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

DMR REF NO: LP 30/5/1/3/2/ 11582 MP

PREPARED FOR PHT MINERAL RESOURCES (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: PHT Mineral Resources (Pty) Ltd

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FILE REFERENCE NUMBER SAMRAD: LP 30/5/1/3/2/ 11582 MP

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resource Development Act as amended, the Minister must grant Mining or Prospecting 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
Physical address	No: 29J Woltemade Street Emalahleni 1035

REVIEWER EAP: Ms. Pheladi Mphahlele

Ms. Pheladi Mphahlele obtained a Bachelor of Earth Science in Mining and Environmental Geology (BESMEG) in September 2017 from University of Venda as well as a Certificate in from VBK Business Venture in January 2015. She obtained knowledge in storm water management projects while working on community project in 2015 (2 months) in the construction sector. She also worked on research project while completing her honors in BESMEG. Furthermore, she is affiliated with EAPASA as a registered EAP.

AUTHOR EAP: Ms. Lethabo Chauke and Mr. Thato Jimmy Ramoraswi

Ms. LF Chauke holds a National Diploma in Environmental Sciences from Tshwane University of Technology (TUT) which was completed in 2019 and she is currently in pursuit of an Advanced Diploma qualification in the same field. She is an Environmental Assessment Practitioner with over four years experience in a wide-range of environmental related projects,

Prospecting right and Mining permit applications. She has been training and working in an Environmental Consulting Company where she is being groomed and exposed into different environmental applications, processes and documentation. This includes Environmental Impact Assessment and Basic assessment. Furthermore, she is affiliated with EAPASA as a Candidate EAP.

As a student, Ms. LF Chauke was part of the green campus initiative team which was responsible for promoting green leadership on campus by raising environmental awareness and building sustainable living practices through advocating for water conservation, energy conservation and efficiency, recycling and waste reduction. She would attend Educational excursions which involved training on aspects of wetland and nature reserve science and the facilitation of wetland education.

Mr. Thato Jimmy Ramoraswi obtained a Bachelor of Environmental Science in April 2009 from University of Venda as well as a Certificate in Waste Management from VBK Business Venture in January 2015. He obtained extensive experience (over 5 years) in Environmental Management in the construction and mining sector. He completed several EIA projects. He is affiliated to the South African wing of the International Association for Impact Assessment. He completed several EIA projects. He is affiliated to the South African wing of the International Association for Impact Assessment and in the process of Environmental Assessment Practitioners Association of South Africa (EAPASA) registration.

Projects Experience (Environmental Impact Assessment)

- Environmental Assessment for construction of the new schweizer Reneke Primary School at Ipelegeng Extention 4 within Mamusa Local Municipality of Dr. Ruth Segomotsi Mompati District Municipality, North West Province.
- Environmental Assessment for the proposed development of filling station at Ga-Selala Village on the portion of farm Twyfelaar 119 KT, within the Greater Tubatse Local Municipality, Sekhukhune District Municipality, Limpopo Province, February 2013.

- Environmental Assessment for the proposed sand mining permit on portion of portion 39 of the farm Haakdoornboom 267 JR, within City of Tshwane Metropolitan Municipality, Gauteng Province, May 2019.
- Environmental Assessment for the proposed prospecting right of coal on portion of portion 41 and 42 of farm Rietvalei 140 HU, within the jurisdiction of Abaqulusi Local Municipality, Zululand District of Kwa-Zulu Natal Province, July 2019.
- Environmental Assessment for proposed mining permit of gold ore on farm on the remaining extent of farm kameelspoort 563 JU, within the jurisdiction of Mbombela Local Municipality, Ehlanzeni District of Mpumalanga Province, October 2021.

2. LOCATION OF THE OVERALL ACTIVITY

The area where mining operation will be conducted is located approximately 15.5 km on the south west of Musina to Mopane along the N1 route on portion of the remaining extent of the farm Verbaard 53 MT within the jurisdiction of the Musina local Municipality, Vhembe 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

A	22.4552 S	29.9772 E
B	22.4563 S	29.9722 E
C	22.4555 S	29.9720 E
D	22.4545 S	29.9772 E

Table 2-2: Locality Description

Farm name Portion of the remaining extent of the farm Verbaard 53 MT

Application area(Ha)	5 Ha
Magisterial district	Vhembe
Distance and direction from nearest town	Approximately 15.5 km south west of Musina
21 digit Surveyor general code for each farm portion	T0MT00000000000530000

3. LOCALITY MAP

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

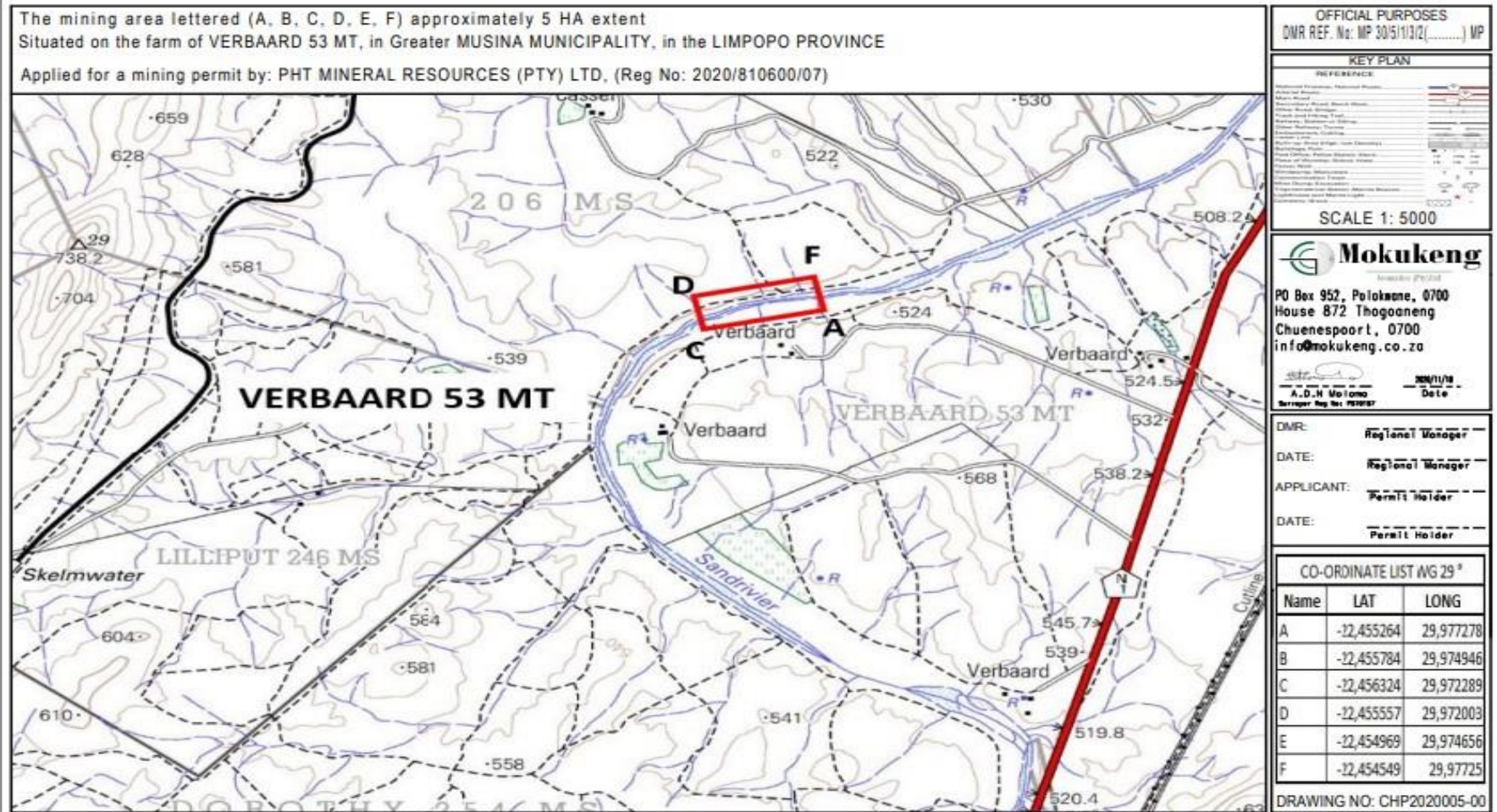


Figure 3-1: Locality Map

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

4.1 Listed and specified activities

Table 4-1 below shows the listed and specified activities.

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 a,b)
Pit area	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)g 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	2251 m	X	GNR 983 Listing Notice No:1 (Activity 21)

4.2 Description of the activities to be undertaken

Mining Method

A sand and dimension stone mining operation can be viewed as being made up of some, or all, of the following sub-activities:

The type of mineral to be mined is Sand (General) and Dimension stone. The method that will be employed is a very basic form of open pit mining, and a 5 ha area will be demarcated for mining activities. Sand will be mined along rivers; it is often dug up with backhoes, shovels or bare hands. Dimension Stone is produced from quarrying. Quarry operations typically involve isolating a mass of stone by cutting it free from the parent mass on all sides but one. The isolated mass is then lifted or separated from the parent mass by breaking it free or by undercutting it with a wire or chain saw. The freed stone can either be a mill block (block suitable for either sale or resizing) or a quarry block (a much larger block size).

Quarry blocks are subdivided by breaking them into smaller blocks that can be removed from the quarry and sent to the mill. Typical mill blocks range in size from 12 to 30 t, but they can reach weights as large as 65 t. Quarry operations thus involve cutting the stone, breaking the stone, and removing the stone from the quarry. A front-end loader will be utilised to load the material into haulage trucks and transported to the end user and sold.

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 pit, loading zone, loading and dust control, hauling and transporting of ore, ablation facilities and waste storage area and rehabilitation of site.



Figure 4.2: An illustration of Sand Mining and dimension stone mining method

4.2.1.1 Site Clearance

Site clearance is the first step that must be conducted on-site to remove all the vegetation that exist and to ensure that the area impacted is kept to an absolute minimum. The mining activities need to be designed with closure in mind. Site clearance/ preparation mainly deals with the stripping and stockpiling of waste rocks prior to the mining activities commencing as this might affect the quality and quantity of available valuable waste rock resources.

4.2.1.2 Construction of Access Roads

Access roads exist on site. Any additional temporary roads created to gain access to site will be rehabilitated on completion of the Mining Permit operations, to the satisfaction of the relevant landowner.

4.2.1.3 Water Supply

It is anticipated that water will be brought to site. The water will be sourced from the Local water supply entrepreneurs 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

4.2.1.4 Temporary Office and Ablution

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. The ablution facilities must be provided at a ratio of 15 :1, i.e. 15 people per 1 toilet. A temporary site office area may be erected on site. The office must be established distant from the water drainage lines.

4.2.1.5 Mining Area, Loading and Haulage

This is where sand is excavated using equipment's such as a truck and shovel. A front-end loader will be utilised to load the material into haulage trucks while the sand outcrop will be mined and then transported to the end-user. Dimension stone will be mined by a Quarry operations typically involve isolating a mass of stone by cutting it free from the parent mass on all sides but one. The isolated mass is then lifted or separated from the parent mass by breaking it free or by undercutting it with a wire or chain saw.

4.2.1.7 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.

4.2.1.8 Temporary Stockpiling of material

Various stockpiles will be required on site. Long-term stockpiles will include 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 stockpiles which will be temporary in nature.

4.2.1.9 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.

Phase	Activity	Expertise Required	Duration
Construction	Logistical consultation with land owner. Maintenance of Access road Establish mobile office and security dwellings Establish mobile ablution facility Construction of berm	Project Manager Contractor	2 Months
Operational	Mining area (Open pit) Temporary stockpiling of material (Topsoil stockpile, overburden and ROM) Loading and hauling to the stockpile area and Rehabilitation	Project Manager Surveyor	20 months
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, 2017 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 prospecting 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 prospecting 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)

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 used in the construction industry e.g. Buildings, paving, tombstones, base material in road and highway construction, Tiles and polished granite slabs. The proposed mining of sand and dimension stone will be established in an area approximately 15.5 km south west of Musina along the N1 to the proposed site.

6.1 Socio economic

Mining industry contributes about 40 % to the local GDP and establishment of operations will attract businesses to invest within the surrounding area, as a result contribute to infrastructure developments. 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.

Musina Local Municipality was populated by 53 509(51.1%) females as compared to their 51 146 (48.9%) male. It is noted that the youth male population is more than the youth female population within the municipality. A large proportion of the population only completed secondary education, it is also noted that 43,5% of the population were employed, while 35.20% are not economically active, 14.60% are unemployed and the remaining 6.80% are discouraged work-seekers.

Sources: Statistics South Africa, Census 2011

6.2 Location suitability

The geology of the farm area indicates presence of gravel soil material around the area. The area is located 5km from the nearby town. Musina Local Municipality is characterized by the following geological rocks; Beaufort, Baberton, Suurberg, Waterberg and Zululand. Therefore the Verbaard farm comprises of shales, slate, Quartzite, Mudstone, Granite, Gneiss, Dolerite, Basalt and Arenite preferred for Sand production. The area is dominated by grassland vegetation, trees and on 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 shales, slate, Quartzite, Mudstone, Granite, Gneiss, Dolerite, Basalt and Arenite suitable for the preferred sand to be mined. The area is dominated by grassland vegetation, trees and its a mountainous area.

7.2 Summary of Mining work programme to be undertaken.

7.2.1 Desktop study:

This programme aims to assess historical data of the property and surrounding properties. Properties and previous work done on the property will comprise of the following key activities:

- Historical data
- Previous mining activities
- Challenges relating to mining
- Depth
- Size of the commodity body

7.2.2 Geological Mapping

After conducting a desktop study of the property the next subsequent activity will entail a field mapping the area to determine various rocks and minerals that have an economic potential a detailed mapping programme needs to be undertaken so as to identify the rock and mineral where there is sand mineralization is present.

This might include the following mapping techniques such as:

- Identifying various rock and mineral lithologies.
- Mapping geological structures that might be of economic importance.

- Mapping alteration processes that might be of economic importance such as weathering, leaching, dissolution and enrichment processes

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

8.1 Details of the development footprint alternatives considered

8.1.1 Analysis of alternatives

In terms of the NEMA EIA Regulations one of the criteria to be taken into account by the competent authority when considering an application is “any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment”.

Alternatives are defined in the Regulations as “different means of meeting the general purpose and requirements of the activity”. It is therefore necessary to provide a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity.

The positioning of the proposed activities will result in types of sand to be mined. These constraints limit the possible locations, access road and position of the proposed mining area. The proposed mining project will therefore have less impact on the environment.

The project will take place commissioned on portion of the remaining extent of the farm Verbaard 53 MT, situated in the magisterial district of Vhembe. The project will base on Draft BAR and EMP for mining permit on portion of the remaining extent of the farm Verbaard 53 MT

a mining of sand and dimension stone. The mining activity will be done as per the conditions of EA to ensure that there is no environmental degradation on site. This project will be undertaken with an environmental conscious manner, to ensure the area is rehabilitated to pre-mining condition and restore the current land use by implementing proper mitigation measures and rehabilitation methods.

Mining – It will be open pit and will use the following equipment – front end loader, excavator and dipper truck.

Processing – the applicant proposes to mine sand and dimension stone on portion of the remaining extent of the farm Verbaard 53 MT. The primary extracted material will be loaded on earthworks and transported to the end-user.

Road – Mining activity will use Irwin street joining from the gravel road.

Waste generation – Domestic waste will be stored in bins and spillage will be removed and send to the registered landfill at Musina local Municipality.

8.2 Details of the public participation process followed

8.2.1 Confirmation of consultation

The interested and affected parties have been confirmed to this matter. A newspaper advertisement will be placed on the **30th June 2023** on **Limpopo Mirror** Newspaper to inform interested and affected parties of the proposed mining activities. **See attached Appendix D**

8.2.2 Record of the public participation and the results thereof

8.2.2.1 Identification of interested and affected parties



Draft BAR and EMP for mining permit on portion of the remaining extent of the farm Verbaard 53 MT

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 permit area. **See Appendix D**

8.2.3 The details of the engagement process

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

The applicant will notify the landowner of the property, including adjacent landowners through emails, meetings and placement of site notices where proposed mining of Sand and dimension stone will be located.

PHT Mineral Resources (Pty) Ltd is planning to establish sand and dimension stone mining operations on portion of the remaining extent of the farm Verbaard 53 MT, located 15.5 km on the south west of Musina along the N1 to Mopane. The mining operation will be done on a two-year period upon renewal for another three years depending on the availability of the sand applied for, as per Minerals and Petroleum and Resource Development Act, 2002 (Act 28 of 2002).

Mining method to be used will be open-pit as determined by the shallow depth of the Sand and dimension stone. The applicant will engage with the 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.

8.2.3.2 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?
Landowner Department of Public Works		Emails were sent and meeting will be held	Still waiting for response
Musina local Municipality	21 Irwin Street Musina 0900 Tel: (015) 534 6100 Email: info@musina.gov.za	Emails were sent	Still waiting for response
Department of Agriculture and Rural development	61 Biccard street, Polokwane, Private Bag X9552 Polokwane 0700 Email: pleasant.gavhi@drdlr.gov.za MRampora@dalrrd.gov.za	Emails were sent	Still waiting for response.

Department of Water and Sanitation	Azmo Place, 49 Joubert Street, Private Bag X9506, Polokwane,0700 Email: NthangeniC@dws.gov.za	Emails were sent	Still waiting for response
Department of Economic Development, Environmental and Tourism	20 Hans Rensburg Street, Polokwane Central, 0700 Email: Nkanyaner@ledet.gov.za	Emails were sent	Still waiting for response

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

Still waiting for comments from the interested and affected parties.

(a) Socio-economic

Still waiting for comments from the interested and affected parties

(b) Biophysical environment

Still waiting for comments from the interested and affected parties

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

Records of consultation are attached in Appendix D.

8.2.3.5 Information regarding objections received.

Currently there are no objections registered.

8.2.3.6 The manner in which the issues raised were addressed

The interested and affected parties were given an opportunity to raise their concerns with regards to their issue through emails, telephones and also meetings with landowners, lawful occupiers and the community will be held.

8.3 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				
Department of Public Works	X		Still waiting for response		Appendix D
Lawful occupier/s of the land					
N/A					
Landowners or lawful occupiers of adjacent properties					
Municipality	X				

Musina local Municipality			Still waiting for response		Appendix D
Organ of state(Responsible for infrastructure that may be affected Roads department, Eskom, Telkom, DWA					
Department of water and Sanitation	X		Still waiting for response		Appendix D
Communities					
N/A					
Department of Land Affairs	X				
Department of Agriculture Rural development			Still waiting for response		See Appendix D
Traditional Leaders					
Department of Environmental Affairs					
Department of Economic Development, Environmental and Tourism			Still waiting for response		See Appendix D
Other Competent					

authorities affected					
Other affected parties					
Interested parties					

8.4 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

8.4.1 Baseline environment

8.4.1.1 Type of environmental affected by the proposed activity

(a) Topography

The highest relief within the Municipality range between 450 to 900 while the lowest range between 0-130m. Generally, the Municipality's surface relief is between 30 to 210m; however, some areas have high and low surface relief. Most of the areas on the south, west, central, north to east nearby Honnet Nature Reserve to the North West nearby Gumbu Gumbu to Ha-Kontswi and Kruger National Park SP, their surface relief is between 30 to 210m. The areas around the southern border within the six additional wards, Dovha Duluthulu and Bale (eastern part) and Musina NW (western part) have the lowest surface relief which is between 0-130m. The areas that have high surface relief include; Makhuya Nature Reserve (south eastern part), Matatani, Tshipise, Muraluwe on the southern part of the Municipality. Part of the areas around the west of the Kruger National Park, the surface relief is between 130 to 450m.

(b) Climate

The Municipality forms part of one of the warmest regions of South Africa. Its average temperature ranges between a minimum of 10 degrees Celsius during winter and 40 degrees Celsius during summer. The Municipality experiences a dry climate with rainfall ranging between 800mm to 1000mm. MLM receives low rainfall during winter and more rainfall during summer.

(c) Geology and Mineral Potential

The Soutpansberg rocks rest unconformably on gneisses of the Limpopo Belt and Bandelierkop Complex. Along the eastern and most of the northern margin the Soutpansberg outcrops are unconformably overlain by, or tectonically juxtaposed against, rocks of the Karoo Supergroup. The contact relationship between the Soutpansberg and Waterberg Group rocks is a tectonic one, though the latter rocks are believed to be younger. The Group is best developed in the eastern part of Soutpansberg, where the maximum preserved thickness is about 5 000 m.

The Soutpansberg Group represents a volcano-sedimentary succession which is subdivided into seven formations (Brandl, 1999). The basal discontinuous Tshifhefhe Formation is only a few metres thick, and made up of strongly epidotised clastic sediments, including shale, greywacke and conglomerate. The following Sibasa Formation is dominantly a volcanic succession with rare discontinuous intercalations of clastic sediments, having a maximum thickness of about 3 000 m. The volcanics comprise basalts, which were subaerially extruded, and minor pyroclastic rocks. The basalts are amygdaloidal, massive and generally epidotised. The clastic sediments which include quartzite, shale and minor conglomerate, can reach locally a maximum thickness of 400 m. The overlying Fundudzi Formation is developed only in the eastern Soutpansberg, and wedges out towards the west. It is up to 1 900 m thick, and consists mainly of arenaceous and argillaceous sediments with a few thin pyroclastic horizons. Near the top of the succession up to four, about 50 m thick layers of epidotised basaltic lava are intercalated with the sediments. It is followed by the Wyllie's Poort Formation, which is an almost entirely clastic succession, reaching a maximum thickness of 1 500 m. Since the formation overlies, from east to west, progressively older units, its lower contact is interpreted to form a regional unconformity. Resistant pink quartzite and sandstone with minor pebble washes dominate the succession, with a prominent agate conglomerate developed at the base. The uppermost unit is represented by the Nzhelele Formation, which consists of a 400 m thick volcanic assemblage (Musekwa Member) at the base, followed by red argillaceous and then by arenaceous sediments. Maximum preserved thickness is of the order of 1 000 m. The volcanics consist of basaltic lava and several thin, though fairly consistent horizons of pyroclastic rocks of which one is copper-bearing.

The Soutpansberg rocks are not well endowed with economic minerals, and only copper mineralization, considered to be subeconomic, is reported from its eastern part. Salt is produced at the “Soutpan” from brines pumped up from deep wells. A number of thermal springs occur, and they are invariably associated with recently re-activated post-Karoo faults. The mountains, which receive exceptional high rainfall, play a unique role in recharging the regional groundwater, in particular in the area north of Soutpansberg.

(d) Fauna and Flora

The Municipality is dominated by Musina Mopane Bushveld vegetation. The following vegetation types are found: Ironwood Dry Forest, Lowveld Riverine Forest, Makuleke Sandy Bushveld, VhaVenda Miombo, Subtropical Alluvial Vegetation, Limpopo Ridge Bushveld, Musina Mopane Bushveld, and Soutpansberg Mountain Bushveld. Musina Mopane Bushveld is more evident on the south to central and on the east to western part of the Municipality. Makuleke sandy bushveld is partially evident on the North West and on the far south west where it stretches to the border of the Thulamela Municipality. Limpopo Ridge Bushveld appears on the north where it stretches to the far west and also appears partially on the east, south and central part of the Municipality. Ironwood dry forest is scattered on the south-western part of the Municipality. Subtropical Alluvial vegetation is evident on the north eastern and south-western part of the Municipality. A Mopane salt pan appears on the south-western part while Tsende mopane veld appears on the south-western part of the Municipality.

8.4.1.2 Description of the current land uses

The farm Verbaard 53 MT is located just outside the town of Musina. The land is a mountainous area, vacant, consists of trees, vegetation grassland, gravel road and a river called sandrivier. The sand will be mined directly from the river while the dimension stones will be mined from the river banks hence, only the river will be affected by the mining operation hence a water use authorization should be applied.

8.4.1.3 Description of specific environmental features and infrastructure on the site

Grassland is the dominant vegetation type in the region and covers most of the south-eastern parts of the Municipality. (Figure 8-3) reveals an aerial map.



Figure 8.3: Aerial Map

8.4.1.4 Environmental and Current land use Map

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

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

8.5.1 Assessment of impacts and identified risk of open-pit 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 8-1: Impact Assessment – Open Pit mining: Operational Phase

Aspect	Impact	Probability	Duration	Scale	magnitude	significance	Mitigation measures
Geology	Collapse of overlying strata and voids creation	Define	Permanent	Local	Low	Low	The direct effect on the geological structure in this situation is not important and regarded as normal consequences of mining. No specific mitigation required (significant will remain low)
Topography	Change in landform (macro perspective)	Define	Permanent	Local	Low	Low	The overall effect on landform is inconsequential. No specific mitigation measures are required (significant will remain low)
	Change to drainage lines due to surface subsidence	Define	Permanent	Local	Moderate	Moderate	Mapping of surface is undertaken (significance will remain moderate)
Soils	Loss of topsoil due to higher erosion potential with increase in surface slopes associated with subsidence	Highly probable	Medium term	Site only	High	Moderate	Reshape the steep slope areas to grades below 4% and re-vegetate disturbed areas (significance will be reduced to low)
	Changes to the soil physical, chemical and biological properties due to loss of topsoil because of erosion and/or rehabilitation of subsided areas	Highly probable	Medium term	Site only	High	Moderate	Enforce conservational tillage and cultivation practice, improve organic status of soils, maintain soil fertility level and curb topsoil loss (significance will be reduced to low)

Land capability	Impaired agricultural potential due to surface subsidence induced by high extraction mining and formulation of steep slopes due to differential surface subsidence	Highly probable	Long term	Local	Moderate	Moderate	Reshape steep slope areas to grade below 4%; provision of water to affected groundwater users; provision of drainage to prevent surface ponding (significance reduced to low)
Land-use	Change in existing land use patterns due to surface subsidence related to high extraction mining	Medium probability	Long term	Site only	Moderate	Low	No mitigation required
Vegetation	Displacement of remaining natural grassland due to surface subsidence change and subsequent change in soil properties	Medium probability	Long term	Local	Moderate	Moderate	Implement and maintain measures to ensure that subsided areas are free-draining.(significance reduced to low)
Animal life	Displacement of animal life due to subsidence	Low probability	Medium term	Local	Low	Low	No specific mitigation required

Surface water	Impairment of local surface water quality and hence aquatic ecosystem health and beneficial use of water Adverse impacts on functional attributes related to wetlands and pans	Highly	Long term	Local	Moderate	moderate	Application of best practice water pollution control measures as stipulated in the within the EMP (significance reduced to low)
Groundwater	Lowering of groundwater levels related to mine dewatering	Highly probable	Permanent	Regional	Moderate	moderate	No mitigation measures are possible(significance remains the same)
	Impacts on groundwater quality due to storage of contaminated mine water on the surface	Highly probable	Permanent	Local	Moderate	moderate	Contamination has already occurred. Discontinuation at mine closure of the use of bird pan for the storage of contaminated mine water should eliminate this source of contamination.

8.5.2 Assessment of impact related to water management for proposed mine: operational phase

Table 8-1-2: Impact Assessment – Water management related: Operation Phase

Aspect	Impact	Probability	Duration	Scale	Magnitude	Significance	Mitigation measures
Surface water	Floods exceeding the design flood level will impact on water courses	Low probability	Medium term	Local	low	low	Measures for storm water management to prevent overflow are detailed in the EMP (Significance remains low)
	Contamination of surface water by surface run-off	Medium probability	Medium term	Local	low	low	Rainwater falling into the Pit will be redirected off course, seepage cannot be controlled, but management of acid will be carried out using measures outlined in the EMP (Significance remains low)
	Reduction in water quantity in the pan used for potable water.	Low probability	Medium term	Local	low	low	Regular monitoring of aquatic life will be conducted (Significance remains low)

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

8.6.1 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-pit mining. Furthermore, due to the extraction of the sand and dimension stone seam and the removal of associated geological material for the open –pit 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. 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 8-1-3: 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/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

(l) 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 8-1-4: 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 8-1-5: 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 8-1-6: 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.

8.7 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

8.7.1 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

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

8.8.1 Positive impacts

8.8.1.1 Economic development

- The Project will create an income stream for the business that operates within the proposed area of Musina and the beneficiaries of the project especially the Musina local Municipality residents as well as those of the local municipalities.
- Contribution of the business to the coffers of Tax of the Government of the Republic of SA.
- Acceleration of infrastructural developments in the area and the other rural under developed areas.

8.8.1.2 Job Creation

- Communities will benefit from the selection, appointment of casual employment that will take place as a result of site establishment of the project.
- This employment will be executed in line with the necessary skills required during mining operations, from the beginning to the commissioning phase. Labour-force requirements include (artisans, engineers, electricians, various trades men, etc.).

8.8.2 Negative impacts

Negative impacts that will be envisaged at this phase will include the following.

For Excavation phase

- Loss of Topsoil
- Impact on vegetation
- Dust from roads and land
- Waste Disposal
- Noise
- Water use

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

8.9.1 Proposed mitigation measures to minimize adverse impacts.

8.9.1.1 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

8.9.1.2 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 (eg 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 a 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.

8.10 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.

8.11 Motivation where no alternative sites were considered

The mining (open-pit) methods to be used will minimize potential impacts to the preferred site. Although the applicant has applied for a size of 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.

8.12 Statement motivating the alternative development location within the overall site

Due to the abundance sand and dimension stone around the farm Verbaard 53 MT and its surrounding areas, it is the most suitable site to extract for sand and dimension stone present. Geological setting of the area indicates that there is abundance of sand around the area. Residences are located 13.4 km from the proposed mining area; as a result impact on human beings will be minimal.

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 is for open-pit mining as such, there is minimal expectations of impacts for the proposed activity on the preferred site. The following steps best describes the process:

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	Dust generation	Air quality	Establishment phase	Minimal negative impact	Dust suppression	Negligible negative
	Loss of topsoil	Soils	Establishment phase	Minimal negative impact	Soil stripping	Negligible negative
	Loss of fauna & flora	Fauna & flora	Establishment phase	Minimal negative impact	Limited infrastructure footprint	Negligible negative
	Sedimentation of wetlands	Wetlands	Establishment phase Operational phase	Minimal negative impact	Buffer zones	Negligible negative
	Sedimentation & contamination of surface watercourses	Surface water	Operational phase	Minimal negative impact	Limited infrastructure footprint	Negligible negative
	Groundwater contamination	Groundwater	Operational phase	Minimal negative impact	Avoidance and spillage attention	Negligible negative
	Noise generation	Noise	Decommission	Minimal negative impact	Adhering to	Negligible negative

			phase	impact	operating hours	
Excavation at the mine site	Soil compaction and erosion	Soils	Decommission phase	Minimal negative impact	Vegetation, restrict access	Negligible negative
	Sedimentation of wetlands	Wetlands	Decommission phase	Minimal negative impact	Buffer zones	Negligible negative
	Contamination of groundwater	Groundwater	Decommission phase	Minimal negative impact	Consent from landowners from water usage	Negligible negative
Rehabilitation	Sedimentation of surface watercourses	Surface water	Decommission phase	Minimal negative impact	Rehabilitation of sumps	Negligible negative
	Soil compaction & erosion	Soils	Decommission phase	Minimal negative impact		Negligible negative
	Dust generation	Air quality	Decommission phase	Minimal negative impact	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	Individual specialist reports were not conducted due to the minimal impacts of the proposed activities	N/A	N/A
Fauna & flora	N/A	N/A	N/A
Wetlands Impact Assessment	N/A	N/A	N/A
Surface water impact	Individual specialist reports were	N/A	N/A

assessment	not conducted due to the minimal impacts of the proposed activities		
Groundwater impact assessment	N/A	N/A	N/A
Heritage impact assessment	N/A	N/A	N/A

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
Establishment phase	Social	Nuisance impacts due to heavy vehicles	Insignificant negative	Insignificant negative
	Soil, land capability	Loss of topsoil resources and capability	Minor negative	
	Fauna & flora	Loss of fauna & flora	Minor negative	
	Surface water	Sedimentation & contamination of surface water	Minor negative	
	Groundwater	Groundwater contamination	Negligible negative	
Operational phase	Social	Nuisance impact due to earthworks, heavy vehicles	Minor negative	Minor negative
	Soil, land-use & capability	Soil compaction	Minor negative	Minor negative
	Wetland	Contamination of wetlands	Minor negative	Minor negative
	Surface water	Contamination of surface watercourses	Minor negative	Minor negative
Decommission phase	Air quality	Elusive dust generation	Minor negative	Minor negative
	Soil, land-use & land capability	Soil contamination, restoration of land capability	Minor negative	Minor negative
	Fauna & flora	Destruction of suitable habitat	Minor negative	Minor negative
	Surface water	Contamination & sedimentation of surface watercourse	Minor negative	Minor 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

11.3.1 Impacts resulting from establishment phase

- Clearance of site through removal of vegetation and topsoil
- Exposed area become prone to soil erosion
- Wetland deterioration

11.3.2 Impacts resulting from operation phase

- Nuisance of heavy vehicles
- Dust generation by heavy vehicles

12. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND IMPACT MANAGEMENT OUTCOMES

Compilation of the EMPr 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

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 sand and dimension stone, 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.

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

15.1 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.

15.2 Conditions that must be included in the authorisation

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

16. 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 and ended that is after conducting closure and rehabilitation on site.

17. 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.

18. FINANCIAL PROVISION

In accordance with the requirements of regulation 54(i) of the Mineral and Petroleum Resource Development Act, 2002 (Act 28 of 2002) PHT Mineral Resources (Pty) Ltd 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 49 891.08. (See appendix E)**

18.1 Explain how the aforesaid amount was derived

18.1.1 Quantum calculations

The calculation of the quantum of the financial provision required to manage 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) have been provided in the Appendix E. The calculation of the quantum for financial provision was according to Section b of the working manual.

18.1.1.1 Mine type and saleable mineral by-product

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

Mine type	Small scale mining
Saleable mineral by-product	Sand and dimension stone

18.1.1.2 Risk ranking

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

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

18.1.1.3 Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low
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18.1.1.4 Level of information

According to Step 4.2:

Level of information available	Limited
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18.1.1.5 Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4(A)	Demolition and rehabilitation of electrified railway		No
4(B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Open rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, adits and inclines		No
8(A)	Rehabilitation of overburden and spoils	Yes	
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		No
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		No
9	Rehabilitation of subsided areas		No
10	General surface rehabilitation, including	Yes	

	grassing of all denuded areas		
11	River diversions		No
12	Fencing	Yes	
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		No
14	2 to 3 years of maintenance and aftercare		No

18.1.1.6 Unit rates for closure components

According to Table B.6 master and multiplication factors for applicable closure components.

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		
2(A)	Demolition of steel buildings and structures		
2(B)	Demolition of reinforced concrete buildings and structures		
3	Rehabilitation of access roads	51.00	
4(A)	Demolition and rehabilitation of electrified railway		
4(B)	Demolition and rehabilitation of non-electrified railway lines		
5	Demolition of housing and facilities		
6	Open rehabilitation including final voids and ramps	301350	1
7	Sealing of shafts, adits and inclines		
8(A)	Rehabilitation of overburden and spoils	200900	1
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		
8©	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		
9	Rehabilitation of subsided areas		

10	General surface rehabilitation, including grassing of all denuded areas	159147	1
11	River diversions		
12	Fencing		
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		
14	2 to 3 years of maintenance and aftercare		

18.1.1.7 Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1
Weighting factor 2: Proximity of urban area where goods and service are to be supplied	1.05

18.1.1.8 Calculation of closure costs

Table B.10 Template for level 2: “Rules-based” assessment of the quantum for financial provision (see attached calculation)

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 49 891.08. (See Appendix E)**

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

The amount of financial provision will be paid by PHT Mineral Resources (Pty) Ltd before the final BAR and Environmental Management Programme Report can be approved.

19. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

19.1 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

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

There will be minimal impact on the socio-economic status of the persons directly affected as the mining operation will involve Sand commodity consist of fairly marginal labour to complete the project. Potential negative impacts will be addressed in consultation with the I&APs to avoid violation of any person rights.

19.1.2 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 thus far, appropriate measures have been proposed to protect such sites from the impact arising from the project should they be discovered during operation.

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

The report compiled together with the information provided are 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 aspects 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

4.2 Volume and rate of water use required

Water usage will be limited to the following activities

- Water will only be utilized during dust suppression for heavy vehicles, the type of commodity to be mined will not require any water-use. 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 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

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

Activities	Phase	Size scale and	Mitigation measures	Compliance with standards	Time period for implementation
Site Clearance	Dust generation	Air quality	Establishment phase	Minimal negative impact	Dust suppression
	Loss of topsoil	soils	Establishment phase	Minimal negative impact	Soil stripping
	Loss of fauna & flora	Fauna & flora	Establishment phase	Minimal negative impact	Limited infrastructure footprint
	Sedimentation of wetlands	wetlands	Establishment phase Operational phase	Minimal negative impact	Buffer zones
	Sedimentation & contamination of surface watercourses	Surface water	Operational phase	Minimal negative impact	Limited infrastructure footprint
	Groundwater contamination	Groundwater	Operational phase	Minimal negative impact	Avoidance and spillage attention
	Noise generation	noise	Decommission phase	Minimal negative impact	Adhering to operating hours

Excavation of the mine site	Soil compaction and erosion	soils	Decommission phase	Minimal negative impact	Vegetation, restrict access
	Sedimentation of wetlands	wetlands	Decommission phase	Minimal negative impact	Buffer zones
Rehabilitation	Contamination of groundwater	Groundwater	Decommission phase	Minimal negative impact	Consent from landowners from water usage

6. IMPACT MANAGEMENT OUTCOMES

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

Table 6-1: 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	Establishment Phase	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 minimise operating noise

				Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;
	Soils	Establishment Phase	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>
	Fauna and Flora	Establishment Phase	100 m ²	<p>Minimise the size of the excavated sites as far as possible</p> <p>Indigenous trees will not be removed</p> <p>Drainage lines, and indigenous vegetation will be avoided</p> <p>Use existing access road</p>
	Wetlands	Establishment 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>
	Surface water	Establishment Phase	Local	<p>Berms must be constructed around the periphery of the mining site to separate clean and dirty water</p> <p>Water within the excavated site must be diverted to the water sump</p> <p>All watercourses will be avoided and the stipulated buffer will be implemented</p>
	Groundwater	Establishment 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 offsite location			
	Noise	Establishment Phase	Site Specific	Site clearing to take place during daylight hours only Vehicles and machinery will be properly maintained to minimise operating noise Vehicles will obey speed limits			
Excavation at the mine site	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						
	Soil	Operational Phase Decommissioning Phase	Site Specific	Immediately cease excavation and contain and cleanup any hydrocarbon spillages as they occur			

				<p>Ensure the spill cleanup kits are readily available in the event of a spillage</p> <p>Machinery and vehicles must be serviced and maintained off site at a workshop and drip trays must be in place to capture the spillage</p>
	Surface Water	Operational Phase	Local	<p>Topsoil stockpiles will be covered with a plastic liner during windy and rain conditions</p> <p>Berms on the periphery of the mining site will be inspected daily and maintained to ensure runoff from or within the mining site</p> <p>mining site does not report to the catchment</p>
	Groundwater	Operational Phase	Local	<p>Emergency spill response plan required to handle any unplanned spillages</p> <p>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</p>
Decommission phase	Surface Water	Operational Phase Decommission phase	Local	<p>The site and access roads will be kept moist to avoid the creation and disturbance of dust</p> <p>The sumps must be pumped empty and the oil and sludge must be disposed of at a registered waste facility</p>

	Soil	Operational Phase Decommissioning Phase	100 m ²	Sumps will be backfilled and the site leveled immediately after has concluded All compacted areas will be ripped to loosen the soils during rehabilitation
	Fauna and Flora	Decommissioning 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

7. IMPACT MANAGEMENT OUTCOMES

Table 7-1: Impact Management Outcomes

Activity	Potential Impact	Aspects Affected	Phase
Column 1	Column 2	Column 3	Column 4
Establishment Phase			
	Fugitive dust generation	Air Quality	Establishment Phase
	Loss of topsoil resources and land capability	Soils	Establishment Phase
	Loss of fauna and flora species	Fauna and Flora	Establishment Phase
	Sedimentation of wetlands	Wetlands	Establishment Phase
Operational Phase			
Excavation at the mine site	Sedimentation and contamination of surface water resources	Surface water	Establishment Phase , Operational Phase
	Groundwater contamination	Groundwater	Establishment Phase
	Noise generation	Noise	Establishment Phase, Decommissioning Phase
	Soil contamination and degradation	Soil	Operational Phase, Decommissioning Phase
	Alternation of visual environment	Topography and Visual Environment	Operational Phase
	Soil compaction	Soils	Operational Phase

	Sedimentation of wetlands	Wetlands	Operational Phase
	Sedimentation of surface water resources	Surface Water	Operational Phase
	Contamination of groundwater and reduction in groundwater quantity	Groundwater	Operational Phase, Decommissioning Phase
	Elusive dust generation	Air Quality	Decommissioning Phase

8. IMPACT MANAGEMENT ACTIONS

Table 8-1: 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

9. FINANCIAL PROVISION

9.1 Determination of the amount of financial provision

9.1.1 Minimum closure objectives that will be adhered to

9.1.1.1 Rehabilitation of access roads

- Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit, any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager
- Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre mining situation.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilized (Based on a soil analysis) to ensure the re-growth of vegetation. Imported road construction materials which may hamper re-growth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.

- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

9.1.1.2 Rehabilitation of excavated areas

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once excavation have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

9.1.1.3 Final rehabilitation

- All infrastructure, equipment and other items used during the mining period will be removed from the site (section 44 of the MPRDA)
- Waste material of any description, including receptacles, scraps, rubble and tyres, will be removed entirely from the mining area disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Resources Act, 1983 – act 43; Regulations 15 and 16 (as amended in March 2001) need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

9.1.2 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.

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

The excavated sites will be rehabilitated immediately following the commencement of the mining activities. The rehabilitation process is summarised as follows:

- The excavation machines will be removed from the site
- The sumps will be pumped empty and the oil and sludge disposed of at a registered disposal facility
- The waste water will be removed from site and treated at a registered water treatment facility;
- All waste will be removed from site and disposed of accordingly;
- The sump liner will be removed and reused at another site, following the inspecting of the liner, or disposed of at a registered disposal facility;
- The sumps will be backfilled and levels;
- The site will be levelled and ripped to ensure there is no compaction.
- The topsoil will be spread over the site and the site vegetated with indigenous
- vegetation; and;
- The site will be monitored for the success of the rehabilitation;

9.1.4 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.

9.1.5 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 **Appendix E**

9.1.5.1 Mine type and saleable mineral by-product

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

Mine type	Small-scale mining
Saleable mineral by-product	Sand

9.1.5.2 Risk ranking

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

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

9.1.5.3 Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low
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9.1.5.4 Level of information

According to Step 4.2:

Level of information available	Limited
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9.1.5.5 Unit rates for closure components

According to Table B.6 master and multiplication factors for applicable closure components.
See attached Appendix E

9.1.5.6 Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1
Weighting factor 2: Proximity of urban area where goods and service are to be supplied	1.05

9.1.5.7 Calculation of closure costs

Table B.10 Template for level 2: “Rules-based” assessment of the quantum for financial provision (see attached calculation)

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total (**see Appendix E**)

9.1.5.8 Undertaking to provide financial provision

Herewith I, the person, whose name and identity number is stated below confirm that I am the person authorized to act as representative of the applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines, which final amount is unlikely to be less than R10/m² of the area to be rehabilitated.

9.1.6 Confirm that the financial provision will be provided as determined

The amount of financial provision will be paid by PHT Mineral Resources (Pty) Ltd immediately after the Environmental Management Plan has been approved.

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

10.1 Monitoring of Impact Management Actions

10.1.1 List of Identified Impacts Requiring Monitoring Programmes

10.1.1.1 The identified impacts that require monitoring programmes includes the following:

- Dust handling
- Noise handling
- Management of weed or invader plants
- Storm water handling
- Management of health and safety risks
- Waste management
- Management of access roads
- Topsoil handling

10.1.1.2 Functional requirements for monitoring programmes.

Dust Monitoring:

- Dust suppression equipment such as a water car and water dispenser.
- The applicant already has the equipment available.

Noise Monitoring:

- Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition.
- Compliance with the appropriate legislation with respect to noise will be mandatory.

Surface and storm water monitoring:

- Sterilized water sampling bottles to be handed to an approved laboratory for water quality testing.
- Trenches and contours to be made where applicable to direct storm and runoff water around the stockpile areas.

Management of weed or invader plants:

- Removal of weeds should be manually or by use of an approved herbicide.

Management of Health and Safety Risks:

- Workers to be provided with the required PPE while operating on site.
- The necessary warning signs to be placed at the site to inform the public and workers of the mining activities

Waste Management:

- Closed containers, for the storage of general hazardous waste, to be used until waste is removed to the appropriate landfill site.
- Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas.
- Drip trays should be available to place underneath haul vehicles while the vehicles are parked at night.
- Should a vehicle have a break down, it should be removed from site immediately.

Management of access roads:

- Dust suppression equipment such as a water car and dispenser.
- Trenches and contours to be made to direct storm and runoff water around the access roads.

Topsoil Monitoring:

- Excavating equipment to remove the first 300mm of topsoil from the proposed work areas. The applicant has this equipment available.
- Trenches and contours to be made to direct storm and run-off water around the stockpiled topsoil area.

10.1.1.3 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, PHT Mineral Resources (Pty) Ltd 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 10-1: Roles and Responsibilities

Monitoring Aspect	Role	Responsibility
Dust 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"> - 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. - 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/invader 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</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

	<p>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 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 management	<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 vehicle repairs only take place at the off-site - 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</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

	EMP. Compliance to be monitored by the Environmental Control Officer	<p>in the event of heavy rains/storm water.</p> <ul style="list-style-type: none"> - 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. - 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>	<ul style="list-style-type: none"> - Conduct quarterly water analysis when water is present in the stream bordering the site.

10.2 Monitoring and reporting frequency

10.2.1 Committed time frames for monitoring and reporting

Table 10-2: 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/invader 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

10.3 Responsible Persons



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

10.4 Time Period for Implementing Impact Management Actions

This was discussed on the impact management action section table

10.4.1 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.

11. 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.

12. ENVIRONMENTAL AWARENESS PLAN

12.1 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.

12.1.1 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.

12.1.1.1 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

12.1.1.2 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

12.1.1.3 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

12.1.1.4 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

12.1.1.5 Discoveries:

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

12.1.1.6 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

12.1.1.7 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

12.1.1.8 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

12.1.1.9 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 fire-fighting equipment
- Report all fires
- Don't burn waste or vegetation

12.1.1.10 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;
- Status of gates of property owner;
- Toilet facilities and hygiene measures;
- Handling of waste;
- Emergency procedures awareness.

13. 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.

14. 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:

Ms. Pheladi Mphahlele

TPR MINING RESOURCES PTY LTD

Name of Company:

28 June 2023

Date:

-END-

15. THE FOLLOWING APPENDIXES ARE ATTACHED

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