



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: GADEBE INVESTMENTS cc

REFERENCE NUMBER: NW 30/5/1/1/2/12982 PR

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

DETAILS OF THE APPLICANT

Project applicant:	Gadebe Investments cc		
Responsible Person, (e.g. Director, CEO, etc).:	2006/10412/23		
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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP:	Lufuno Kenneth Nengwani		
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1. IMPORTANT NOTICE

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

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

In terms of section 16(3)(b) of the BAR Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context :
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

(i) Details of the EAP

Name of the Practitioner	Lufuno Kenneth Nengwani
Tel No	0615406265
Fax No	0866235664
e-mail address	iapconsultations@gmail.com

ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence). BES in Mining and Environmental geology

(2) Summary of the EAP's past experience.

(In carrying out the Environmental Impact Assessment Procedure)

Refer to attached Cv: Appendix A

b) Location of the overall Activity.

Farm Name:	Farm(s) Name	Farm No.	Portions Number
	Klipvoor	159 JQ	Excluding portion 2,3,7 and remaining extent.
	Ruigtesloot	160 JQ	Whole farm
	Ruigtepoort	162 JQ	Whole farm
Application area (Ha):	± 8806 ha		
Magisterial district:	Brits magisterial district, North West Province.		
Distance and direction from nearest town:	Approximately 70 km north of Brits		

c) Locality map

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

Refer to Appendices

d) Description of the scope of the proposed overall activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site.

(i) Listed and specified activities

NAME OF ACTIVITY E.g. for drilling,- drillings, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, powerlines, conveyors	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
Access road	300 m ²	X	GNR 983, Activity 20
Clearing of vegetation	500m ²	X	GNR 983, Activity 20
Prospecting right Application	9646.775 ha	X	GNR 983, Activity 20
Drilling	0.5 Ha		GNR 983, Activity
Site office (portable office containers)	250m ²		
Ablution facility	20.m ²		

(ii) Description of the activities to be undertaken

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

The following section presents a detailed description of all the activities associated with the proposed Prospecting Application. Due to the nature of the Prospecting Works Programme, and the fact that the specific prospecting activities required are dependent on the preceding phase, assumptions are presented where required. These assumptions are based on similar projects undertaken by the Applicant and therefore be regarded as indicative of what will be undertaken.

Description of the Planned Invasive Activities

Drilling

Diamond core drilling will be conducted in order to delineate and quantify the Rare earth resource. The total number of ten (10) boreholes will be drilled at a depth of 150m, at a spacing of 350m-1000m. The area to be disturbed, for each drill site (borehole) will be 100m² (10m x 10m).

An independent and experienced drilling contractor will be used to complete the drilling in accordance with industry best practice and in compliance with the Mine Health and Safety Act (Act No. 29 of 1996).

It is envisaged that skid or truck mounted rigs will be used to drill the vertical holes. Plastic lining to prevent oil spillage will be used under the rig as well as within any water sumps that are required. The area will be cordoned off and, if required, firebreaks will be established.

Borehole sites will be GPS located and pegged with a steel dropper. The site will be inspected and photographed prior to any disturbance.

A drill pad will be then cleared, keeping disturbance to the native vegetation to an absolute minimum. Any topsoil removed will be stored separately for later reuse.

After the drilling operation is completed, each borehole collar will be surveyed by an independent surveyor using a high accuracy differential GPS. Thereafter the site will be rehabilitated and photographed according to the procedures as stipulated in the Environmental Management Plan (to be submitted as part of the Basic Assessment Report) and will be closely monitored to ensure that standards are not compromised and there is compliance with the EMP. The drill site will be only considered rehabilitated when the project geologist has signed the standard drill pad rehabilitation checklist.

Logging and Sampling

Drilled samples will be placed in chip trays and moved to a central storage facility for further processing.

A qualified and experienced senior geologist will log and sample all drill holes in accordance to best practice procedures and methodologies, including quality control and assurance. The logging will record core losses, structures, lithology types and thicknesses, and weathering.

Each sample will be given a unique sample number, with labelling outside and inside the bag. Sampling will be done at lengths to yield a sufficient sample.

Access Roads

The majority of the targeted areas will be accessed through existing roads, in a case wherein the area is inaccessible, the relevant authority will be consulted for permission to make new temporary roads which will be rehabilitated after the activities. The drilling contractor will be encouraged to use existing roads.

Water Supply

Water will be sourced from an external source for drilling purposes. It is anticipated that water brought onto the site, will be sourced from the Local Municipality.

Continuous water supply will be required during drilling, at an estimated rate of 500 litres per hour. On-site water storage tanks with a capacity of 10,000 for water supply to the drill, will be installed.

Additional water requirements relates to the potable water supply for employees and workers. A temporary 260 litre on-site vertical water storage tank for drinking water and general use by persons will be provided at the drill site.

Ablution

Ablution facilities at the drill site will involve the installation of chemical toilets or tank type portable toilets.

Temporary Office Area

A temporary site office shaded area will be erected at the drill sites. No on-site electricity generation through the use of generators will be undertaken.

Accommodation

No accommodation will be constructed onsite, unless otherwise agreed with the land owner, workers will be accommodated in the nearby towns at the expense of the driller.

Storage of Dangerous Goods

There will be no storage of dangerous goods (e.g. fuels) onsite, fuel will be delivered to site on a daily basis unless otherwise if alternative options are agreed upon between the applicant and the land owner.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process</p>		<p>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p>Minerals and Petroleum resources development act</p>	<p>NW 30/5/1/1/2/12982 PR</p>	<p>A Prospecting right application was lodged and acknowledged by the DMR</p>
<p>National Environmental Management act</p>		<p>An environmental authorisation has been submitted and acknowledged</p>
<p>National Heritage Resource act</p>		<p>Thorough consultation will be done with the farm owner/ land owner to avoid drilling on the historical grounds or graves.</p>
<p>National water act</p>		<p>After evaluating the need for water, and volumes, water will be sourced from the municipality.</p>
<p>Constitution of the Republic of South Africa (108 of 1966)</p>		<p>Chapter 2 of the Constitution includes an environmental right (Section 24). Obligation to ensure that the proposed development will not result in</p>

		pollution and ecological degradation; and Obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.
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f) Need and desirability of the proposed activities.

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

The mining industry of the province is of national and international importance. The Northwest economy depends heavily on mining. It contributed 7% to the GDP in 2014/2015 its iron-ore, 93% of its The North West mining value chain primarily constitutes exploration/prospecting, shaft set-up and mining. The North West Provincial Spatial Development Framework (PSDF, 2011) identifies significant societal challenges in terms of employment and poverty. According to the PSDF (2011) these issues can be alleviated and addressed through long-term sustainable economic growth and development. Opportunities for potential growth include mining and mineral processing.

The proposed prospecting activities are needed in order to determine the exact position, extent, grade and quality of the minerals within the location. These minerals are of significant value and the drilling thereof has the potential to contribute positively to the South African economy. The geological characteristics of the preferred location meet the prerequisites for concentration of these minerals. Prospecting is therefore confined to the preferred location in order to prevent unnecessary impacts on alternative locations

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

Preferred site

The proposed prospecting area is targeted as historically several metal occurrences are known in the area. There are also various metals within the exploration area. The site therefore is regarded as preferred site and alternative site is not considered.

Technological and Site Activity Alternatives

Geophysical surveys, trenching and drilling are the only major methods used in exploring for deposits of this type and also for resource definition and evaluation. The technology to be used cannot be replaced by any other methods thus these are the preferred activities

Due to the nature of the proposed prospecting activities future land use alternatives will not be compromised. Once viable reserve has been confirmed a comprehensive social and environmental impact assessment will be required (in accordance with the legislation), during which time alternative land use to drilling would be investigated.

In terms of the technologies proposed, these have been chosen based on the long term success of the company in terms of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

The location of intrusive drilling activities will be determined during Phase 1 of the Prospecting Works Programme. There will not be any infrastructures during exploration activities; only temporary mobile infrastructures will be erected.

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

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i) Details of the development footprint alternatives considered.

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

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

Farm(s) Name	Farm No.	Portions Number
Klipvoor	159 JQ	Excluding portion 2,3,7 and remaining extent.
Ruigtesloot	160 JQ	Whole farm
Ruigtepoort	162 JQ	Whole farm

(b) the type of activity to be undertaken;

In terms of the technologies proposed, these have been chosen based on the long term success of the company in terms of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques .

A phased prospecting programme will be applied:

Phase 1

Desktop Studies

It will comprise of gathering geological information about the project area. This will also include visiting organizations like the council of geosciences in order to research on what has been done in the region. This will take about the whole month to complete.

Field Mapping

It mainly consist of a comprehensive field mapping, geologist will complete properly selected transverse while recording their geological observations. This method includes the identification of exposed geological structures and lithological outcrops, through aerial photo interpretation, satellite image interpretation and also by walking the farms/folios.

Phase 2

Geophysical Survey

Mainly consist of a comprehensive ground gravity survey to delineate magnetic anomalies and potential target areas. Ground gravity surveys are applied in order to outline ore deposit positions and size accurately. Ground gravity surveys are carried out on a grid layout. The grid is placed in the field through the use of total station or real time GPS system. Gravity readings and accurate elevations are recorded at each station on the grid. The grid that is used is a 200m x 200m and if there are anomalies in the data the grid is tightened to 100m x 100m. The smaller grid increases the resolution and smaller features then become visible.

Preliminary Drilling and assaying

It consists of reconnaissance drilling. A proposed drilling programme of 10 boreholes will be used to further define the ore body. The drilling program will determine the exact outline, shape and size of the ore body. The core drilling is generally done in this target. The different rock sample intersecting the deposit will be sent for assay at one of the accredited laboratories.

RC-drilling

Drilling is done in phases, over anomalous target areas, using reconnaissance lines or a grid depending on the extent of the lithology. The drilled core logs will be sent to the laboratory for assay.

Detailed drilling and assaying

It consists of detailed drilling within the determined target areas, to delineate the ore body accurately, and to determine depth to bedrock and internal stratigraphic composition of the ore body.

Phase 3

Geological Modeling and geological report

This will be comprised by detailed geological modeling and report writing.

(c) the design or layout of the activity;

The site is designed in such a way that there will be a designated area for the following:

- Storage of water tanks
- Stockpiles for overburden
- Drilling holes
- Offices
- Ablution facilities

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

In terms of the technologies proposed, these have been chosen based on the long term success of the company in terms of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

- For communication purposes, mobile phones will be utilised.

(e) the operational aspects of the activity; and

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage facilities are required.

The activities will commence with geophysical Surveys (as previously discussed), which will comprise of non- invasive techniques. This manner of survey will ensure that the client can clearly delineate areas which are regarded as suitable for further investigation and no unnecessary surface disturbance will be undertaken.

Based on the outcomes of the magnetic survey, soil sampling will be undertaken for target areas only. Soil samples is planned to be drilled using a simple shovel and bucket. Soil sampling is a low impact exploration method in terms of environmental disturbance.

After the preliminary exploration work, the anomalies identified will be ranked for exploratory drilling. Site activities as it relates to exploratory drilling will comprise the establishment of the drill pad (drill pad clearing and compaction), drilling operations (drill maintenance, refuelling, core extraction and core storage) and rehabilitation activities (drill pad ripping and re- vegetation). No feasible alternative

to the proposed exploratory drill methods currently exists. Impact associated with the drilling operations will be managed through the implementation of a management plan, developed as part of the application for authorisation.

After all operations and rehabilitation has taken place on site, a closure certificate will be issued. This phase is anticipated to take place within a period of one year.

(f) the option of not implementing the activity

There is no option of implementing all these activities as there is enough information to prove the viability of the area in terms of exploration for the selected metals.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB. the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient details of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

<p>Steps to be taken to notify interested and affected parties(Describe the process to be under taken to consult interested and affected parties including public meetings and one on one Consultations. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. Photographs of notice boards, and copies of advertisements and notices notifying potentially interested and</p>	<p>PROVIDE DESCRIPTION HERE</p> <p>The following steps will be used to notify interested and affected parties:</p> <ol style="list-style-type: none"> 1. Newspaper advert 2. Distribution of Background Information Document (s) 3. Community meeting, if necessary 4. Notification via emails and registered letters 5. Communication with surrounding land owners 6. Notify relevant departments
<p>Information to be provided to Interested and Affected Parties.</p>	<p>Compulsory</p> <ul style="list-style-type: none"> ○ The site plan. ○ List of activities to be authorised ○ Scale and extent of activities to be authorised ○ Typical impacts of activities to be authorised ● (e.g. Surface disturbance, dust, noise, drainage etc.) ● The duration of the activity. ● ☐ Sufficient detail of the intended <p>Other, specify:</p>

<p>Information to be required from Interested and Affected Parties.</p>	<p>Compulsory</p> <ul style="list-style-type: none"> • To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions • To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity • To provide information on current land uses and their location within the area under consideration • To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied. requested to make written proposals • To mitigate the potential impacts on their socio economic conditions to make proposals as to how the potential impacts on their
	<p>Other, Specify</p>

- iii) **Summary of issues raised by I&Aps**
(Complete the table summarising comments and issues raised, and reaction to those responses)

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

(1) Baseline Environment

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

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

The environmental features on the site which may require protection, remediation, management or avoidance include the following: environmental

Soil

Caution should be taken to prevent oil leakages and spillages which will cause soil contamination which will in turn result in the death of organisms that live in the soil. Preventive measures that should be taken include;

- The use of oil drip trays on leaking vehicles and equipment
- No major vehicle repairs should be done on site
- Oils and fuel should be stored on bund areas to avoid spillages
- An emergency plan for spillages should be available on site.

Flora and Fauna

Only areas demarcated for drilling should be cleared of vegetation, firewood harvesting and animal hunting should not be allowed on site.

Surface Water

Where the drilling will take place close to a river or dam, a buffer zone of 100 metres should be left protected to avoid contamination of surface water.

Topography

There will not be any detrimental effects to the topography of the area, the drilled area will be rehabilitated to its normal form as soon as the drilling activities cease.

Air Quality

Dust suppression techniques will need to be implemented to avoid the dispersion of dust particles into the air. The following techniques will be used:

- The use of water to keep the soil wet.
- Vegetation clearing should only be limited to the demarcated areas for drilling.

Water Resources

Water contamination could be as a result of spillages of oil from vehicles and siltation as a result of run-off. To avoid siltation and disturbance of river flow, no drilling activities will take place within 100 metres from any water resource and drip trays will be used for leakages of oils from vehicles.

Heritage/cultural resources

After thorough consultations with farm owners, in the farm to be prospected, there are a few cemeteries that have been identified with archaeological and cultural value. A buffer zone of 25m will be applied to avoid interference with graves.

(b) Description of the current land uses.

Current land use includes the following:

- Residential area
- Crop farming (e.g. seasonal crops)
- Domestic animals farming

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

Besides land uses described above on the nearby farms, visible environmental features on the targeted farm are trees, small shrubs, grass and a few streams and river which is far from the demarcated area for the drilling activities.

Infrastructure on the area will be houses belonging to community members and farm owners.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

The majority of the area is used for farming and residential purposes.

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

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

Activity	Affected Environment	Potential Mitigation and Management
Displacement of the landowner (s)	Losing or gaining more income	<ul style="list-style-type: none">• The area will be regularly maintained so that the impacts are kept minimal so that the farm will not have to deal with impacts out of his/her pocket.• The landowner and applicant will have an agreement for all the losses incurred.
Drilling	Soil	<ul style="list-style-type: none">• The topsoil removed should be stored within an area on higher ground of the drilling area, outside the 1:100 flood level, but within the boundaries of the project area;• Drip trays and designated bund sites should be used to protect soils from hydrocarbons;• Storage of used oil/ grease should be done in a designated bund area until removal;

		<ul style="list-style-type: none"> During rehabilitation, soil should be replaced in a manner that will promote the natural growth of vegetation.
	Land Capability	<ul style="list-style-type: none"> Soil should be replaced in a manner that will promote natural growth of vegetation; Soils forming part of the overburden should be stockpiled separate from rock; and Drip trays and designated bund sites should be used to protect soils from hydrocarbons used during surface drillings.
	Surface water	<ul style="list-style-type: none"> Storage of used oil/ grease should be done in a designated bund site until removal; and Water courses should be avoided. Prospecting should not take place within 100m from a water source.
	Air quality	<ul style="list-style-type: none"> Dust emissions from trucks and bakkies on dusty roads will be suppressed by water spraying.
	Natural Vegetation	<ul style="list-style-type: none"> No unnecessary disturbance of vegetation during drilling activities, thus, the removal of vegetation should be limited; Rehabilitation should be done to promote natural vegetation establishment; Promotion of environmental awareness to employees; and

		<ul style="list-style-type: none"> • Identification of sensitive species and habitats which need to be avoided should be done
	Animal life	<ul style="list-style-type: none"> • Promotion of environmental awareness to employees; • Identification of sensitive species and habitats which need to be avoided; and • There should be no unnecessary disturbance on animal habitats such as nests and breeding grounds.
	Archaeology/Heritage Resources	<ul style="list-style-type: none"> • Heritage sites within 25 m from any drilling area should be clearly marked to prevent any accidental damages.
	Noise	<ul style="list-style-type: none"> • Noise will be generated and should be restricted to the hours between sunrises to sunset and should not be commenced after these hours. Some settlements may be in close proximity to the operation, but it is unlikely that they will be severely impacted on in terms of noise.
Construction of drilling structures.	Topography	<ul style="list-style-type: none"> • There should be no unnecessary clearing of vegetation and topsoil clearing; and • Construction machinery and equipment should be stored away from surface water and drainage lines.
	Visual	<ul style="list-style-type: none"> • The impact has a potentially medium probability and cannot be avoided or prevented.
	Soil	<ul style="list-style-type: none"> • The topsoil removed for this activity should be stored within an area on higher ground of the drilling area,

		<p>outside the 1:100 flood level, but within the boundaries of the project area; and</p> <ul style="list-style-type: none"> Oil spills should be cleaned up immediately
	Land capability	<ul style="list-style-type: none"> Topsoil stockpile heights should not exceed pre-determined height restrictions; and Topsoil should be stockpiled for use during rehabilitation and these stockpiles should be allowed to naturally vegetate to result in the stabilisation of soil particles and to prevent erosion.
	Surface water	<ul style="list-style-type: none"> Only release water if quality is acceptable.
	Air quality	<ul style="list-style-type: none"> On windy days, especially during spring between the months of September and October, wind can carry dust over a wider area. Dust suppression by means of a water cart should be conducted on a daily basis.
	Natural vegetation	<ul style="list-style-type: none"> No trees should be cut for fire wood; Fires should only be made in a dedicated area cleared from vegetation; Vegetation should not be removed unnecessarily; and Identification of sensitive species and habitats which need to be avoided should be conducted.
	Animal life	<ul style="list-style-type: none"> Identification of sensitive species and habitats which need to be avoided should be conducted.

	Archaeology/Cultural Heritage	<ul style="list-style-type: none"> Heritage sites within 25 m from any drilling area should be clearly marked to prevent any accidental damages
	Noise	<ul style="list-style-type: none"> The drilling times should be communicated to the local communities. Communities should be able to file complaints regarding the noise; and such issues should be addressed by the drilling company.
Storage of hydrocarbons, chemicals	Soil	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons used; and Storage of used oil/ grease should be done in a designated bund site until removal.
	Land capability	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated bund site until removal.
	Surface water	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated site until removal.
	Groundwater	<ul style="list-style-type: none"> Drip trays and designated sites should be used to protect soils from hydrocarbons; and

		<ul style="list-style-type: none"> Storage of used oil/ grease should be done in a designated site until removal.
	Natural vegetation	<ul style="list-style-type: none"> Drip trays and designated sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated site until removal.
	Animal life	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated bund site until removal; and The storage area should be securely fenced.
Fence	Visual	<ul style="list-style-type: none"> No mitigation is possible.
	Animal life	<ul style="list-style-type: none"> No mitigation is required. This is seen as a positive.
Removal and storage of topsoil (Topsoil stockpile)	Soil	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface area will occur; The topsoil removed should be stored in an area on high ground in the project area outside the 1:100 flood level and should be protected from being blown away or being eroded; Topsoil should be kept separate from subsoil and should not be used for building or maintaining access roads; Vegetate with diverse grass mix to control erosion; and Topsoil fertility, biological quality should be monitored and a

		management plan should be implemented.
	Land capability	<ul style="list-style-type: none"> • The topsoil removed should be stored in an area on high ground in the project area outside the 1:100 flood level and should be protected from being blown away or being eroded for use for rehabilitation of site; • Topsoil should be removed separately from sub- soils and should be stockpiled separately; and • The stockpile should be grassed to protect the topsoil from wind and rain.
	Visual	<ul style="list-style-type: none"> • Topsoil should be stockpiled in a designated area.
	Topography	<ul style="list-style-type: none"> • Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance on surface water flow dynamics.
	Surface water	<ul style="list-style-type: none"> • Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance on surface water flow dynamics; and • Topsoil stockpiles should be allowed to naturally vegetate or manual vegetation will be applied in order to stabilise soil particles and prevent erosion, thus limiting siltation of surface water.
	Air quality	<ul style="list-style-type: none"> • Topsoil stockpiles will be allowed to naturally vegetate, or manual vegetation will be applied in order to

		stabilise particles and reduce the risk of wind erosion.
	Natural vegetation	<ul style="list-style-type: none"> Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance on surface water flow dynamics.
	Animal life	<ul style="list-style-type: none"> Identification of sensitive species and habitats which need to be avoided should be conducted prior to topsoil removal.
	Archaeology/Cultural Heritage	<ul style="list-style-type: none"> Heritage sites within 25 m from any drilling area should be clearly marked to prevent any accidental damages.
	Noise	<ul style="list-style-type: none"> Tipping of topsoil into stockpiles should occur between sunrises to sunset.
Transport of equipment and vehicle and equipment maintenance	Soil	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent leaks resulting in soil contamination.
	Land capability	<ul style="list-style-type: none"> The vehicle maintenance yard should be established outside the flood plain, above the 1 in 100 flood level within the project area;
	Surface water	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent spillages resulting in surface water contamination. Should spillage occur implement appropriate clean up immediately
	Groundwater	<ul style="list-style-type: none"> Vehicles and machinery should be adequately maintained to prevent

		<p>spillages resulting in groundwater contamination.</p> <ul style="list-style-type: none"> • Should spillage occur implement appropriate clean up immediately
	Air quality	<ul style="list-style-type: none"> • Dust on roads should be suppressed with the use of water by a water cart truck.
	Natural vegetation	<ul style="list-style-type: none"> • Vehicles should be restricted to the roads.
	Animal life	<ul style="list-style-type: none"> • Vehicles should be restricted to the roads to prevent habitat disturbance of birds and animals.
	Archaeology/Cultural Heritage	<ul style="list-style-type: none"> • Heritage sites within 25 m from any drilling area should be clearly marked to prevent any accidental damages.
	Noise	<ul style="list-style-type: none"> • Vehicular movement should be restricted to sunrise and sunset. • Speed limits of 10km/h should be exercised.
Construction of surface infrastructure	Soil	<ul style="list-style-type: none"> • Topsoil should be removed from all areas where physical disturbance of the surface will occur; • The topsoil removed for this activity should be stored within an area on higher ground of the drilling area, outside the 1:100 flood level, but within the boundaries of the project area; and • Oil spills should be cleaned up immediately
	Topography	<ul style="list-style-type: none"> • There should be no unnecessary clearing of vegetation and topsoil clearing;

		<ul style="list-style-type: none"> • Drilling machinery and equipment should be stored away from surface water and drainage lines; and • Surface infrastructure should be established outside the flood plain, above the 1 in 100 flood level mark in the project area.
	Land capability	<ul style="list-style-type: none"> • This should involve the least disturbance to vegetation; and • Topsoil should be removed from all areas where physical disturbance of the surface area will occur.
	Surface water	<ul style="list-style-type: none"> • Surface infrastructure such as offices and camps should not be located closer than 100 metres from any water courses. • No construction within the 1:100 year flood line • Implement storm water control measures to separate clean and dirty water run off
	Groundwater	<ul style="list-style-type: none"> • Spillages should be cleaned up immediately.
	Air quality	<ul style="list-style-type: none"> • On windy days, especially during spring between the months of September and October, wind can carry dust over a wider area, thus dust suppression by means of a water cart should be conducted on a daily basis to reduce dust emissions.
	Natural vegetation	<ul style="list-style-type: none"> • No trees or shrubs should be felled or damaged; and • Open fires should not be allowed.

	Animal life	<ul style="list-style-type: none"> • Identification of sensitive species and habitats which need to be avoided or re-located should be conducted.
	Archaeology/Cultural Heritage	<ul style="list-style-type: none"> • Heritage sites within 25 m from any development area should be clearly marked to prevent any accidental damages.
	Noise	<ul style="list-style-type: none"> • Drilling, blasting or drilling activities should be restricted to between sunrise and sunset.
Waste generation, disposal and sewage handling	Soil	<ul style="list-style-type: none"> • Accidental spillages should be cleaned up immediately; • Waste such as glass bottles, plastic bags, metal scrap etc. should be separated and stored in a bin/ container for recycling purposes.
	Land capability	<ul style="list-style-type: none"> • Accidental spillages should be cleaned up immediately;
	Surface water	<ul style="list-style-type: none"> • Accidental spillages should be cleaned up immediately;
	Groundwater	<ul style="list-style-type: none"> • Accidental spillages should be cleaned up immediately;
Ablution	Soil	<ul style="list-style-type: none"> • Accidental spillages should be cleaned up immediately with the use of saw dust and placed in a 25 L container to be treated as hazardous waste; • The contents of the chemical toilets should be emptied on a regular basis to prevent spillages.
	Land capability	<ul style="list-style-type: none"> • The contents of the chemical toilets should be emptied on a regular basis to prevent spillages.

	Surface water	<ul style="list-style-type: none"> The contents of the chemical toilets should be emptied on a regular basis to prevent spillages.
	Groundwater	<ul style="list-style-type: none"> The contents of the chemical toilets should be emptied on a regular basis to prevent spillages.
Domestic Waste	Soil	<ul style="list-style-type: none"> Separation of general waste and classification of waste to ensure reuse and recycling of waste as per the new Waste Management Act, Act 58 of 2008; and No general waste is to be burnt or buried on site;
	Visual	<ul style="list-style-type: none"> Construction workers should not be allowed to litter; and Litter should be placed in bins labelled type of litter in them
	Land capability	<ul style="list-style-type: none"> Construction workers should not be allowed to litter; and Litter should be placed in bins labelled type of litter in them.
	Surface water	<ul style="list-style-type: none"> Spillages should be cleaned up immediately. Surface water quality must be regularly monitored
	Groundwater	<ul style="list-style-type: none"> Spillages should be cleaned up immediately Groundwater quality must be regularly monitored.
	Natural vegetation	<ul style="list-style-type: none"> Spillages should be cleaned up immediately.
	Animal life	<ul style="list-style-type: none"> Spillages should be cleaned up immediately.
Access Road	Soil	Ensure surface levelling after use to prevent soil erosion.

	Land capability	<ul style="list-style-type: none"> • Vehicles should be restricted to roads; and • Minimal vegetation should be removed when clearing for access roads.
	Surface water	Water bodies should be avoided when upgrading access roads.
	Air quality	Dust suppression on roads with the use of water- roads should be sprayed with water.
	Natural vegetation	Route should be selected that a minimum number of bushes or trees are felled for roads.
	Animal life	It is a preference that existing roads should be used, by upgrading or maintaining the roads, however if access roads need to be constructed, the sites should be assessed to identify any habitats or breeding grounds of animals and birds.
	Archaeology/Cultural Heritage	Heritage sites within 25 m from any drilling area should be clearly marked to prevent any accidental damages.
	Noise	Usage of roads by trucks should be restricted to between sunrise and sunset.

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

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision).

The table below indicates the ratings of significance of potential impacts.

Activity	Description	Affected Environment	Potential Impact	Mitigation measures	Nature of Impact (Positive/Negative)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)
CONSTRUCTION AND OPERATIONAL PHASE											
Displacement of the landowner	Losing or gaining more income	Income	Due to the drilling activities proposed to take place on the land, the landowner will not be required to vacate the land	The landowner, depending on the land use agreement, will be compensated in the form of money.	N	1	5	1	7	4	28

Upgrading of Access Roads	Access roads that already exist will be upgraded.	Soil	Increased erosion of soils due to the removal of vegetation.	Ensure surface levelling after use to prevent soil erosion	N	2	2	2	6	4	24
		Natural Vegetation	Destruction and removal of natural vegetation during site clearance.	Route should be selected that a minimum number of bushes or trees are felled for roads.	N	2	2	3	7	4	28
		Surface Water	Potential siltation of surface run-off due to soil erosion.	Water bodies should be avoided when upgrading access roads. A buffer of 100m should be left undisturbed.	N	2	2	2	6	4	24
		Air Quality	Increased potential for dust emission	Dust suppression on roads with the use of water- roads should be	N	2	2	2	6	4	24

			due to wind erosion.	sprayed with water.							
Transportation of Equipment	The drilling operation will involve transportation of equipment to the project area.	Soil	Soil compaction due to the repetitive movement on gravel roads.	Vehicles and machinery should be adequately maintained to prevent spillages resulting in soil contamination.	N	2	2	4	8	4	32
		Interested and Affected Parties	Potential damage to roads caused by movement of heavy vehicles and continual use of vehicles moving to and from the site.	Equipment's should be transported using main roads and during off peak traffic hours	N	3	3	3	9	4	36
		Air Quality	Increased dust emissions due to entrainment of dust particles	<ul style="list-style-type: none"> Dust on roads should be suppressed with the use of 	N	3	3	3	9	4	36

			by the movement and operation of construction equipment.	water by a water cart truck.							
Construction of surface infrastructure.	This will involve vegetation clearing and topsoil removal to construct offices, a change house, etc.	Soil	Permanent compaction of soil in areas of infrastructure construction	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface will occur; The topsoil removed for this activity should be stored within a bund area on higher ground of the drilling area, outside the 1:100 flood level, but within the 	N	3	3	3	9	5	45

				boundaries of the project area; and							
				<ul style="list-style-type: none"> Oil spills should be cleaned up immediately 							
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.	Topsoil should be removed from all areas where physical disturbance of the surface will occur	N	2	3	3	8	5	40
		Natural Vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.	Vegetation should be removed prior to topsoil soil removal in order to limit effects of site clearance	N	3	3	3	9	5	45

		Surface Water	Altered surface flow dynamics around surface infrastructure; Potential contamination of surface water due to spillage of fluids.	<ul style="list-style-type: none"> • Surface infrastructure such as offices and camps should not be located closer than 100 metres from any water courses. • No construction within the 1:100 year flood-line 	N	2	3	3	8	5	40
		Groundwater	Potential groundwater contamination due to infiltration of fluid contaminated water.	Spillages should be cleaned up immediately.	N	4	4	4	12	5	60
		Air Quality	Dust from construction vehicles on	On windy days, especially during spring between	N	3	3	4	10	5	50

			gravel and secondary roads.	the months of September and October, wind can carry dust over a wider area, thus dust suppression by means of a water cart should be conducted on a daily basis to reduce dust emissions.							
Soil Removal and Stockpile	This will involve the removal of soil during site clearance.	Topography	Alteration of the local topography and disturbance of natural drainage lines.	Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance	N	2	5	3	10	4	40
		Visual	The creation of stockpiles alters the visual quality of the landscape.	Topsoil should be stockpiled in a designated area.	N	3	4	3	10	5	50

		Soil	<p>Damage to the natural soil structure due to soil handling, removal and mixing of soil types and horizons; removal of vegetation causes a change in the water runoff characteristics of the site and increased probability of soil erosion. This leads to the loss of topsoil and an increase of siltation in the streams and</p>	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface area will occur; <p>The topsoil removed should be stored in a bund wall on high ground in the project area outside the 1:100 flood level and should be protected from being blown away or being eroded;</p>	N	2	6	4	12	4	48
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			<p>rivers with the runoff carrying sediment; and Leaching of soil nutrients during long-term stockpiling.</p>	<p>Topsoil should be kept separate from subsoil and should not be used for building or maintaining access roads; Vegetate with diverse grass mix to control erosion; and Topsoil fertility, biological quality should be monitored and a management plan should be implemented.</p>								
		Land Capability	<p>Decreased land capability due to damage to the natural soil structure, soil loss through wind and water</p>	<ul style="list-style-type: none">The topsoil removed should be stored in a bund wall on high ground in the project area outside the 1:100	N	2	6	4	12	4	48	

			erosion and leaching of soil nutrients.	flood level and should be protected from being blown away or being eroded for use for rehabilitation of site; • The stockpile should be grassed to protect the topsoil from wind and rain.							
		Natural Vegetation	Damage to natural vegetation due to deposition of dust emitted during the tipping and stockpiling,	Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance on surface water flow dynamics.	N	2	6	4	12	3	36

			restricting photosynthesis.								
		Animal Life	Potential direct impacts on threatened fauna species; Habitat disturbance and destruction; Potential disruption on birds nesting, foraging or roosting in project area.	<ul style="list-style-type: none"> Identification of sensitive species and habitats which need to be avoided should be conducted prior to topsoil removal. 	N	2	3	3	8	4	32
		Air Quality	Increased potential for dust emissions due to wind erosion during the tipping of soil into trucks	Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the	N	2	3	4	9	5	45

			and onto risk of wind stockpiles, as erosion. well as exposure of stockpiles to wind erosion; and Potential increase of dust generation.								
		Noise	Potential increase of noise of hauling trucks to topsoil stockpile site.	Tipping of topsoil into stockpiles should occur between sunrises to sunset.	N	3	2	3	8	6	48
Placement of a fence	A fence will be constructed around the drilling site which will be limited to the demarcated area	Animal life	Potential limitation of movement for domestic animals to grazing areas. This is a positive impact	No mitigation is required. This is seen as a positive.	N	2	3	3	8	4	32

	to protect the workings and prevent people and domestic animals from harm		as it will prevent movement of domestic animals into demarcated areas, thus preventing injury.								
		Interested and Affected Parties	The fence could prevent access to communal agricultural fields and livelihood. Also, the fence will provide a safety factor, preventing access to areas where safety risks may occur.	No mitigation is possible.	N	3	4	3	10	5	50

		Groundwater	Potential groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.	No mitigation is possible.	N	3	3	4	10	5	50
Use of Hydrocarbons, Chemicals	The use of hydrocarbons, chemicals will take place and these will be stored on site in designated storage areas.	Soil	Potential soil contamination.	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be used to protect soils from hydrocarbons used; and • Storage of used oil/grease 	N	2	6	4	12	4	48

				should be done in a designated bund site until removal.							
		Land Capability	Potential decreased land capability due to contaminated soil.	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and • Storage of used oil/ grease should be done in a designated bund site until removal. 	N	2	6	4	12	4	48
		Natural Vegetation	Potential damage due natural vegetation and loss due to spillages of	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and 	N	2	6	4	12	4	48

			hydrocarbons, chemicals.	<ul style="list-style-type: none"> Storage of used oil/ grease should be done in a designated bund site until removal. 							
		Animal Life	Potential injury or loss of animals due to spillages of hydrocarbons, chemicals.	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated bund site until removal; and The storage area should be 	N	2	4	6	12	3	36

				securely fenced.							
		Surface Water	Potential contamination of surface water due to the spillage of hydrocarbons, chemicals or contaminated run- off sourced from contaminated soil.	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and • Storage of used oil/ grease should be done in a designated bund site until removal. 	N	4	4	4	12	4	48
		Groundwater	Potential groundwater contamination due to the infiltration of	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be 	N	4	5	5	14	4	56

			<p>surface water contaminated with spilled hydrocarbons, chemicals.</p> <p>used to protect soils from hydrocarbon s; and</p> <ul style="list-style-type: none"> Storage of used oil/grease should be done in a designated bund site until removal. 								
Access Roads	Existing Access Roads will be used to access the site and to transport equipment onto and off the site. If	Soil	Upgrading of existing roads to will cause a potential to result in soil erosion, soil loss.	Ensure surface levelling after use to prevent soil erosion.	N	2	2	2	6	4	24

	need be, they will be upgraded	Land Capability	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads.	<ul style="list-style-type: none"> • Vehicles should be restricted to roads; and • Minimal vegetation should be removed when clearing for access roads. 	N	3	3	3	9	4	36
		Natural Vegetation	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads; Site clearing and	Route should be selected that a minimum number of bushes or trees are felled for roads.	N	3	3	3	9	4	36

			removal of topsoil could lead to soil erosion and soil loss.								
		Surface Water	Altered surface flow dynamics due to removal of topsoil and topographical alterations and increased surface runoff from cleared areas; Potential surface water runoff over haul roads will result in erosion and consequent siltation of surface water	Water bodies should be avoided when upgrading access roads. A buffer of 100m should be left undisturbed.	N	2	3	4	9	5	45

			resources; Potential contamination of surface water runoff from hauls roads due to the spillage of hydrocarbons from vehicles travelling on haul roads.								
		Air Quality	Potential dust pollution caused by construction vehicles	Dust suppression on roads with the use of water-roads should be sprayed with water.	N	3	3	4	10	4	40
		Noise	Potential elevated noise levels due to continuous vehicular	Usage of roads by trucks should be restricted to between sunrise and sunset.	N	3	3	3	9	5	45

			movement on haul roads.								
		Interested and Affected Parties	Potential damage to roads could impact safety of people and animals.	Trucks should be restricted to between sunrise and sunset.							
					N	2	3	3	8	5	40
Drilling, pitting and Trenching	The use of machinery to dig up soil (either soft or hard) to extract materials/minerals	soil	Removal of topsoil could damage the natural soil structure due to soil handling, removal and mixing of soil types and horizons resulting in increased erosion of soils due to damage	<ul style="list-style-type: none"> The topsoil removed should be stored within a an area on higher ground of the drilling area, outside the 1:100 flood level, but within the boundaries of the project area; Drip trays and designated bund 	N	2	6	4	12	5	60

			to the natural soil structure; potential soil contamination sourced from hydrocarbons	<p>sites should be used to protect soils from hydrocarbons;</p> <ul style="list-style-type: none"> •Storage of used oil/ grease should be done in a designated bund area until removal; •During rehabilitation, soil should be replaced in a manner that will promote the natural growth of vegetation. 							
		Land capability	Decreased land capability due to damage to natural soil structure and soil loss through wind	Soil should be replaced in a manner that will promote natural growth of vegetation;	N	2	6	4	12	5	60

			and water erosion								
		Surface water	Potential contamination of surface water due to spillage of fluids.	Water courses should be avoided. Drilling should not take place within 100m from a water source	N	4	5	5	14	4	56
		Air quality	Potential pollutants of air from machinery and vehicular emissions.	Dust emissions from trucks and bakkies on dusty roads will be suppressed by water spraying.	N	4	5	5	14	4	56
		Natural vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.	No unnecessary disturbance of vegetation during drilling activities, thus, the removal of vegetation should be limited;	N	2	5	4	11	5	55

				Rehabilitation should be done to promote natural vegetation establishment							
		Animal life	Disruption of animal habitats such as nests and breeding grounds (potential modification, fragmentation, and reduction of habitat).	Identification of sensitive species and habitats which need to be avoided; and there should be no unnecessary disturbance on animal habitats such as nests and breeding grounds.	N	2	4	6	12	4	48
DECOMMISSIONING AND CLOSURE											
Rehabilitation	All areas disturbed will be rehabilitated to its original state	Soil and Vegetation	Positive impact as topsoil will be replaced to enhance	Soils have to be levelled and indigenous plants should be planted	N	2	3	3	8	4	32

	with the waste rock and topsoil stockpiles.		vegetation growth.	to cover the bare soil							
	Roads should be ripped Or ploughed and fertilised if necessary to promote re-growth of vegetation.	Animal Life	Positive impact as vegetation will re-establish itself and the natural Fauna will gradually return to the rehabilitated sites.	No animal life should be tempered with and area to be rehabilitated in a manner that supports animal habitat within it.	N	2	2	2	6	4	24

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

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

Positive impacts

The site layout is designed in such a way that the drilling area will be far from the residential and agricultural activities, there will be minimal noise pollution and air pollution in the form of dust will be regularly suppressed using water sprays.

Negative impacts

The only negative impacts will be the noise and dust pollution which will be kept under control, to enable nearby farm owners to proceed with their normal activities with minimal disturbance.

Up to date there are no issues raised by the interested and affected parties, which might raise the need for an alternative site. However, the consultation is in continuation to try and cover as many interested and affected parties to give them a voice over the affected land.

- viii) The possible mitigation measures that could be applied and the level of risk.**

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Up to date, all the consulted interested and affected people have not raised any concerns.

- ix) Motivation where no alternative sites were considered.**

Up to date there are no issues raised by the interested and affected parties, which might raise the need for an alternative site.

This particular site was preferred as there is historical information regarding the availability of the minerals, previously there was a mining in some of the portions.

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

The site plan has been properly planned to provide maximum productivity and minimal environmental impacts, in such a case wherein the impacts cannot be prevented, mitigation strategies will be implemented, and the area will be properly rehabilitated.

In such a case wherein a concern will be raised, the concern will be addressed in such a way that both parties will be satisfied.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that are identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

ITEM	DESCRIPTION
Environmental attributes. Describe how the Environmental attributes associated with the development footprint will be determined.	<p>The identification and protection of the crucial environmental attributes will focus on the key principles of sustainable development (biophysical, social and economic components) and the key components of the meaning of the term environment (geographical, physical, biological, social, economic and cultural aspects). The environmental attributes will be determined through the means of the following:</p> <ul style="list-style-type: none"> • Applicable legislation; • Provincial and Municipal Policies and Guidelines; • Making use of Geographic Information Systems (GIS); • Site inspection of the area; • Previous applications conducted in the area; • Previous specialist studies conducted in the area; • Historical knowledge of the area; and • Inputs raised during the stakeholder engagement process. <p>Visits to the site has provided an accurate assessment of the area and subsequently confirmed through the use of GIS data. Data will be compared</p>

	<p>to previous studies conducted in the area and a conclusion reached to detail the existing environmental attributes in and around the proposed development.</p>
<p>Identification of impacts and risks. (Describe the process that will be used to identify impacts and risks.</p>	<p>Risks and potential impacts will be categorized according to the type of activity undertaken and the relation to each environmental variable. Additional impacts will be identified by the EAP based on their extensive knowledge and understanding of the surrounding environment and professional judgement.</p> <p>Existing literature will be utilized in identifying potential risks and evaluating the likelihood of the risks. Similar projects will be researched to identify additional impacts and risks and compared to the context of the proposed development. Pre-planning risk assessments, and hazard identification conducted by the operational team will be reviewed and utilized as local knowledge. This information will assist in identifying additional impacts and risks through the utilization of operations teams' knowledge on the construction, operation, and decommissioning processes.</p>
<p>Consideration of alternatives. Describe how alternatives, and in particular the alternatives to the proposed site layout and possible alternative methods or technology to be applied will be determined.</p>	<p>The NEMA prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, inter alia, with respect to every application for environmental authorisation include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.</p> <p>The general objective of integrated environmental management is, inter alia, to "identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management" set out in NEMA.</p> <p>Ultimately the BAR is a decision-making process with the specific aim of selecting the option that will provide the most benefit and cause the least</p>

	<p>damage in the short and long term to the physical and human environment. The BAR process will identify and investigate alternatives, with feasible and reasonable alternatives to be comparatively assessed. If, however, after having identified and investigated alternatives, no feasible and reasonable alternatives were found, no comparative assessment of alternatives, beyond the comparative assessment of the preferred alternative and the option of not proceeding, is required during the assessment phase. The alternatives will be identified by its definition in that "Alternatives" are defined in the Regulations as different means of meeting the general purpose and requirements of the activity, which may include alternatives to:</p> <p>(a) the property on which or location where it is proposed to undertake the activity;</p> <p>(b) the type of activity to be undertaken;</p> <p>(c) the design or layout of the activity;</p> <p>(d) the technology to be used in the activity or process alternatives;</p> <p>(e) the operational aspects of the activity; and</p> <p>(f) the option of not implementing the activity.</p> <p>However, a range of alternatives exist, not all of which are necessarily appropriate for each BAR.</p> <p>The following will be used amongst other to inform the preferred alternative for the proposed development:</p> <ul style="list-style-type: none"> • Environmental attributes; • The identified impacts and risks; • The PPP
Process to assess and rank impacts. Describe the process to be undertaken to identify, assess and rank the impacts and risks each individual activity.	<p>Assessment of environmental impacts are ranked from 1 to 7, with 1 being a limited damage and 7 being very significant impact. This is determined by formula $\text{Significance} = \text{Consequences} \times \text{Probability}$, where $\text{Consequences} = \text{Severity} + \text{Spatial Scale} + \text{Duration}$ and $\text{Probability} = \text{Likelihood of an impact occurring}$</p>
Contribution of specialist reports Describe how specialist reports, if	<p>After looking at the environmental impact and the features, In this case no specialist studies will be required.</p>

<p>required, will be taken into consideration and inform the impact identification, assessment and remediation process.</p>	<p><u>After doing site visits doing proper assessment of the area and meeting with the relevant people, its was concluded that no specialist reports will be required since no environmental sensitive areas were identified, and the proposed activities do not trigger any notices that might require specialist studies.</u></p> <p>If required, the specialists will be involved for different purposes and at different intensities during various stages of the application process. This will allow for a uniform inform method for impact identification and assessment and recommending mitigation measures. The specialists will provide input throughout the application process:</p> <ul style="list-style-type: none"> - Pre-Application Planning Stage, to identify environmental opportunities and constraints, alternatives and potential fatal flaws to the proposed project that should be considered during early project planning and design. - Screening Stage, to assist the Competent Authority to determine whether or not a proposed project requires environmental assessment and, if so, what level of assessment is required. - Scoping Stage, to identify key issues and alternatives associated with a proposed project, to respond to issues raised by other stakeholders and, where further specialist input is required, to assist in drafting specialist terms of reference. - Impact Assessment Stage, to predict and assess potential impacts of a proposed development and recommend management actions and monitoring programmes. <p>The role of a specialist in the application process would be to assist the following:</p> <ul style="list-style-type: none"> - Describing the affected environment; - Describing the legal, policy and planning context; - Identifying and responding to issues; - Identifying alternatives; - Identifying opportunities and constraints; - Developing specialist terms of reference (TOR); - Predicting and assessing impacts; and
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	<p>- Recommending management actions and monitoring programmes.</p> <p>The findings of the specialist reports will aim to provide a comparative assessment of all potential impacts identified to result in the best practical environmental option for the proposed development.</p>
<p>Determination of impact management objectives and outcomes. Describe how impact management objectives will be determined for each activity to address the potential impact at source, and how the impact management outcomes will be aligned with standards.</p>	<p>The Environmental Management Programme (EMPr) will provide overarching objectives to be achieved through the management of project activities and risk sources. These objectives are based on managing the environmental impacts identified inter alia through a BAR process; and specify the desired outcomes from effectively minimizing the negative impacts and enhancing the positive impacts. Best practice principles require that every reasonable effort be made to reduce and preferably to prevent negative impacts, while enhancing positive impacts/benefits. These principles have guided the BAR process. Some potential negative impacts have been avoided through careful design and location of infrastructure. Specialists will also identify measures whereby impacts can be avoided/mitigated.</p> <p>The key objectives of the EMPr are to:</p> <ul style="list-style-type: none"> - Ensure compliance with regulatory authority's requirements; - Verify environmental performance through information on impacts as they occur; - Achieve the environmental performance objectives and targets that have been set; - Identify the responsibilities for the actions required; - Identify the means for conducting the actions (e.g. technical, financial and organisational resources); - Specify timeframes; - Respond to unforeseen events; - Specify procedures for amending the programme when necessary; and - Provide feedback for continual improvement in environmental performance. <p>In order to achieve the EMPr objectives, the scope of the EMPr will include the following:</p>

	<ul style="list-style-type: none"> - A definition of the environmental management objectives to be realized during the life of a project (i.e. pre-construction, construction, operation and/or decommissioning phases) in order to enhance benefits and minimise adverse environmental impacts; - A description of the management actions to achieve the environmental objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. The management actions will apply throughout the project lifecycle and will be feasible, practical and cost-effective and are based on the mitigation and enhancement actions identified in the BAR; - Mechanisms will be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes; - Clarification of institutional structures, roles and responsibilities, communication and reporting processes required as part of the implementation of the EMPr; - Description of the link between the EMPr and associated legislated requirements; and - Description of requirements for record keeping, reporting, review, auditing and updating of the EMPr. <p>The mitigation measures (management actions) will be aimed at eliminating, offsetting, or reducing adverse environmental impacts. The list below presents the range of approaches that will be used to manage the potential environmental impacts:</p> <ul style="list-style-type: none"> - Avoidance: Avoiding projects or activities that could result in adverse impacts; avoiding certain types of resources or areas considered to be environmentally sensitive. <p>Prevention: Measures aimed at preventing the occurrence of negative environmental impacts.</p> <ul style="list-style-type: none"> - Preservation: Preventing any future actions that might adversely affect an environmental resource. - Minimisation: Limiting or reducing the degree, extent, magnitude or duration of adverse impacts. - Rehabilitation: Repairing or enhancing affected resources, such as natural habitats or water sources
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	<ul style="list-style-type: none">- Restoration: Restoring affected resources to an earlier (and possibly more stable and productive) state, typically a 'pristine' condition.- Compensation: Creation, enhancement, or protection of the same type of resource at another suitable and acceptable location, compensating for lost resources. It should be noted that compensation may be a suitable mitigation measure for certain impacts of certain projects, but is often not a sustainable measure to implement. <p>The EMPr is a living document that will be periodically reviewed and updated as necessary and submitted to the Competent Authority for consideration. Updating the EMPr will typically occur following a near incident, change in process, or significant pollution event. The mitigation measures contained in the specialist studies will be incorporated into the EMPr where relevant to ensure that the management outcomes are aligned with the standards set.</p>
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j) Assessment of each identified potentially significant impact and risk

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

Activity	Description	Affected Environm ent	Potential Impact	Mitigation measures	Nature of Impact (Positive/Negative)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)
CONSTRUCTION AND OPERATIONAL PHASE											
Upgrading of Access Roads	Access roads that already exist will be upgraded.	Soil	Increased erosion of soils due to the removal of vegetation.	Ensure surface levelling after use to prevent soil erosion	N	2	2	2	6	4	24
		Natural Vegetation	Destruction and removal of natural vegetation during site clearance.	Route should be selected that a minimum number of bushes or trees are felled for roads.	N	2	2	3	7	4	28

		Surface Water	Potential siltation of surface run-off due to soil erosion.	Water bodies should be avoided when upgrading access roads. A buffer of 100m should be left undisturbed.	N	2	2	2	6	4	24
		Air Quality	Increased potential for dust emission due to wind erosion.	Dust suppression on roads with the use of water-roads should be sprayed with water.	N	2	2	2	6	4	24
Transportation of Equipment	The drilling operation will involve transportation of equipment to the project area.	Soil	Soil compaction due to the repetitive movement on gravel roads.	Vehicles and machinery should be adequately maintained to prevent spillages resulting in soil contamination.	N	2	2	4	8	4	32
		Interested and	Potential damage to roads caused	Equipment's should be transported using	N	3	3	3	9	4	36

		Affected Parties	by movement of heavy vehicles and continual use of vehicles moving to and from the site.	main roads and during off peak traffic hours.							
		Air Quality	Increased dust emissions due to entrainment of dust particles by the movement and operation of construction equipment.	<ul style="list-style-type: none"> Dust on roads should be suppressed with the use of water by a water cart truck. 	N	3	3	3	9	4	36
Construction of surface infrastructure.	This will involve vegetation clearing and topsoil removal to construct offices, a change house, etc.	Soil	Permanent compaction of soil in areas of infrastructure construction	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface will occur; 	N	3	3	3	9	5	45

				<ul style="list-style-type: none"> The topsoil removed for this activity should be stored within a bund area on higher ground of the drilling area, outside the 1:100 flood level, but within the boundaries of the project area; and Oil spills should be cleaned up immediately 							
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and	Topsoil should be removed from all areas where physical disturbance of the surface will occur	N	2	3	3	8	5	40

			leaching of soil nutrients.								
		Natural Vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.	Vegetation should be removed prior to topsoil removal in order to limit effects of site clearance.	N	3	3	3	9	5	45
		Surface Water	Altered surface flow dynamics around surface infrastructure; Potential contamination of surface water due to spillage of fluids.	<ul style="list-style-type: none"> • Surface infrastructure such as offices and camps should not be located closer than 100 metres from any water courses. • No construction within the 1:100 year flood-line 	N	2	3	3	8	5	40

		Groundwater	Potential groundwater contamination due to infiltration of fluid contaminated water.	Spillages should be cleaned up immediately.	N	4	4	4	12	5	60
		Air Quality	Dust from construction vehicles on gravel and secondary roads.	On windy days, especially during spring time between the months of September and October, wind can carry dust over a wider area, thus dust suppression by means of a water cart should be conducted on a daily basis to	N	3	3	4	10	5	50

				reduce dust emissions.							
Soil Removal and Stockpile	This will involve the removal of soil during site clearance.	Topography	Alteration of the local topography and disturbance of natural drainage lines.	Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance	N	2	5	3	10	4	40
		Visual	The creation of stockpiles alters the visual quality of the landscape.	Topsoil should be stockpiled in a designated area.	N	3	4	3	10	5	50
		Soil	Damage to the natural soil structure due to soil handling, removal and mixing of soil types and horizons; removal of vegetation	<ul style="list-style-type: none"> Topsoil should be removed from all areas where physical disturbance of the surface 	N	2	6	4	12	4	48

			causes a change in the water runoff characteristics of the site and increased probability of soil erosion. This leads to the loss of topsoil and an increase of siltation in the streams and rivers with the runoff carrying sediment; and Leaching of soil nutrients during long-term stockpiling.	<div>area will occur;</div> <ul style="list-style-type: none">• The topsoil removed should be stored in a bund wall on high ground in the project area outside the 1:100 flood level and should be protected from being blown away or being eroded;• Topsoil should be kept separate from subsoil								
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				<p>and should not be used for building or maintaining access roads;</p> <ul style="list-style-type: none">• Vegetate with diverse grass mix to control erosion; and• Topsoil fertility, biological quality should be monitored and a management plan should be implemented.							
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		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.	<ul style="list-style-type: none"> The topsoil removed should be stored in a bund wall on high ground in the project area outside the 1:100 flood level and should be protected from being blown away or being eroded for use for rehabilitation of site; Topsoil should be removed separately from sub-soils and should be stockpiled separately; and 	N	2	6	4	12	4	48
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				<ul style="list-style-type: none"> The stockpile should be grassed to protect the topsoil from wind and rain. 							
		Natural Vegetation	Damage to natural vegetation due to deposition of dust emitted during the tipping and stockpiling, restricting photosynthesis.	Vegetation should be removed prior to topsoil removal in order to limit the effects of site clearance on surface water flow dynamics.	N	2	6	4	12	3	36
		Animal Life	Potential direct impacts on threatened fauna species; Habitat disturbance and	<ul style="list-style-type: none"> Identification of sensitive species and habitats which need to be avoided should be 	N	2	3	3	8	4	32

			destruction; Potential disruption on birds nesting, foraging or roosting in project area.	conducted prior to topsoil removal.							
		Air Quality	Increased potential for dust emissions due to wind erosion during the tipping of soil into trucks and onto stockpiles, as well as exposure of stockpiles to wind erosion; and Potential increase of dust generation.	Topsoil stockpiles will be allowed to naturally vegetate in order to stabilise particles and reduce the risk of wind erosion.	N	2	3	4	9	5	45

		Noise	Potential increase of noise of hauling trucks to topsoil stockpile site.	Tipping of topsoil into stockpiles should occur between sunrises to sunset.	N	3	2	3	8	6	48
Placement of a fence	A fence will be constructed around the drilling site which will be limited to the demarcated area to protect the workings and prevent people and domestic animals from harm	Animal life	Potential limitation of movement for domestic animals to grazing areas. This is a positive impact as it will prevent movement of domestic animals into demarcated areas, thus preventing injury.	No mitigation is required. This is seen as a positive.	N	2	3	3	8	4	32

		Interested and Affected Parties	The fence could prevent access to communal agricultural fields and livelihood. Also, the fence will provide a safety factor, preventing access to areas where safety risks may occur.	No mitigation is possible.	N	3	4	3	10	5	50
		Groundwater	Potential groundwater contamination due to the infiltration of surface water contaminated with spilled	No mitigation is possible.	N	3	3	4	10	5	50

			hydrocarbons, chemicals.								
Use of Hydrocarbons, Chemicals	The use of hydrocarbons, chemicals will take place and these will be stored on site in designated storage areas.	Soil	Potential soil contamination.	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons used; and Storage of used oil/grease should be done in a designated bund site until removal. 	N	2	6	4	12	4	48
		Land Capability	Potential decreased land	<ul style="list-style-type: none"> Drip trays and designated 	N	2	6	4	12	4	48

			capability due to contaminated soil.	bund sites should be used to protect soils from hydrocarbons; and <ul style="list-style-type: none"> Storage of used oil/ grease should be done in a designated bund site until removal. 							
		Natural Vegetation	Potential damage due to natural vegetation and loss due to spillages of hydrocarbons, chemicals.	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/ grease should be done in a designated bund site until removal. 	N	2	6	4	12	4	48
		Animal Life	Potential injury or loss of	<ul style="list-style-type: none"> Drip trays and designated 	N	2	4	6	12	3	36

			animals due to spillages of hydrocarbons, chemicals.	bund sites should be used to protect soils from hydrocarbons; and <ul style="list-style-type: none"> • Storage of used oil/grease should be done in a designated bund site until removal; and • The storage area should be securely fenced. 							
		Surface Water	Potential contamination of surface water due to the spillage of hydrocarbons, chemicals or	<ul style="list-style-type: none"> • Drip trays and designated bund sites should be used to protect soils from 	N	4	4	4	12	4	48

			contaminated run-off sourced from contaminated soil.	hydrocarbons; and <ul style="list-style-type: none"> Storage of used oil/grease should be done in a designated bund site until removal. 							
		Groundwater	Potential groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.	<ul style="list-style-type: none"> Drip trays and designated bund sites should be used to protect soils from hydrocarbons; and Storage of used oil/grease 	N	4	5	5	14	4	56

				should be done in a designated bund site until removal.							
Access Roads	Existing Access Roads will be used to access the site and to transport equipment onto and off the site. If need be, they will be upgraded	Soil	Upgrading of existing roads too will cause a potential to result in soil erosion, soil loss.	Ensure surface levelling after use to prevent soil erosion.	N	2	2	2	6	4	24
		Land Capability	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle	<ul style="list-style-type: none"> Vehicles should be restricted to roads; and Minimal vegetation should be removed when 	N	3	3	3	9	4	36

			entrainment on haul roads.	clearing for access roads.							
		Natural Vegetation	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads; Site clearing and removal of topsoil could lead to soil erosion and soil loss.	Route should be selected that a minimum number of bushes or trees are felled for roads.	N	3	3	3	9	4	36
		Surface Water	Altered surface flow dynamics due to removal of topsoil and	Water bodies should be avoided when upgrading access roads. A	N	2	3	4	9	5	45

			topographical alterations and increased surface runoff from cleared areas; Potential surface water runoff over haul roads will result in erosion and consequent siltation of surface water resources; Potential contamination of surface water runoff from hauls roads due to the spillage of hydrocarbons from vehicles	buffer of 100m should be left undisturbed.							
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			travelling on haul roads.								
		Air Quality	Potential dust pollution caused by construction vehicles	Dust suppression on roads with the use of water-roads should be sprayed with water.	N	3	3	4	10	4	40
		Noise	Potential elevated noise levels due to continuous vehicular movement on haul roads.	Usage of roads by trucks should be restricted to between sunrise and sunset.	N	3	3	3	9	5	45
		Interested and Affected Parties	Potential damage to roads could impact safety of people and animals.	Trucks should be restricted to between sunrise and sunset.	N	2	3	3	8	5	40

Drilling, pitting and Trenching	The use of machinery to dig up soil (either soft or hard) to extract materials/minerals	soil	Removal of topsoil could damage the natural soil structure due to soil handling, removal and mixing of soil types and horizons resulting in increased erosion of soils due to damage to the natural soil structure; potential soil contamination sourced from hydrocarbons	<ul style="list-style-type: none"> •The topsoil removed should be stored within an area on higher ground of the drilling area, outside the 1:100 flood level, but within the boundaries of the project area; •Drip trays and designated bund sites should be used to protect soils from hydrocarbons; •Storage of used oil/ grease should be done in a designated bund area until removal; 	N	2	6	4	12	5	60
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				<ul style="list-style-type: none"> During rehabilitation, soil should be replaced in a manner that will promote the natural growth of vegetation. 							
		Land capability	Decreased land capability due to damage to natural soil structure and soil loss through wind and water erosion	Soil should be replaced in a manner that will promote natural growth of vegetation;	N	2	6	4	12	5	60
		Surface water	Potential contamination of surface water due to spillage of fluids.	Water courses should be avoided. Drilling should not take place within 100m from a water source	N	4	5	5	14	4	56

		Air quality	Potential pollutants of air from machinery and vehicular emissions.	Dust emissions from trucks and bakkies on dusty roads will be suppressed by water spraying.	N	4	5	5	14	4	56
		Natural vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.	No unnecessary disturbance of vegetation during drilling activities, thus, the removal of vegetation should be limited; Rehabilitation should be done to promote natural vegetation establishment	N	2	5	4	11	5	55
		Animal life	Disruption of animal habitats such as nests and breeding grounds	Identification of sensitive species and habitats which need to be avoided; and there	N	2	4	6	12	4	48

			(potential modification, fragmentation, and reduction of habitat).	should be no unnecessary disturbance on animal habitats such as nests and breeding grounds.							
DECOMMISSIONING AND CLOSURE											
Rehabilitation	All areas disturbed will be rehabilitated to its original state with the waste rock and topsoil stockpiles. Roads should be ripped Or ploughed and fertilised if necessary to promote re-growth of vegetation.	Soil and Vegetation	Positive impact as topsoil will be replaced to enhance vegetation growth.	Soils have to be levelled and indigenous plants should be planted to cover the bare soil	N	2	3	3	8	4	32
		Animal Life	Positive impact as vegetation will re-establish itself and the natural Fauna will gradually return to the	No animal life should be tempered with and area to be rehabilitated in a manner that supports animal habitat within it.	N	2	2	2	6	4	24

			rehabilitated sites.								
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The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix A**

k) Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE BAR REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
N/A	N/A	N/A	N/A

No specialist reports were done due to the following reason:

After doing site visits doing proper assessment of the area and meeting with the relevant people, its was concluded that no specialist reports will be required since no environmental sensitive areas were identified, and the proposed activities do not trigger any notices that might require specialist studies.

l) Environmental impact statement

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

The activities which cover a small scale of the area, will not pose any permanent damage to the environment, only a small area equalling to 100 Hectares will be utilised and it will be rehabilitated simultaneously with the drillings, mitigation processes will be implemented in cases wherein the environment is affected, a rehabilitation programme will also be put in place, for affected area i.e drilled areas.

(ii) Final Site Map

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

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

Positive impacts

The site layout is designed in such a way that the drilling area will be far from the residential and agricultural activities, there will be minimal noise pollution and air pollution in the form of dust will be regularly suppressed using water sprays.

Negative impacts

The only negative impacts will be the noise and dust pollution which will be kept under control, to enable nearby farm owners/ community members to proceed with their normal activities with minimal disturbance.

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

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

Objectives

- To ensure that there is minimal damage to the environment.
- To have a mitigation strategy that can sustain the natural environment.
- To ensure that the water resources are not affected by the drilling activities
- To ensure that the identified structure and infrastructures are left intact, even after the drilling activities have ceased.
- To promote vegetation growth suitable for agricultural activities
- To ensure that the environment is rehabilitated to its normal state.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

-Water from the nearby river will not be used for the proposed drilling activities.

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

(Which relate to the assessment and mitigation measures proposed)

-Up to date there are not assumptions, uncertainties or gaps in knowledge with regard to the proposed activities, if in future the need arises for further assessment of the impacts, a specialist will be employed to make the relevant assessments and mitigation strategies.

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

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

This activity should be authorised given the following reasons:

- The project has minimal impacts on the environment
- All the activities will be in accordance to section 24b of the National Environmental Act 107 of 1998.
- Mitigation strategies are in place in cases wherein they need to be utilised.
- A rehabilitation plan will be implemented simultaneously, to ensure maximum environmental maintenance.

ii) Conditions that must be included in the authorisation

None

q) Period for which the Environmental Authorisation is required.

The authorisation is required for a maximum of 5 years.

r) Undertaking

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

I **Humphrey Mathada**, hereby confirm that the information provided is correct.

s) Financial Provision

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

With the determination of the quantum for closure it must be assumed that the infrastructure has no salvage value (clean closure). The closure cost estimate (clean closure) was determined in accordance with the DMR guidelines and is based, where possible, on actual costs provided by a third party contractor. The closure costs are estimated as follows: **R 63,254.00**

i) Explain how the aforesaid amount was derived.

- **Method of Assessment**

As mentioned before, the applicant made use of the Guideline Document for the Evaluation of Financial Provisions made by the Mining Industry. The following table presents the step-by-step details on how the financial provision has been derived. For the purposes of determining the quantum for closures, it is assumed that the infrastructure will have no salvage value.

Table 1: Method of assessment of financial provision

Step	Description	DRM Applicable Table	Outcomes
1	Determine primary mineral and saleable mineral by-products	Table B.12	Low Risk
2	Determine Risk Class	Table B.12	Primary Risk Class: C (Small operation, no waste, no processing). Risk Class C is considered a low risk with a low probability of occurrence of the impact with a negligible consequence.
3	Determine the Area Sensitivity	Table B.4	Medium to High Sensitivity.
4.1	Determine the level of information	N/A	Limited information is available which is based on desktop investigations and consultation with stakeholders.
4.2	Determine the closure components	Table B.5	
4.3	Determine the unit rates closure components	Table B.6	
4.4	Determine and apply the weighting factors	Table B.7 Table B.8	Weighting factor 1 (Nature of the terrain): 1 (generally flat terrain) Weighting factor 2 (Peri-urban, less than 150km from a developed urban area): 1.05(Rural/Urban).
4.5	Identify areas of disturbance	N/A	No areas of disturbance are considered in this assessment. The area in which the prospecting activities are planned is considered to be undisturbed.
4.6	Identify closure costs from specialist studies	Table B.9	Due to the fact that the operation in question is only a prospecting operation, no residual impacts should take place. During the Life of Prospecting and ongoing rehabilitation, the self-

			succession results should be assessed and monitored. If self-succession does not take place satisfactorily the client may be subjected to additional specialist investigations (ecological and pedology) to determine seeding and re-vegetation requirements.
4.7	Calculate Closure Costs	Table B.10	See the following section.

- **Quantity Estimation**

For the purposes of this assessment, the applicant can confirm that the method adopted to obtain and compile the schedule of quantities is sound, correct, and provides detail that is required by the DMR. The information will allow for continued monitoring and updating of quantities and provides the ideal platform to manage and monitor the actual on-site rehabilitation measures and costs incurred.

- **Determination of Rates**

The method of determining the applicable rehabilitation rates is based on practical experience and information by third party contractors.

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CALCULATION OF THE QUANTUM

Applicant: **Gadebe Investments cc**
 Evaluator: **Humphrey Mathada**

Ref no: **NW
30/5/1/1/2/12982
PR**

No.	Description	Unit	A	B	C	D	E=A*B*C*
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	R 16	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	R 228	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	R 336	1	1	0
3	Rehabilitation of access roads	m2	1000	R 41	1	1	32000
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	R 395	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	R216	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	R455	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	R238697	1	1	0
7	Sealing of shafts audits and inclines	m3	0	R122	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,01	R159131	1	1	159,131
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R198195	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	R575653	1	1	0

9	Rehabilitation of subsided areas	ha	0,05	R133249	1	1	666,245
10	General surface rehabilitation	ha	0,06	R126059	1	1	7561,74
11	River diversions	ha	0	R126029	1	1	0
12	Fencing	m	0	R144	1	1	0
13	Water management	ha	0	R47931	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0,08	R16776	1	1	1054,3528
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							45480,6571

1	Preliminary and General	5457,678852	weighting factor 2	5457,678852
			1	
2	Contingencies	4548,06571		4548,06571
Subtotal 2				55486,40
VAT (14%)				7768,10
Grand Total				63254

- ii) **Confirm that this amount can be provided for from operating expenditure.** (Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Drilling work programme, Financial and Technical Competence Report as the case may be).

-I hereby confirm that the amount is available to be paid either as cash or reserved by the bank for the DMR as the rehabilitation bond guarantee.

t) Specific Information required by the competent Authority

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

(1) Impact on the socio-economic conditions of any directly affected person. (Provide the results of Investigation, assessment, and evaluation of the impact of the drilling, on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim,.

The project will have an impact on the socio economic conditions, the drilling activities could have a partial impact on the farmer/land owner. In such cases an agreement to compensate the farmer can be entered into with the applicant

However looking on the positive side, this project will have a positive impact on the unemployed members of the community and our economy, since it will generate more jobs.

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

South African Heritage resource agency has been consulted and given 30 days to provide us with the report of any historical sacred areas that we should be aware of. According to

the Wikipedia research records, the proposed area does not have any historical aspects that can be deemed sacred areas.

Proper consultations with the nearby farm owners/land owners has been conducted in order to find out if there are any heritage sites or graves, that might be affected by the drilling activities, further consultation is still underway as we are awaiting further comments from the farm owner. However once comments are received we will take further precautions in ensuring that such areas are not affected by the proposed drilling activities.

u) Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix A**).

The Environmental Assessment Practitioner is a holder of Bachelor of Earth Sciences in Mining and Environmental Geology, with an experience in the sector of over 6 years, if ever there are issues that are beyond the practitioner knowledge, assistance will be sourced from the other Environmentalists and geologists.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

Details provided in Part A, section 1(a)

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

Provided in Part A of the Basic Assessment report.

c) Composite Map

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

In this case there are no identified sensitive areas near the targeted areas, in a case that such areas are identified, a buffer zone of approximately 100m will be applied to protect the sensitive areas.

d) Description of Impact management objectives including management statements

- i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

The closure objectives include the following:

1. To comply with local regulatory requirements and international best practice;
2. To address all relevant stakeholder issues and concerns;
3. To identify all knowledge gaps that require further investigation;
4. Form active partnerships with local communities where possible;
5. To implement progressive rehabilitation measures, leaving a safe and stable environment for communities and animals;
6. To ensure that the rehabilitation efforts do not impact adversely on public and employee health, safety and welfare;
7. To prevent or mitigate adverse environmental effects;
8. To maintain and monitor all rehabilitated areas and to ensure closure objectives are met;

9. To enhance positive socio-economic impacts in the area in which the operation is located following decommissioning and subsequent rehabilitation and closure by achieving sustainable land-use conditions similar to that which existing prior to the drilling, or alternatively as agreed with the applicable government regulator and affected communities; and
10. To avoid or minimise costs and long-term liabilities to the company and to the government and public.

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

Approximately 4000-5000 litres of water will be required per day, especially for dust suppressing.

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

A water use licence will not be necessary in this case as the water will be sourced from outside (municipality) and supplied on a regular basis for use during drilling.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For drilling,- drillings, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Constructi on' Constructi on, Operationa l, Rehabilitat ion,</p>	<p>ce (volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of drilling, rare earth prospecting as the case may be.</p>

plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Closure, Post closure).				
Drilling site	Operational	30 Ha	Backfilling	Ensuring that overburden and processed soil is being stockpiled	Ongoing simultaneously , with the drillings
Campsite/offices space rehabilitation	Closure	600 m ²	Removal of structures	Ensuring that there are no structures that were not initially there	3 month from closure date
Access roads	Closure	1500m ²	Backfilling and revegetation	Ensuring that the environment adapts to the surrounding environment.	Closure

e) Impact Management Outcomes

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

ACTIVITY (Whether listed or not listed).	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	MITIGATION TYPE (modify, remedy, control, or stop) through (E.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. • Modify through alternative method. • Control through noise control	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
(E.g. Drillings, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines,					

conveyors, etc...etc...etc.).				<ul style="list-style-type: none"> • Control through management and monitoring • Remedy through rehabilitation. 	
Drillings	Surface disturbance	Topography	Operational	The drilled areas will be plugged and backfilled simultaneously	Area will be rehabilitated to its original form
Haulage trucks	Dust, surface water contamination and noise	Vegetation	Operational	-Noise will be kept at the allowed minimal rate -Water will be used to suppress dust.	Dust , noise and contamination will be prevented or minimised
Ablution	Groundwater contamination	groundwater	Operational	-Chemical toilet will be serviced regularly to prevent leakage	Groundwater contamination will be prevented
Stockpiles	Groundwater contamination	Groundwater	Operational	No contaminated soil will be kept onsite, contaminated soil will be discarded at the municipal landfills	Groundwater contamination will be prevented

f) Impact Management Actions

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

ACTIVITY whether listed or not listed.	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. • Modify through alternative method. • Control through noise control • Control through management and	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
(E.g. Drillings, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).				

		monitoring Remedy through rehabilitation.	or Upon the cessation of drilling, rare earth prospecting as the case may be.	
Drillings	Surface disturbance	The drilled areas will be plugged and backfilled simultaneously	Operational	GNR 983
Haulage trucks	Dust, surface water contamination and noise	-Noise will be kept at the allowed minimal	Operational	GNR 983
-Water will be used to suppress dust.	Dust , noise and contamination will be prevented or minimised	-Water will be used to suppress dust.	Operational	GNR 983
Ablution	Groundwater contamination	-Chemical toilet will be serviced regularly to prevent leakage	operational	GNR 983
Stockpiles	Groundwater contamination	No contaminated soil will be kept onsite, contaminated soil will be discarded at the municipal landfills	Operational	GNR 983

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The closure objectives include the following:

1. To comply with local regulatory requirements and international best practice;
2. To address all relevant stakeholder issues and concerns;
3. To identify all knowledge gaps that require further investigation;
4. Form active partnerships with local communities where possible;
5. To implement progressive rehabilitation measures, leaving a safe and stable environment for communities and animals;
6. To ensure that the rehabilitation efforts do not impact adversely on public and employee health, safety and welfare;
7. To prevent or mitigate adverse environmental effects;
8. To maintain and monitor all rehabilitated areas and to ensure closure objectives are met;
9. To enhance positive socio-economic impacts in the area in which the operation is located following decommissioning and subsequent rehabilitation and closure by achieving sustainable land-use conditions similar to that which existing prior to the drilling, or alternatively as agreed with the applicable government regulator and affected communities; and
10. To avoid or minimise costs and long-term liabilities to the company and to the government and public.

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

I hereby confirm that the closure objective have been communicated and that they will further be discussed with the farm owners. A copy of the BAR will be made available to the farm owners.

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

The closure methods for infrastructure and rehabilitation and its associated costing was based on the Department of Mineral Resources (DMR) guidelines set out by the DMR in

the “Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine” (2005). This has been described below:

General rehabilitation

General surface rehabilitation must involve the shaping of the surface topography to match the surrounding landscape and 300mm of topsoil, where available, need to be added to the site. During the process of shaping the landscape proper drainage lines must be properly reinstated into the topography. Any heaps of excess material also need to be removed, this all so that effective re-vegetation can take place.

Maintenance and Aftercare

Maintenance and aftercare must be planned for 1 year after drilling has ceased. Maintenance will specifically focus on vegetation, on rehabilitated areas, as well as any alien vegetation that needs to be controlled.

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

The objective is to reinstate the area back to its original form, with concurrent rehabilitation, that can be achieved because that will minimise time and cost of rehabilitation after the drilling activities have ceased.

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

An amount of **R 63 254** will be allocated for the rehabilitation of the project area after the drilling activities have ceased.

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

The applicant hereby confirm that the financial provision will be provided as determined.

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

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Soil Erosion	Monitoring of erosion	Field mapping, visual inspections	Eradication plan	Seasonal (ongoing)
Vegetation	Vegetation monitoring	Visual inspection	Assess degradation of vegetation	Monthly (ongoing)
Re-vegetation	All cleared and revegetated areas monitoring	Visual inspection, survey map	Plot on a map, areas treated and those that need to be treated.	Monthly (ongoing)
Waste disposal	Domestic waste monitoring	All waste to be collected per week	Weekly disposal of waste	Weekly (ongoing)

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Equipment	Efficiency monitoring	Regular service and visual monitoring	Regularly, and when the need arises	Monthly (ongoing until closure)

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

-An environmental performance assessment report should be submitted annually to the DMR.

m) Environmental Awareness Plan

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

- Induction processes will be conducted with the employees in order to train them to be able to identify environmental impacts, how to mitigate them and how to prevent them.
- Environmental awareness posts will be made available at the offices.
- Warning placards will be pasted in designated areas around the drilling area.
- Short courses will be offered to some of the employees depending on their needs and responsibilities.

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

-Rehabilitation and mitigation strategies will be put in place beforehand, a monitoring programme will be put in place in order to monitor the risk, once identified, proper/relevant mitigation strategies will be implemented, if the impact is too high, a rehabilitation plan will be implemented to remedy the affected area.

n) Specific information required by the Competent Authority

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

-The financial provision will be reviewed annually and submitted to the DMR.

-An environmental performance assessment report should be submitted annually to the DMR

2) UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports ☐x
- b) the inclusion of comments and inputs from stakeholders and I&APs; ☐x

- c) the inclusion of inputs and recommendations from the specialist reports where relevant;
☐Xand
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein. ☐X



Signature of the environmental assessment practitioner:

Murunzi Consulting (Pty) Ltd

Name of company:

20 October 2021

Date:

-END-