farms can be managed through the development and ensuring compliance to an appropriate access control procedure.
- Risks associated with crime can be mitigated through avoiding recruitment activities on site, as well as monitoring and reporting.
- Visual impact can be minimized through giving consideration to site infrastructure placement and materials used

13. ASPECT FOR INCLUSION AS CONDITIONS OF AUTHORISATION

The proposed strategies ranging from mitigation measures, monitoring and management systems should be part of the conditions of the authorisation.

14. DESCRIPTION OF ANY ASSUMPTION, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The type of commodity to be mined being Iron and Vanadium ore, which largely involves a minimal impact approach to the environment, having said that the information provided in this report will assist the competent authority to arrive with an appropriate conclusion to the proposed activity in question.

OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

14.1 Reasons why the activity should be authorized or not

The proposed activity should be authorised considering the need and desirability of the activity relevant to the location of the area where the proposed activity is to be conducted on. The type of commodity to be mined will have minimal impact on the environment as measured by the economic benefits notwithstanding the recommendations and measures to be put in place to monitor impact response and minimisation.

14.2 Conditions that must be included in the authorisation

As discussed above the recommendations, mitigation measures proposed in the EMPr will suffice as conditions.

15. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The mining permit will expire in 2 years' time with a possible renewal of another 3 years, similarly the authorisation should be active until the permit expires, as contents of the authorisation will no longer serve value when mining has been decommissioned has ended that is after having done closure and rehabilitation has been concluded.

16. UNDERTAKING

Project team confirms that the undertaking that is applicable to the basic assessment report and EMPr is made available at the last section of the report.

17. FINANCIAL PROVISION

In accordance with the requirements of regulation 54(i) of the Mineral and Petroleum Resource Development Act, 2002 (Act 28 of 2002) LM3 Brothers has calculated the environmental closure liability for the proposed project according to the Department of Minerals Resources guidelines. The cost closure is estimated to the total of **R 111 677,12 (See Appendix F)**

17.1 Explain how the aforesaid amount was derived

17.1.1 Quantum calculations

Provide a calculation of the quantum of the financial provision required to manager and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulations 54 (1) in respect of each of the phases referred to)

17.1.1.1 Confirm that this amount can be provided for from the operating expenditure

It is hereby undertaken that the amount of **R 111 677,12** in the form of a bank guarantee for rehabilitation purposes as required in terms of section 24P of the Act: Financial provision for remediation of.

18. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

18.1 Compliance with the provision of section 24(4)a and b read with section 24(3) and 7 of the National Environmental Management Act(107 of 1998).The EIA report must include

18.1.1 Impact on the socio-economic conditions of any directly affected persons

The project generate an approximate of about 300 employment opportunities and business opportunities for SMMEs through contracts for construction, operation and also during rehabilitation phases..

18.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resource Act

There are no heritage sites identified within the proposed mining area, this was in consultation with the landowners and appropriate measures have been proposed to protect such sites from the impact arising from the project should they be discovered during operation.

19. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)A AND B OF THE ACT

The report compiled together with the information provided included in the attached proof of consultations, site visits etc

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT



1. DETAILS OF EAP

Details of the Environmental Assessment Practitioner has been included in **Part A (section 1)**

2. DESCRIPTION OF THE ASPECT OF THE ACTIVITY

Description of the aspect of the activity has been included in **Part A (section 1)**

3. COMPOSITE MAP

A Map containing all the required information regarding the proposed mining site. **See Appendix A**

4. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENT

4.1 Determination of closure objectives

The closure objectives for the proposed mining activity include the following:

- Rehabilitation of the mining sites
- Reduction of the visual impact of the mining sites
- Information provision to the competent authority
- Submit monitoring results to the relevant competent authority
- Ensure that all the soil profile is return in accordance with their original horizons.
- Preserve the topsoil and ensure that it keep its fertility in order to retain the vegetation of the area.
- Ensure that all foreign material including carbonaceous material are cleared from the site.
- Contour the area in order to ensure that storm water does not wash the topsoil into the nearby stream.
- Encourage the vegetation growth through watering and seeding the rehabilitated areas.

4.2 Volume and rate of water use required

Water usage will be limited to the following activities

- The project will utilize about 18600 cm³. At a given point that a water use is triggered a licence will be applied for in terms of section 21 of the National Water Act, 1998 (Act 36 of 1998)

4.3 Has a water-use licence been applied for

The use of groundwater will be Generally Authorized in terms of the NWA. Based on the outcomes of discussions with the Department of Water and Sanitation, the potential abstraction of water due to mining activities will be clarified. Should it be deemed necessary, on instruction by the department, to submit a water use license application, this will be undertaken.

4.4 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

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

Table 4-1: Measures to rehabilitate the environment affected by undertaking any listed activity

| No | Activity | Affected Environment | Objectives | Mitigation/Management measure | Frequency of mitigation | Legal Requirements | Recommended Action Plans | Timing of implementation | Responsible Person | Management Cost |
|----|---|----------------------|---|--|-------------------------|--------------------|---|--|--------------------|-----------------|
| 1 | Recruitment, procurement and employment | Socio-economic | Ensure that recruitment strategies for the mine prioritises the sourcing of local labour, and share in gender equality. Empower the workforce to develop skills that will equip them to obtain employment in other sectors of the economy. Contribute to the sustainable development of a community (not dependent on the mine) surrounding the area of operation | Positive impact will be implemented through LED initiative as part of local development and need to be managed. Ad-hoc, informal recruitment at the gate or through other unapproved channels by setting up recruitment stands in built up areas should be prohibited. Relationships with local government through LED programmes should be developed. Stakeholder database should be established to identify partners and develop collaborative | Ongoing | As per LED | The social plans to involve action plans aimed at providing development opportunities and benefits to the affected local communities. | Construction phase and operational phase | HR manager | N/A |

BAR and EMP for mining permit on the remaining extent of farm 11111111 KS

| | | | | | | | | | | |
|---|------------------------------------|------|---|---|---------|---------------------------------|-------------------|---|----------|--|
| | | | | networks | | | | | | |
| 2 | Transport of construction material | Soil | Minimization of disturbed area and prevention of compaction of soil | All heavy machinery operators and truck drivers should stay in designated areas | Ongoing | Rehabilitation and closure plan | Life of Mine(LoM) | Mining engineer and environmental coordinator | R 15 000 | |

5. IMPACT MANAGEMENT OUTCOMES

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

Table 5-1: Measures to rehabilitate the environment affected by undertaking any listed activity

| Activity | Aspects Affected | Phase | Size and Scale of Disturbance | Mitigation Measure |
|-----------------------|------------------|---|-------------------------------|---|
| Column 1 | Column 2 | Column 3 | Column 4 | Column 5 |
| Site Clearance | Social Nuisance | Construction Phase(transport of construction materials) | Limited to the mining site | Keep soils moist to suppress possibility of dust; |
| | | | | Site clearing to take place during daylight hours only |
| | | | | Vehicles and machinery will be properly maintained to minimize operating noise |
| | | | | Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; |



| | | | | |
|--|-----------------|---|--------------------|---|
| | | | | |
| | Soils | Construction Phase(topsoil removal, overburden) | 100 m ² | <p>Ensure topsoil is stored in one dedicated stockpile, less than 1 m high, and within the demarcated mining site; and</p> <p>Topsoil stockpiles will be covered with a plastic liner during windy and rain conditions so as to prevent erosion (October to March). ▪</p> <p>Only remove vegetation when and where necessary;</p> |
| Iron and Vanadium ore removal and stockpiling | Fauna and Flora | Construction Phase(establishment of Benches, initial strip) | 100 m ² | Minimize the size of the excavated sites as far as possible |
| | | | | Indigenous trees will not be removed |
| | | | | Drainage lines, and indigenous vegetation will be avoided |
| | | | | Use existing access road |
| | Wetlands | Construction Phase | Local | <p>Ensure site clearing is limited to the designated areas</p> <p>All watercourses will be avoided and the stipulated buffer will be implemented</p> |
| Water use around site | Surface water | Construction Phase | Local, Continues | All dirty water must be captured and recycling of water must be emphasized and implemented throughout the mine |
| | | | | Water within the excavated site must be diverted to the water sump. Waste water management plan/procedure |
| | | | | All watercourses will be avoided and the stipulated buffer will be implemented |

| | | | | |
|----------------------------------|-----------------|---|--------------------|---|
| Pollution control dams | Groundwater | Construction phase | Local | All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; |
| | | | | Spillage control kits will be readily available on site to contain the mobilization of contaminants and clean up spills; |
| | | | | All vehicles and machinery to be serviced in a hard park area or at an off-site location |
| | Noise | Construction Phase | Site Specific | Site clearing to take place during daylight hours only |
| | | | | Vehicles and machinery will be properly maintained to minimize operating noise |
| | | | | Vehicles will obey speed limits |
| | Social Nuisance | Operational Phase | Limited | Maintain excavation equipment and, if possible, fit silencing equipment |
| | | | | excavation will only take place during daylight hours |
| | | | | Use a dust suppressant and keep access roads moist |
| | | | | Cover stockpiles with a plastic liner in windy and rain conditions so as to prevent topsoil from eroding |
| | Noise | Operational Phase | Site Specific | Maintain drilling equipment and, if possible, fit silencing equipment |
| | Fauna and Flora | Operational Phase | 100 m ² | Remove alien invasive species as and when they occur |
| | | | | Maintain excavation equipment and, if possible, fit silencing equipment |
| | | | | All personnel are to remain on the demarcated mining site only |
| | | | | to prevent the footprint of the site expanding and further vegetation loss |
| Concurrent replacement of | Soil | Operational Phase Rehabilitation Phase | Site Specific | The replacement of overburden and top soil should be replaced so it follows the original contouring of the land prior to mining. The area would need to be revegetated to decrease the risk of erosion. |

BAR and EMP for mining permit on the remaining extent of farm 11111111 KS



| | | | | |
|--|------------------------------------|-------------------|-----------------------------|--|
| overburden and topsoil and revegetation | | | | |
| | | | | Machinery and vehicles must be serviced and maintained off site at a workshop and drip trays must be in place to capture the spillage |
| Vehicular activity on haul roads and conveying of Iron and Vanadium ore | Air quality | Operational Phase | Local, As and when required | Road surfaces, for example the access road, will be sprayed and treated with water and a dust binding agent. Water will be applied to haul roads three times daily, except during periods of rainfall. All Iron and Vanadium ore haul trucks must be covered. The overland conveyor belt will also be covered and where Iron and Vanadium ore on the conveyor will be sprayed to reduce emissions. The limit value for the 24 hour average for PM10 is 75 ug/m3 and this may not be exceeded 4 times within a year. The limit value for the yearly average for PM10 is 40ug/m3. |
| | | | | Berms on the periphery of the mining site will be inspected daily and maintained to ensure runoff from within the |
| | | | | mining site does not report to the catchment |
| | Biodiversity & Aquatic Environment | Operational Phase | Local, As and when required | Wetting of the haul road to suppress dust creation as well as cover haul trucks to prevent dust emissions during transport. The overland conveyor belt will also be covered and where Iron and Vanadium ore on the conveyor will be sprayed to reduce emissions |
| | | | | Daily inspection of the excavation must be undertaken prior to the commencement of Excavation and routine maintenance must be |
| | | | | undertaken to prevent the likelihood of fluid dispersing and breakdowns |

| | | | | |
|--|--|--|---------------------------------|---|
| Final replacement of overburden and topsoil revegetation | Surface Water | Operational Phase Rehabilitation phase | Local | <p>The replacement of overburden and top soil should be replaced so it follows the original contouring of the land prior to mining. The area would need to be revegetated to decrease the risk of erosion.</p> <p>Scarify roads and stockpile areas to a depth of 500mm and infrastructure areas and restore topsoil cover. Implement soil conservation measures. Integrate disturbed area to most appropriate land use to ensure long-term stability of restored topsoil. Rehabilitation must ensure long-term stability and not compromise post-mining land use objectives.</p> |
| | Soil | Operational Phase Rehabilitation Phase | 100 m ² | <p>Sumps will be backfilled and the site levelled immediately after has concluded</p> <p>All compacted areas will be ripped to loosen the soils during rehabilitation</p> |
| | Fauna and Flora | Rehabilitation Phase | 100 m ² | Remove alien invasive species as and when they occur |
| | | | | An alien invasive management plan must be established |
| | | | | All compacted areas will be ripped to loosen the soils during rehabilitation and seeded with an appropriate seed mixture |
| Post closure monitoring and rehabilitation | Soil, Surface Water, Biodiversity and Wetlands | Rehabilitation Phase | 5 Ha area(on-going post mining) | <p>Woody vegetation should be establishment to minimize water ingress into the discard will be applied. Soil will be required to cover the mined area. The quantities of soil required as well as the timing of the operation will depend on the design and operation of these facilities.</p> <p>Surface water runoff controls will be engineered to prevent future soil erosion of the rehabilitated area. Re-vegetation will assist in controlling erosion by wind and water. Monitoring will be ongoing for 3years to determine potential water contamination. For the first year</p> |
| Post closure monitoring and rehabilitation | Soil, Surface Water, Biodiversity and Wetlands | Rehabilitation Phase | 5 ha area(on-going post mining) | <p>Analyze soils, treat to ameliorate salinity or contamination and dispose of untreatable soil at an approved disposal site. Restore overburden to recreate slope form and topsoil with optimal fertilization based on soil analysis. Implement soil conservation measures. Integrate available land with activities in adjacent areas. Rehabilitation must ensure long-term</p> |

| | | | | |
|--|--|--|--|--|
| | | | | stability and not compromise post-mining land use objectives. Take into account developments in surrounding areas and design post-mining land use options to support and enhance long-term development options. Ongoing monitoring to establish status of environment post closure |
|--|--|--|--|--|

6. IMPACT MANAGEMENT ACTIONS

Table 6-1: impact management actions

| Activities | Potential Impacts | Aspects Affected | Mitigation Type | Time Period for Implementation | Compliance with Standards |
|---|---|--|---|--|---|
| The list of activities for the Project are displayed in Table 4-1 | The potential impacts associated with each activity are outlined in Table 4-2 | The aspects affected as a result of the potential impact are outlined in Table 4-2 | The mitigation types of each of the potential impacts are outlined in Table 4-2 | The time periods for each of the potential impacts are outlined in Table 4-1 | The compliance with the standards for the potential impacts are outlined in Table 4-1 |

7. FINANCIAL PROVISION

7.1 Determination of the amount of financial provision

7.1.1 Minimum closure objectives that will be adhered to

| Environmental risk or Issue | Objective or requirement | Control measure |
|-----------------------------|---|---|
| | To prevent and restrict siltation and groundwater pollution | Management Objective: to ensure that no harm to the receiving environment |



| | | |
|---------------------|------------------------|---|
| Storm water control | | <p>occurs. To comply with the provision of government notice 704 and not reduce the sub catchment yield.</p> <ul style="list-style-type: none"> ➤ Management Criteria: ➤ All clean water collected as runoff from areas up gradient of the mining sites should be separated from the sites by means of berms to divert clean water to the surrounding areas, to allow natural runoff into the nearby stream. ➤ The mining site will be considered a dirty area and demarcated as such. |
| Soils | Contamination of soils | <p>Management Objective: To prevent contamination of soils.</p> <ul style="list-style-type: none"> ➤ Management criteria: ➤ All topsoil is to be removed from the site prior to stockpiling. ➤ Any contamination of soils should be suitably handled by an appropriately trained person. ➤ Should soils be contaminated in such a way as to lead it being classified as waste, it should be disposed of at a suitable disposal site |

| | | |
|--|-----------------------|---|
| | Erosion and siltation | <p>Management Objective: to prevent unnecessary loss of soil through bad management.</p> <ul style="list-style-type: none"> ➤ Management criteria: ➤ All surface run-off shall be managed in such a way so as to ensure erosion of soil does not occur. ➤ All surfaces that are susceptible to erosion, shall be protected either by cladding with biodegradable material or to layer of soil being seeded with grass seeded/planned with suitable groundcover. ➤ The applicant should adhere to the requirements of the Department of Agriculture in the design of effective erosion control measures on bare soils. |
| | Conserving topsoil | <p>Management Objective: To prevent loss of valuable topsoil.</p> <ul style="list-style-type: none"> ➤ Management criteria: <p>The top layer of all areas to be excavated for the purpose of mining must be tripped and stockpiled, in areas where this material will not be damaged, removed or compacted. This stockpiled material shall be used</p> |

| | | |
|-----------|---|--|
| | | <p>for the rehabilitation of the site upon completion sampling in areas as deemed necessary.</p> <ul style="list-style-type: none"> ➤ When stripping of topsoil takes place, the grass component shall be included in the stripped topsoil. This soil will contain a natural grass seed mixture that may assist in the re-growth of grass once the soil is used for back filling and rehabilitation |
| Hydrology | <p>Surface water: To prevent contamination of water courses</p> | <p>Management Objective: To prevent contamination of streams by mining activities.</p> <ul style="list-style-type: none"> ➤ Management Criteria: All streams should be monitored before the mining activities commence. There will be no clearing of vegetation or stripping of soils until clean-water diversions (for diversions of runoff from upstream catchment) and dirty water collection facilities has been established There shall be environmental conditions included in the contractual agreement to make successful miner of the necessity to prevent accidental spillages by the implementation of |

| | | |
|--|--------------------------------------|--|
| | | good housekeeping practices. |
| | Prevent the pollution of groundwater | <p>➤ Management Objective: To ensure groundwater is not polluted by the mining activities – particularly in areas where groundwater is generally shallow.</p> <p>➤ Management criteria: Chemical toilets and mining activities that may cause negative impact on ground water quality must be suitably managed and monitored. No waste material shall at any stage be disposed of on site. All solid waste must be removed and transported to a recognised waste disposal site by suitably qualified service provider (contractor). Land use Minimise the impact on land</p> |

| | | |
|---|--|--|
| Land-use | Minimise the impact on land-use to areas specifically used for mining activities | <ul style="list-style-type: none"> ➤ Management Objective: To minimise impact on land use areas demarcated as mining sites. ➤ Management criteria: All mining activities are to take place within the designated footprint areas as per mining standard. |
| Flora and Fauna biodiversity and Ecological functioning | To ensure that the mining activities pose no significant harm to the surrounding areas as well as any sensitive species of fauna and flora – if present. | <ul style="list-style-type: none"> ➤ Management Objective: To ensure that no loss of ecological function of the surrounding areas occurs due to mining activities. ➤ Management criteria: All activities associated to the mining activities should occur within their designated areas and there should not be encroachment into the surrounding areas. Any areas to be rehabilitated shall be rehabilitated with no-invasive species |
| | Prevent the invasion of the areas with invasive species | <ul style="list-style-type: none"> ➤ Management Objective: To eradicate all invasive alien species. ➤ Management criteria: Invasive alien species shall be eradicated as part of the rehabilitation programme. All alien species should be removed |

| | | |
|-----------------|--|--|
| Land capability | | prior to flowering season of the relevant species. |
| | To retain the flora and fauna assets on site | No floral assets of conservation concern were identified which need to relocate or left in situ. |
| | None | No management of impacts on and capability can be implemented since the proposed project activities will not degrade the land based on their meagre impacts from a land capability perspective. |
| Social impact | Air quality | <ul style="list-style-type: none"> ➤ Management Objective: To limit public and staff exposure to unnecessary dust. ➤ Management criteria: Dust pollution could occur during both initial stages of mining each strip - especially during the dry months. Regular and effective damping down must be carried out to avoid dust generation that will have a negative impact on the surrounding environment |
| | Noise impact | <ul style="list-style-type: none"> ➤ Management Objective: To prevent Public and staff exposure to noise. |

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| | | <p>➤ Management criteria:</p> <p>Mining crew(s) should comply with the DMR and provincial noise requirements</p> <p>All equipment shall be subject to routine maintenance, which will include the checking of noise decibels or emissions.</p> <p>Personnel will be trained in techniques to reduce noise during operation of equipment</p> <p>The applicant will record and respond without delay to complaints about disturbing noise.</p> <p>The applicant should employ an open door policy with the landowners, nearby farmers and any other affected parties regarding issues that impact upon them.</p> |
| Waste management | To avoid, reuse or recycle material where possible, correctly dispose of unusable waste(s) and do not generate pollution | <p>➤ Management Objective: Comply with existing good waste management practices in terms of NEMA principles.</p> <p>➤ Management Criteria:</p> <p>Contain all waste within designated dirty areas of development – that is, mining sites.</p> <p>Ensure waste storage area</p> |

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| | | does not generate pollution Cover any wastes that are likely to wash away or contaminate storm water. |
| Archaeological and cultural interest | Sites of archaeological and cultural interest | <ul style="list-style-type: none"> ➤ Management Objective: To avoid disturbing sites of archaeological and cultural interest ➤ Management criteria: If archaeological and cultural materials are recognised during mining, protocol according to SAHRA requirements will be followed |
| | Graves | <ul style="list-style-type: none"> ➤ Management Objective: To avoid disturbing burial sites. ➤ Management criteria: No graves were identified on the proposed project site. |
| Sensitive Landscapes | Nature conservation or ecological sensitive areas | <ul style="list-style-type: none"> ➤ Management Objective: Conservation of ecologically sensitive areas. ➤ Management criteria: There are no sensitive areas on the proposed mining project site. |
| Regional Socio-Economic Structure | Socio-economic benefits of the project | <ul style="list-style-type: none"> ➤ Management Objective: To eventually enhance the socio-economic benefits, and create job opportunities for locals. |

| | | |
|---------------------------------|--|--|
| | | <ul style="list-style-type: none"> ➤ Management criteria: No regional socio-economic benefits are foreseen at mining phase since there shall not be any profit generation |
| Interested and Affected Parties | To ensure that all stakeholders are informed and aware about the proposed mining | <ul style="list-style-type: none"> ➤ Management Objective: To inform all interested and affected parties about the proposed mining project as the need may arise. ➤ Management criteria: The applicant should ensure that all communication channels are available in order for interested and affected parties to voice opinions or raise concerns The applicant should strive to develop a relationship of trust and credibility with interested and affected parties. ➤ Applicant should ensure that all information is shared and correspondence with I&APs is fully and accurately documented. |

7.1.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with the landowners

The landowners together with the I&APs have been consulted with regard to the closure objectives as they initially requested the closure objectives before allowing access to the proposed site, which will be provided to them on request.

7.1.2 Provide a rehabilitation plan that describes and shows the aerial extent of the main mining activities

Rehabilitation of the mine has become an important consideration for government bodies, the general public and mining companies. The development of detail environmental legislation has largely reflected public and in turn government concern that mined sites retain at least a pre mining land capability and that environmental degradation be repaired. Mine design and scheduling assists in determining every activity associated with the proposed project. In that, it is critical to understand the setup of the mining activities to ensure that concurrent rehabilitation is practical and possible.

Site Clearing – Topsoil, subsoil and overburden (2 months)

Concurrent rehabilitation commences with handling the topsoil, subsoil and overburden material within the proposed area. Handling of soil material plays a critical role when conducting concurrent rehabilitation. In that, the quantity of the soil material must be known as well as the area required for storage. This is a key factor in handling the soil material since mining contractor will be shown the location appropriate for storage and possible quantities expected. The management of soil material during mining is important to ensure that the chemical and physical properties are maintained.

Initial mining strip (3-5 months)

The proposed mining operation will commence on the southern side of the property. Topsoil, subsoil and overburden will be placed adjacent accordingly as illustrated on the mining layout. Three cuts will be required as well as the sequential of replacing the soil material. The proposed mining operation will follow the same route depicted in this document to ensure proper concurrent rehabilitation.

Operational Phase (6-8 months)

Following the initial mining strip, no overburden and/or any soil material will be sent for storage on the mining area. Overburden – sand will be placed at the bottom of the initial strip and grit parting will then follow.



Final void (4-7 months)

The overburden stockpile which was stored when developing the initial strip will be utilised to backfill the Final void. The material will be loaded into the trucks and discharged into the pit. The Final void is the only risk in terms of environmental liability to the Department of Mineral Resources. On the completion of filling the void, the surface (i.e. overburden and R.O.M stockpile areas) will be scrapped of any Iron and Vanadium ore material and commence with revegetation. During this phase all infrastructure on site will be removed and every surface cleaned.

7.1.3 Explain why the rehabilitation is compatible with the closure objectives

The rehabilitation plan has been compiled in support of the primary closure objective which is to rehabilitate the excavated mining sites to their natural or predetermined state, or to land use that conforms to the generally accepted principles of sustainable development through restoration, remediation, rehabilitation and stabilisation remediation of the impact land to a post-mining land use capable of supporting grazing activities.

7.1.4 Quantum calculations

(Provide a calculation of the quantum of the financial provision required to manager and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulations 54 (1) in respect of each of the phases referred to)

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

See attached Quantum calculations (appendix F)

7.1.5 Confirm that the financial provision will be provided as determined

The amount of financial provision will be paid by LM3 Brothers immediately after the Environmental Management Plan has been approved.

8. MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING

8.1 Monitoring of Impact Management Actions

8.1.1 List of Identified Impacts Requiring Monitoring Programmes

8.1.1.1 High level monitoring:

Bi-annual performance assessment must be conducted in line with the MPRDA (Regulation 55).

Establish a structured system of internal and external communication of incidents.

Any changes to the approved EMP which have an impact on interested and affected parties to be communicated to them and the EMP amended accordingly.

Complaints register to be established and kept up to date.

Interested and affected parties concerns to be incorporated into the project implementation.

8.1.1.2 Operational Level monitoring:

On a weekly basis all registers, procedures and records are checked against the prescripts of the EMP. Corrective action must be taken in cases of transgress where necessary.

Internal audits to be conducted by an environmentalist when deemed necessary.

Employees assigned to specific tasks.

Should the mitigation measure not be in line with the prescripts, amendments will be made and the employees will be made aware of the changes and encouraged to adhere to such.

On monthly basis, all site personnel will be inducted at the site and will be taken through the EMP and other relevant legal requirements to familiarize them with same.

Simplified signalling will be placed on site to sensitize the workers of the legal requirements attached to this EMP.



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i) Responsible persons

The Site Manager is responsible for oversight of all EMP requirements. He/she may appoint an assistant to conduct internal monitoring of activities.

The latter will be responsible for the monitoring of day-to-day activities related to the mining process and report any environmental incidents to the Site Manager as per procedure to be established by both parties.

Communication lines will be drawn and will cascade from the Site Manager through to the general workers.

8.1.1.3 Roles and Responsibilities for the Execution of the Monitoring Programmes

Supervisors must be appointed to monitor the potential impacts of the above mentioned activities and Project Managers will foresee that all of the management plans are implemented. Once the mining activities have been completed, The Placement Group will appoint an independent environmental officer to conduct a site visit to audit the rehabilitation and a report will be compiled and submitted to the DMR.

Table 8-1: Roles and Responsibilities

| Monitoring Aspect | Role | Responsibility |
|------------------------|---|--|
| Dust Monitoring | Site Manager to ensure compliance with the guidelines as stipulated in the EMP Compliance to be monitored by the Environmental Control Officer | <ul style="list-style-type: none"> - Control the liberation of dust into surrounding environment by the use of inter alia, water spraying and / or other dust allaying agents - Limit speed on the access roads to 30km/h to prevent the generation of excess dust. - Spray roads with water or an environmentally friendly dust allaying agent that contains no PCB's (eg DAS products) if dust is generated above acceptable limits. - Assess effectiveness of dust suppression equipment. - Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. - |

| | | |
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| | | Thoroughly soak all stockpiles to ensure dust suppression on the site. |
| Noise Monitoring | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Ensure that employees and staff conduct themselves in an acceptable manner while on site. - Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. |
| Management of weed/invaser plants | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Implement a weed and invader plant control management plan. - Control declared invader or exotic species on the rehabilitated areas. - Keep the temporary topsoil stockpiles free of weeds |
| Storm water Monitoring | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Divert storm water around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material - Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. - Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water Affairs, and any other conditions which that department may impose. |
| Management of health and safety risks | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Ensure that workers have access to the correct PPE as required by law. - All operations to adhere to the Occupational Health and Safety Act |
| Waste | Site Manager to | - |



| | | |
|-----------------------------------|---|---|
| management | <p>ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <p>Ensure that vehicle repairs only take place at the off-site</p> <ul style="list-style-type: none"> - Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility - Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility - Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste - Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognized landfill site. Prevent refuse from being dumped on or in the vicinity of the mine area. - Biodegradable refuse to be handled as indicated above. |
| Management of access roads | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Maintain newly constructed access roads so as to minimize dust, erosion or undue surface damage. - Divert storm water around the access roads to prevent erosion. - Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas |
| Topsoil Monitoring | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <ul style="list-style-type: none"> - Remove the first 300mm of topsoil in strips and store at the stockpile area. - Keep the temporary topsoil stockpiles free of weeds. - Place topsoil stockpiles on a leveled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. - Topsoil heaps should not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. - |

| | | |
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| | | Divert storm and runoff water around the stockpile area and access roads to prevent erosion. |
| Surface Water Monitoring | <p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer</p> | <p>- Conduct quarterly water analysis when water is present in the stream bordering the site.</p> |

8.2 Monitoring and reporting frequency

8.2.1 Committed time frames for monitoring and reporting

Table 8-2: Monitoring and Reporting Frequency

| Monitoring Aspect | Time Frames | Reporting |
|--|--|---|
| Dust monitoring | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Noise Monitoring | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Management of weed/invaser plants | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |

| | | |
|--|--|---|
| Storm water Monitoring | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Management of health and safety risks | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Waste Management | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Management of access roads | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |
| Topsoil Monitoring | Throughout Construction, Operational and Decommissioning Phase | <ul style="list-style-type: none"> - Daily compliance monitoring by site management - Quarterly compliance monitoring of site by an Environmental Control Officer |

8.3 Responsible Persons

Roles and responsibilities with mining operation to the monitoring programme were discussed on the monitoring section.

8.4 Time Period for Implementing Impact Management Actions

This was discussed on the impact management action section table

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8.4.1 Mechanism for Monitoring Compliance

The method of monitoring the implementation of the impact management actions, the frequency of monitoring the implementation of the impact management actions were discussed on the monitoring phase, an indication of the persons who will be responsible for the implementation of the impact management actions, the time periods within which the impact management actions must be implemented and the mechanism for monitoring compliance with the identified impact management actions.

9. INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT/ENVIRONMENTAL AUDIT REPORT

A performance assessment report for the Project will be submitted on an annual basis to the DMR during proposed mining operation and on a two yearly basis during operation.

10. ENVIRONMENTAL AWARENESS PLAN

10.1 Employee communication process

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

Alarms will be set at all time to ensure that if there is any risk on site it should prevent employees to be endangered. The applicant will inform his or her employees of any risk on a daily basis should any such risk be identified. This will include Health and Safety as well as Environmental Risks.

10.1.1 Description of solutions to risks

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment)

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An environmental Control Officer needs to check compliance of the mining activities to the management programmes described in the EMPR.



The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

10.1.1.1 Site Management:

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

10.1.1.2 Water Management and Erosion

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

10.1.1.3 Waste Management

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins
- Place waste in containers and always close lid
- Don't burn waste
- Pick-up any litter laying around

10.1.1.4 Hazardous Waste Management (Petrol, Oil, Diesel and Grease)

- Never mix general waste with hazardous waste
- Use only sealed, non-leaking containers
- Keep all containers closed and store only in approved areas
- Always put drip trays under vehicles and machinery
- Empty drip trays after rain
- Stop leaks and spills, if safe



- Keep spilled liquids moving away
- Immediately report the spill to the site manager/supervision locate spill kit/supplies and use to clean-up, if safe
- Place spill clean-up wastes in proper containers
- Label containers and move to approved storage area

10.1.1.5 Discoveries:

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

10.1.1.6 Air quality:

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

10.1.1.7 Driving and noise:

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

10.1.1.8 Vegetation and Animal life:

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

- Do not set snares or raid nests for eggs or young

10.1.1.9 Fire management:

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

10.1.1.10 Environmental awareness training

- Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies)
- The operations manager must ensure that he/she understands the EMP document and its requirement and commitment before any mining takes place.
- In addition to the meeting to be held with the site employees to inform them of the basic steps towards environmental awareness, the operators of earth moving equipment should be informed of the following requirements:
- Mining within demarcated areas;
- No-go areas;
- Establishment of access roads;
- Handling of hazards waste;
- Handling of biodegradable and non-degradable waste;
- Temporary vehicle maintenance;
- Mining methods to be followed;
- Handling and storing of topsoil;
- Sloping of excavations;
- Speed control in order to reduce dust;
- Emergency procedure awareness.
- Labourers should be informed of the following during "toolbox talks":
- Reporting of unusual observations to management (e.g. fossils, graves, etc.);
- Reporting of spills to management;
- Felling or damaging trees for firewood not allowed;
- Making fires not allowed;
- Demarcated areas for mining;
- Establishing of access roads and erection of gates in fence lines;

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- Status of gates of property owner;
- Toilet facilities and hygiene measures;
- Handling of waste;
- Emergency procedures awareness.

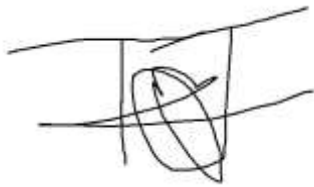
11. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

The financial provision for the environmental rehabilitation and closure requirements of Mining operations is governed by National Environmental Management Act, 1998, Act 107 of 1998), as amended, (NEMA) which provides in Section 24P that the holder of a mining right must make financial provision for rehabilitation of negative environmental impacts. The financial provision will be reviewed annually.

12. UNDERTAKING

The EAP herewith confirms

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



Signature of the Environmental Assessment Practitioner:

TPR Mining Resources (Pty) Ltd

Name of Company:

21 June 2022

Date:

-END-



13. THE FOLLOWING APPENDIXES ARE ATTACHED

- **Appendix A - Site Map**
- **Appendix B - Photographs**
- **Appendix C - Facility illustrations**
- **Appendix D - Consultation Report**
- **Appendix E – Specialist Reports**
- **Appendix F- Quantum Calculation**
- **Appendix G – Screening Tool Report**
- **Appendix H - Other information**