



## mineral resources

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: NARE YA BOPEDI (PTY) LTD

REFERENCE NUMBER: NC 30/5/1/1/2/11133 PR

# ENVIRONMENTAL MANAGEMENT PLAN

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SUBMITTED IN TERMS OF SECTION 39 AND OF  
REGULATION 52 OF THE MINERAL AND  
PETROLEUM RESOURCES DEVELOPMENT ACT,  
2002, (ACT NO. 28 OF 2002) (THE ACT)

**Farms:** Onder Ongelik 28 ptn 0,1,2 ,  
Plaas 21 ptn 0, Plaas 17 ptn 17; Doornvallei 30 ptn 0, Goras 16 ptn 1  
Grove 89 ptn 0, 1,2; Bergfontein 4 ptn 1 and 2; Hazedell 101 ptn 0,1;  
Rosendal

**Mineral:** Manganese and Iron Ore

**Date:** 2 May 2014

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## INTRODUCTION

### IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED

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### PROPERTY DESCRIPTION FOR THE PROPOSED OPERATIONAL AREA

FARM NAME	PORTION
Onder Ongeluk 28,	Portion 0, 1, 2
Plaas 21	Remaining Extent
Plaas 17	Remaining Extent
Doornvallei 30	Remaining Extent
Goras 16	Remaining Extent
Grove 89	Portion 0, 1
Hazeldell 101	Portion 0, 1
Bergfontein 4	Portion 0, 1, 2
Rosendal 27	Whole Farm

## A. COMPLIANCE WITH SECTION 39(4)(A)(I) OF THE ACT.

### 1. SECTION 39(3)(A)

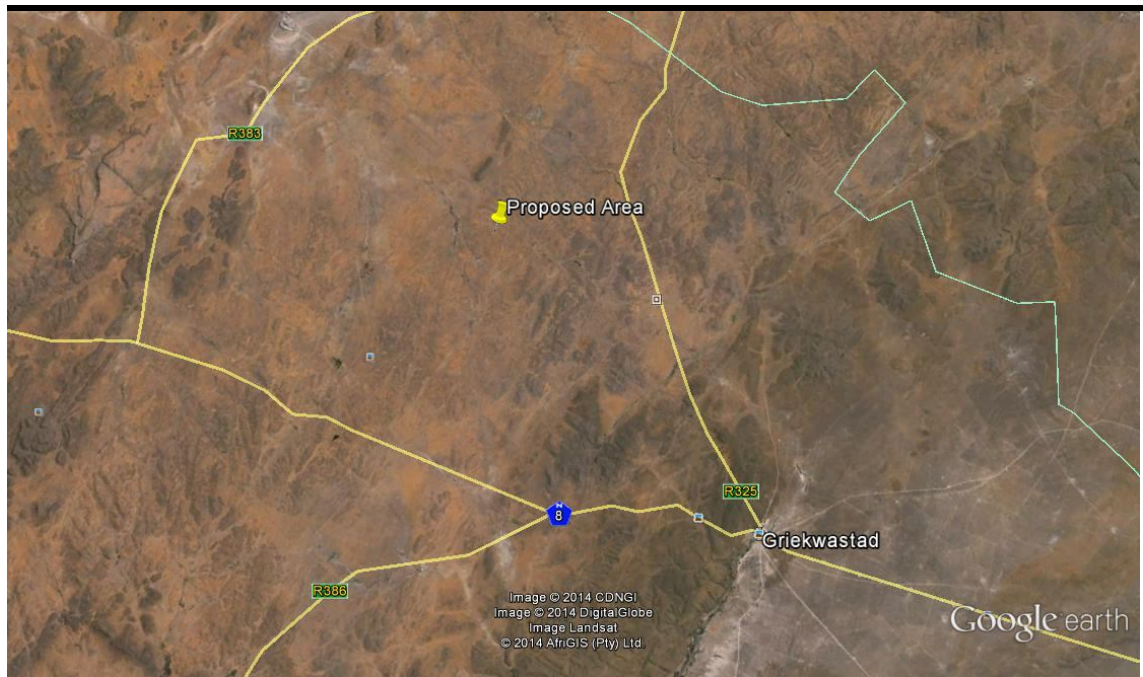
*Section 39(3)(a) of the Act, read together with Regulation 52(2)(a) and 52(2)(c), requires the establishment of baseline information concerning the affected environment, to determine protection, remedial measures, and environmental management objectives. You are herewith required to-*

#### 1.1. ENVIRONMENT ON THE SITE RELATIVE TO THE ENVIRONMENT IN THE SURROUNDING AREA (REGULATION 2(2) PLAN - ATTACHED)

The site is characterized by undisturbed lands. The site is located approximately 30km north of the town Griekwastad, located within the borders of the Siyancuma Local Municipality, in the Northern Cape Province.

Agricultural land is located directly adjacent to the northern and western boundary of the site. Grazing is located to the eastern side of the area. The Northern Cape's weather is typical of semi-desert and desert areas. Rainfall occurs predominantly in summer and autumn and winters are typically very dry from such low temperatures by resprouting with the onset of spring.

**FIGURE 1 PROSPECTING AREA**



Several major transport routes exist in the surrounding area, and are as follows:

- The N8 to the south of proposed application area
- R325 between Griekwastad and Postmusburg

### **Climate**

The Northern Cape's weather is typical of semi-desert and desert areas. Rainfall occur predominantly in summer and autumn and winters are typically very dry. Mean annual rainfall in the area is between 289 mm and 371 mm, with monthly precipitation between 0 mm and 160 mm. The hottest month in summer is generally January (day-time temperatures of approximately 32°C) and the coldest month in winter is generally June (day time temperature is approximately 18°C). Frequent frists occurs during the winter months and humidity levels are generally very low, leading to a high number of cloud –free days per year.

### **Landscape and Topography**

The site area lies at approximately 1,500 m above mean sea level. The landscape of the site and surrounds is undulating. Low-lying areas are grassy in their appearance whilst hill slops and higher ground feature taller, woody vegetation. Land-use in the area is predominantly pastoral farming with scattered farmsteads and small settlements. looking from a low escarpment which runs north-south to the east of the site, across the low-lying site area to the next rise in the distance toward the west.

### **Geology and Soils**

Soils at the site are generally dry and sandy. The underlying geology of the area forms part of the Ongeluk formation (part of the Transvaal Supergroup) which consists almost entirely of andesitic lava with some zones of Jasper and agglomerate. The geology of the Ongeluk formation is largely defined by slow mechanical weathering rather than chemical weathering (which often occurs in areas with higher rainfall) and ground conditions can be hard, depending on local conditions.

### **Hydrology, Surface Water and Groundwater**

There is an un-named non-perennial river to the northwest of the site, part of which may flow close to the western boundary of the site during times of flood. To the west of the site there is a smaller non-perennial tributary which runs west to east.

There are a number of low depressions within the site that may hold ephemeral waterbodies (pans) at certain times of the year, during and immediately after the rains. There is permanent standing water in farm dams at the cattle kraals on site As discussed above the geology includes andesitic lava which commonly decomposes to clayematerial which generally has a very low permeability.

Groundwater associated with the intergranular and fractured aquifer at this site is associated with joints, fractures and contact zones. The Department of Water Affairs and Forestry map classifies the regional aquifer as a minor aquifer with least vulnerability and low susceptibility

## Flora and Fauna

The site lies within the Eastern Kalahari Bushveld bioregion of the Savanna Biome of South Africa. This type of savannah has an herbaceous layer which is usually dominated by grass species, and a discontinuous or open tree layer. Two different vegetation types occur within the region: Olifantshoek Plains Thornveld; and Kuruman Mountain Bushveld. Both vegetation types have a conservation status of Least Threatened.

Olifantshoek Plains Thornveld occurs on the plains of the Northern Cape, including most of the Korannaberg, Langeberg and Asbestos Mountains, as well as those of some ridges to the west of the Langeberg. It is located in the area from the vicinity of Sonstraal in the north, past Olifantshoek to the areas north of Niekerkshoop between Volop and Griekwastad in the south, as well as from Griekwastad northwards to the flats west of the Lime Acres area.

The vegetation consists of a very wide and diverse unit located on plains with usually open tree and shrub layers with, for example, *Acacia luederitzii*, *Boscia albitrunca* and *Rhus tenuinervis* and a sparse grass layer.

Kuruman Mountain Bushveld occurs in the Northern Cape and North-West Provinces from the Asbestos Mountains southwest and northwest of Griekwastad, along the Kuruman Hills north of Danielskuil, passing west of Kuruman town and re-emerging as isolated hills. The vegetation is found on gentle to moderate slopes and hill pediment areas with an open shrubveld with *Lebeckia macrantha* prominent in some places and a well developed grass layer

The habitat in the site area features open grassland in the lower lying areas; slightly higher ground supports an increased frequency of trees and shrubs including mature *Acacia* trees. Although these trees only grow to around 5 m in height they are very slow growing and many mature specimens are present within the site area, particularly in the slightly raised areas on the southeast of the site. Within the site area evidence of grazing pressure can be seen in the form of relatively open grass and herb layers and a network of animal paths through the vegetation.

Typical fauna associated with the habitats that are supported by the site area is likely to include breeding and foraging birds, small rodents, reptiles and small mammals including antelope. Predators that hold territory in the area are known to include raptors and black-backed jackal (*Canis mesomelas*).

### Protected Nature Conversation Areas

There are no protected areas within the site or near surrounds. There are a number of reserves and conservation areas within the wider region Witsand Nature Reserve and Kalahari Mountain Ecotrail (located approximately 100 km west of the site) and Tswalu Kalahari Reserve (located approximately 140 km north of the site).

### **Visual and Aesthetic Landscape Impacts**

Although there are existing man made features including power lines, a railway, roads and a telecommunication tower in the local landscape, the proposed development would result in a small significant change to the local landscape character.



### **Noise**

Noise in the area is caused by traffic from the R325 district roads and normal routine vehicle noises. Agricultural activities such as the cultivation of lands and harvesting of crops along with contribute a low scale source of noise to the ambient level. Potential receptors which might be affected by the proposed prospecting operation are the farmers and the local residents of the neighbouring farms and the farm workers.

### **Visual Aspects (Aesthetics)**

The proposed prospecting area is associated with grasslands and agricultural activities.

### **Heritage Aspects**

No graves have been identified up to this stage. Any graves would be clearly demarcated; however no prospecting activities would take place within 100 meters from any graves or possible heritage resources. On granting of the prospecting right, the South African Heritage Resources Agency (SAHRA) would be notified of any such sites and comments received from SAHRA will further be considered.

## **1.2. SPECIFIC ENVIRONMENTAL FEATURES ON THE SITE APPLIED FOR WHICH MAY REQUIRE PROTECTION, REMEDIATION, MANAGEMENT OR AVOIDANCE**

If any of the following exist on site buffer zones as stipulated will be created and all necessary precautions will be taken to ensure that these areas are not disturbed.

- A buffer zone of 100m from and around wetlands.
- A buffer zone of 100m metres from rivers and streams, outside the floodplain and above the 1:50 year flood level mark.
- A buffer zone of 100m around dams and pans.
- A buffer zone of 100m around heritage sites, including buildings older than 60 years and cemeteries (grave sites).
- A buffer zone of 100m around farmsteads and all other residential areas.
- All conservation and other protected areas.
- A buffer zone of 5m around national, provincial and farm roads.
- Steep sloping mountainous terrain.
- The servitudes of all buried telephone lines, pipelines and other public utilities.

### 1.3. CLOSURE OR END USE OBJECTIVES FOR THE SITE APPLIED FOR AS GUIDED BY THE BASELINE STUDY

There will be no significant change to the environment following prospecting therefore the land use will not be changed or compromised by the proposed prospecting operation.

#### **Bio-physical environment**

Post-closure land use will continue as prior to prospecting. Such measures could entail the correct sealing of the boreholes at a depth that would allow uninterrupted ploughing over the drill sites and ensure that a preferential flow path for water is not caused.

#### **Geology**

During the decommissioning phase and rehabilitation of the drilling sites there will be no impact on the geology of the site as no further activities will be carried out which will impact the lower geological levels. Rehabilitation of each of the drilling sites will focus on the plugging of the hole and stabilisation of the disturbed area.

#### **Soils**

As part of the rehabilitation phase, the excavated soils will be replaced. No further impact is expected on the soils during the decommissioning phase. Although returning the soil to the excavated area is a positive impact, the soil will have been disturbed during the previous phases and will not be restored to its original pre-drilling state. The impact therefore has a positive significance during the decommissioning phase, but however remains negative once the prospecting activity has been completed.

#### **Land Capability**

There will be an on-going residual impact on the capability of the land during (and probably after) the decommissioning phase, as the rehabilitated areas will not again attain the pre-drilled land capability. The capability of land affected by the drilling will not be able to be totally mitigated and will be related to small portions within the drilling site boundaries. Although the impact will be positive during the decommissioning phase, impacts on the land capability will remain negative (low level of significance) as it will not be able to return to its pre-drilled capability.

#### **Land Use**

The use of land will directly revert back to grazing of domestic livestock and planting of crops during the decommissioning phase, as the drill sites will not be fenced off (enclosure). As per the soil impact, the significance of the impact will be greatly reduced from the construction and operational phases. Although rehabilitation will have a positive impact on the land use during the decommissioning phase, the land use will be allowed to return to its pre-drilled use and therefore no impact will remain after drilling and rehabilitation has been completed.

### **Vegetation**

The disturbed areas will be encouraged to re-establish indigenous vegetation. The activity (of rehabilitation) will be limited to the drilling sites and new roads leading to these sites if constructed. It has a small (positive) level of significance when regarded after the operational phase. In time the vegetation could approach its pre-drilled state of biodiversity and therefore no significant impact will remain in the long term. The decommissioning phase will have a positive impact though.

### **Animal Life**

The indigenous animal life will be encouraged to re-inhabit the site as the rehabilitation efforts continue to aim at re-establishing their habitat. The pre-drilled biodiversity associated with the site will most probably be re-established over an extended period of time as the area disturbed in relation to the pre-drilled environment is small. It is foreseen that animal life will return to the site in time and that the impact on the animal life will therefore be of relatively short duration and will be limited to the drilling sites and adjacent areas.

### **Surface Water**

The rehabilitation activities will not have a significant, negative impact on of the surface water features.

### **Ground Water**

Rehabilitation activities will not have a direct, negative impact on the ground water resource of the drill sites and the prospecting area, as the drill holes will have been plugged. The quantities of water which may be impacted on (with regards to infiltration into the ground water) are of negligible quantities in relation to the catchment quantity. This relates mainly to the small extent of the drill sites. As the remaining soil is not of an aggressive nature, no hazardous or aggressive solution will form if any water infiltrates to the ground water.

### **Air Quality**

Very little (– if any) dust will be created during rehabilitation activities by the activities carried out by hand due to the small extent. There will be no demolition of (unwanted) structures. The impact will remain for a short duration and be of a small magnitude and will be mitigated by dust suppression measures implemented during rehabilitation activities where necessary. No industrial emissions are expected to be associated with the decommissioning phase of the proposed activities. Rehabilitation activities will have a low to very low impact on the air quality.

### **Noise**

Noise during the rehabilitation phase will be limited to the machinery (transport vehicle) and (hand) equipment required for refilling the water recycling sumps and landscaping the disturbed areas. The noise generated during this phase will be of relatively short duration and will be much less than the noise generated during the operational phase. The impact will therefore have a much lower significance rating.

### **Sensitive Landscapes**

There will be no impact on any sensitive landscapes during the decommissioning phase as no prospecting activities would have been carried out in sensitive environments.

### **Visual Aspects**

As rehabilitation continues the visual impact and sense of place of the site will increasingly resemble the pre-drilled landscape and sense of place. Rehabilitation activities will therefore have a positive impact (with a low level of significance) on the visual environment which has been disturbed during operational phase. Rehabilitation efforts will mitigate the visual impact by aiming to transform the site back to an area which has a natural sense of place and appeal.

Although the impact extends to receptors far beyond the site boundaries the significance rating of the impact is greatly reduced by the short duration and reversibility of the impact.

## **2. SECTION 39(3)(B)(I)**

*Section 39(3)(b)(i), read together with Section 39(3)(d)(1) of the Act, requires the identification of all actions, activities or processes which may cause pollution or environmental degradation. You are herewith required to provide-*

### **2.1. THE MAIN PROSPECTING ACTIVITIES**

The proposed prospecting activity on the area under application will comprise of the following non-invasive and invasive activities:

#### **Non-invasive prospecting activities**

The following non-invasive activities are planned for the proposed prospecting program:

- Data collection, geological interpretation and projection
- Geological mapping and surface sampling
- Review of all published and unpublished literature

#### **Invasive prospecting activities**

##### *Drilling*

The principal prospecting activity will be Diamond drilling. Diamond drilling is frequently used for holes greater than 20m in depth and is the most common of exploratory drilling methods.

A total of 30 boreholes will be drilled. Depending on the results more boreholes can be required. Each borehole will be approximately 50m deep.

Before any diamond drilling work commences, Nare Ya Bopedi (Pty) Ltd will consult with the registered surface rights owners and notify them of the company's intentions to prospect within their land/area. The geologists together with the drilling contractors will compile an HSEC (Health, safety, environment and community) risk assessment, sign it and attend the HSEC induction.

Drilling will be done during the day and no drilling will take place at night due to health and safety issues. Drilling will be carried out in 2 phases:

- Phase 1 drilling (approximately 12 months) is done to determine the nature and abundance of the minerals in the target area, a total of 15 boreholes will be drilled.
- Phase 2 (up to 12 months), 15 more boreholes will be drilled to determine the size, continuity, competency, grade and metallurgy of the deposit and if it can be extracted at a profit.

### **Time frames**

The prospecting programme will be divided into four successive phases extending over a period of 3 years as proposed. The phases will be divided as follows:

**TABLE 1 TIME FRAMES FOR PROSPECTING ACTIVITIES**

<b>PHASE</b>	<b>MAIN ACTIVITIES</b>	<b>TIMEFRAME</b>
1	Desktop study	Month 1 – 6 (6 months)
2	Diamond drilling	Month 7 – 18 (12 months)
3	Infill diamond drilling	Month 19- 30 (12 months)
4	Evaluation and prefeasibility.	Month 31 – 36 (6 months)

## **2.2. A PLAN SHOWING THE LOCATION AND AERIAL EXTENT OF THE MAIN ACTIVITIES**

See attached Regulation 2(2) Plan (Appendix A)

### 2.3. A CATEGORIZATION RELATIVE TO THE LIST OF MAIN PROSPECTING ACTIVITIES (CONSTRUCTION, OPERATIONAL AND CLOSURE PHASES)

**TABLE 2 A CATEGORIZATION RELATIVE TO THE LIST OF MAIN PROSPECTING ACTIVITIES**

PHASE	ACTIVITY	TIMEFRAME	
Phase 1: Desktop study	<ul style="list-style-type: none"> <li>Obtain and interpret all relevant geological data.</li> <li>Field Geological Mapping of all rock outcrops</li> <li>Ground magnetic survey and interpretation of data</li> <li>Data Interpretation and Planning</li> </ul>	Month 1 – 12 (12 months)	Construction
Phase 2: Diamond drilling	<ul style="list-style-type: none"> <li>Drilling of 15 core drill holes</li> <li>Logging of drill chips and lithological description &amp; interpretation.</li> <li>Rehabilitation of Drilling Sites by sealing of boreholes and clean-up and restoration.</li> <li>Data Interpretation and Resource Modelling</li> </ul>	Month 13 – 18 (6 months)	Construction, Operational & Closure
Phase 3: Infill diamond drilling	<ul style="list-style-type: none"> <li>15 boreholes will be drilled during this phase.</li> <li>A minimum of 2 samples per seam intersection will be taken. More samples will be required when large variations in reserve quality occur within a seam. Therefore an estimated 20 samples per borehole is budgeted for.</li> <li>Results from the laboratory</li> <li>Establishment of the data base,</li> <li>Recording of borehole logs, evaluation and geological modelling will be carried out after all the results have been recorded.</li> <li>Rehabilitation of Drilling Sites by sealing of boreholes and clean-up and restoration.</li> </ul>	Month 19- 30 (12 months)	Construction, Operational & Closure
Phase 4: Evaluation and prefeasibility.	<ul style="list-style-type: none"> <li>Feasibility Study</li> <li>Environmental Studies and reports</li> <li>Socio Economic Impact Assessment</li> <li>Rehabilitation</li> </ul>	Month 31 – 36 (6 months)	Closure

### 3. SECTION 39(3)(B)(II)

*Section 39(3)(b)(ii) of the Act, read together with Regulation 52(2)(c) and 52(2)(g), requires an assessment of the significance of the identified potential environmental impacts of the proposed prospecting operation, including impacts identified by interested and affected parties. You are herewith required to provide-*

#### 3.1. DETAILS OF THE ENGAGEMENT PROCESS WITH INTERESTED AND AFFECTED PARTIES

- An independent consultant was contracted to consult with the I&AP's.
- Notification letters sent to land owners notifying them of the prospecting application along with I&AP Datasheets to the landowners to fill in any information or comments they might have about the project and responded on these issues. A site visit was conducted to deliver the relevant documentation by hand to the landowners that could not be contacted because of wrong contact details.
- The landowners were sent an information pack which describes the prospecting application process as well as the drilling procedure should the prospecting right be granted.
- A newspaper notice was placed in the Middelburg Observer on the 12th of April 2013 notifying the public of the prospecting right application as well as inviting them to a public meeting that was held on the 26th of April 2013.
- A public meeting was held on the 26th of April 2013 where information was given to the IAP's with regards to the prospecting application and issues and concerns were addressed (See Appendix A.1 – Note for the Record).

#### 3.2. POTENTIAL PHYSICAL IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES

##### **Surface and Ground Water**

The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. During drilling, limited seepage of water will occur as temporary settling ponds will be constructed. Before drilling, a geologist will be consulted in order to determine the best possible placement of the boreholes in order to minimise the risk of damaging the ground water resources.

##### **Land Use and Planning**

This is only the prospecting phase of the project. The prospecting activities should not affect future plans of development at this stage. Should the prospecting right be granted the applicant along with the drilling contractor will arrange for a meeting with the landowner in order to avoid unnecessary disturbance of existing activities.

##### **Nuisance**

Before drilling commences the applicant along with the drilling contractor will arrange for a meeting with the landowner in order to avoid unnecessary disturbance of existing activities. The applicant will ensure that the impacts on your activities are minimal. When, where and under what conditions drilling will take place, will be discussed at that time to avoid any nuisance.

### **Air Quality, Visual, Noise and Waste Management**

Regarding your concern with respect to visual, noise and other pollution, the proposed prospecting activities will not have a significant effect on any of these. The drill rig used during the drilling operations will not cause more emissions than a tractor during operation. The noise of the drill rig also falls within the same category produced by the operation of a tractor. An exclusion zone of a 100m will be implemented around all buildings. The visual impact will be minimised as the prospecting site will be rehabilitated when finished.

Regarding your concern with respect to waste management, the proposed prospecting activities will not have a significant effect because the prospecting team will not be housed on site. Waste containers will be placed at the drill sites. The waste will be removed and disposed of at a suitable site after drilling.

### **Security**

Regarding the concerns about safety and security, the drill team will be introduced to the landowner as well as receiving an induction training before entering the premises in order to avoid unauthorised entry to the lands. Should the prospecting right be granted then prospecting would be done under an approved EMP and Prospecting Work Programme to ensure minimum impact or damage to the environment. Drilling contractors are legally appointed to adhere to safety rules.

### **Ecology**

Should the prospecting right be granted then prospecting would be done under an approved EMP and Prospecting Work Programme to ensure minimum impact or damage to the environment. Drilling contractors are legally appointed to adhere to safety rules.

### **Quality of Life**

We would like to inform you that this is only the prospecting phase of the project. The prospecting activity should not affect the quality of life as no mining activities will occur on the land at this stage.

### **Economy**

We would like to inform you that this is only the prospecting phase of the project. The prospecting activity should not affect the economy or value of the property as no mining activities will occur on the land at this stage.

### **Soils**

Regarding your concern with respect to sensitive soils, if the prospecting right is granted then 10x10 meters of vegetation will be cleared for the drill site and the topsoil will be compacted. The prospecting site will be rehabilitated when finished. The drilling team would use existing farm roads as far as possible in order to avoid disturbing sensitive areas.



### 3.3. A LIST OF THE POTENTIAL IMPACTS OF EACH OF THE AFORESAID MAIN PROSPECTING ACTIVITIES

**TABLE 3 POTENTIAL IMPACTS OF EACH OF THE AFORESAID MAIN PROSPECTING ACTIVITIES**

ACTIVITY	DESCRIPTION	PHASES OF OPERATION	POSSIBLE IMPACTS	TIMEFRAME
<b>PHASE 1 DESKTOP STUDY</b>				
<b>Off Site - Outside Prospecting Application Area</b>				
Communication with IAP's	<ul style="list-style-type: none"> <li>Notification of community regarding drilling activities on the proposed site.</li> </ul>	Construction, Operational, Closure	<ul style="list-style-type: none"> <li>Socio-economic expectations: communication with the Ward Councillor may impact on the social environment and possibly impact on the cultural aspects of the environment due to perceived social change (of the community) of possible employment opportunities.</li> </ul>	Ongoing
Geological Services	<ul style="list-style-type: none"> <li>Data collection and validation of existing information;</li> <li>Logging, sampling and analysing of information;</li> <li>Gain an overall impression of the reserve potential;</li> <li>Planning of the logistics of and the further phases of the physical drilling programme;</li> <li>A geological report will be compiled giving the iron ore and manganese resource statement</li> <li>Reports and results statements.</li> </ul>	Construction, Operational	No Impact.	9 months
<b>PHASE 2 DIAMOND DRILLING (&amp; PHASE 3 INFILL DIAMOND DRILLING )</b>				
<b>Off Site - Outside Prospecting Application Area</b>				
Water Acquisition	<ul style="list-style-type: none"> <li>Water will not be required for mineral processing as there is no processing associated with this prospecting exercise. Water will be required for the core-drilling where it will be utilized for cooling and flushing of the hole. This water will be sourced from farm reservoirs and existing boreholes. If not available, water will be sourced off-site and brought in onto the prospecting area via a water bowser. A lined reservoir will be used to store recycled water. This will limit the water usage</li> </ul>	Construction, Operational	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	Duration of actual drilling.

ACTIVITY	DESCRIPTION	PHASES OF OPERATION	POSSIBLE IMPACTS	TIMEFRAME
Transport	<ul style="list-style-type: none"> <li>The drilling team will not be staying on site and will be transported to and from the drill site daily.</li> <li>In the event that water is not available from the farm reservoirs and existing boreholes, water for drilling purposes will be brought onto the drilling site via the existing access road network</li> <li>The drill rigs will be brought onto and again taken off the drilling site via the existing access road network.</li> </ul>	Construction, Operational, Closure	<ul style="list-style-type: none"> <li>Air quality: The tractor and vehicles will generate low levels of dust.</li> <li>Security: Should the farm gates be left open, livestock could move out of the camps.</li> <li>Safety: The transport of labour has a risk to safety.</li> </ul>	Daily As required by drilling process. 6 days
Accommodation	<ul style="list-style-type: none"> <li>The drilling team will not stay on site.</li> </ul>	N/A	No Impact.	N/A
Offices	<ul style="list-style-type: none"> <li>The Applicant has existing office facilities. Offices won't be needed for prospecting.</li> </ul>	N/A	No Impact.	N/A
Laboratory services (testing and result analysis)	<ul style="list-style-type: none"> <li>Samples of all Iron ore and Manganese seams that are intersected will be obtained and analysed to determine the characteristics of the Iron ore and Manganese.</li> <li>The cores will be removed in a tray, sent to the approved laboratory and then discarded at a licensed disposal site.</li> </ul>	Construction, Operational	No Impact.	3 months (continuous)
<b>Off Site From Drilling Site</b>				
Water Acquisition	<ul style="list-style-type: none"> <li>Water for drilling purposes will be obtained from farm reservoirs and existing boreholes, alternatively water will be brought onto the drilling site via the existing access road network, in a water bowser.</li> <li>A lined reservoir will be used to store recycled water in order to limit the water usage.</li> </ul>	Construction, Operational	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	As required by drilling process.

ACTIVITY	DESCRIPTION	PHASES OF OPERATION	POSSIBLE IMPACTS	TIMEFRAME
Access roads	<ul style="list-style-type: none"> <li>The existing road and track network will be utilised as far as possible and if necessary extra roads would be constructed.</li> </ul>	Construction, Operational	<ul style="list-style-type: none"> <li>Vegetation and topsoil: If existing roads are not used the tractor and vehicles will damage the vegetation and topsoil.</li> <li>Air quality: The tractor and vehicles will generate low levels of dust.</li> <li>Security: Should the farm gates be left open, livestock could move out of the camps.</li> <li>Safety: The transport of labour has a risk to safety.</li> </ul>	Ongoing
Geological Services	<ul style="list-style-type: none"> <li>Geophysical and geochemical surveys: An airborne radiometric and magnetic survey will be undertaken to determine the presence of igneous intrusions. A ground geophysical survey will be conducted to follow-up airborne anomalies. This survey will consist of six 1.5km traverses using a hand held magnetometer. A GPS will be used to record the data point locations.</li> <li>Cores will be removed from site, transported in trays to the laboratories in order to be analysed. After analysis these will be disposed of at a licensed waste site. Cores will be removed from site, transported in trays to the laboratories in order to be analysed. After analysis these will be disposed of at a licensed waste site.</li> </ul>	Construction, Operational	No Impact.	24 months
Environmental services	<ul style="list-style-type: none"> <li>An environmental specialist will conduct the required environmental and socio-economic impact assessments and compile the necessary reports.</li> </ul>	Construction, Operational, Closure, Post-Closure	No Impact.	12 months

ACTIVITY	DESCRIPTION	PHASES OF OPERATION	POSSIBLE IMPACTS	TIMEFRAME
Monitoring	<ul style="list-style-type: none"> <li>An Environmental Performance monitoring protocol will be prepared to which monitoring will be measured.</li> <li>A monitoring/ audit report will be compiled and submitted to the Applicant together with any non-conformances and Corrective Action Instructions after each audit has been conducted.</li> </ul>	Construction, Operational, Closure, Post-Closure	<ul style="list-style-type: none"> <li>Monitoring and audits - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	Ongoing
<b>On-Site Activities</b>				
Surveying	<ul style="list-style-type: none"> <li>Geologist to survey borehole positions</li> </ul>	Construction, Operational	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>	30 months
Site establishment	<ul style="list-style-type: none"> <li>Bring drilling rig on site via mounted tractor and trailer or integrated truck rig.</li> <li>Locate areas for demarcated drill sites and set up drill rig.</li> </ul>	Construction, Operational, Closure	<ul style="list-style-type: none"> <li>The site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig.</li> </ul>	As and when required
Drilling	<ul style="list-style-type: none"> <li>30 diamond core boreholes at an average depth of 50 meters each will be drilled to identify and assess the reserve.</li> <li>15 boreholes will be drilled in phase 2. Should the results prove favourable; more boreholes will be drilled during phase 3.</li> <li>Drilling will not occur within 100 meters from the existing boreholes</li> </ul>	Construction, Operational, Closure	<ul style="list-style-type: none"> <li>Local geology</li> <li>Vegetation and soil</li> <li>Noise</li> <li>Air Quality</li> <li>Groundwater: Low Significance</li> <li>Surface water: Low Significance</li> <li>Security: Should the farm gates be left open, livestock could move out of the camps.</li> </ul>	18 months

ACTIVITY	DESCRIPTION	PHASES OF OPERATION	POSSIBLE IMPACTS	TIMEFRAME
Water management	<ul style="list-style-type: none"> <li>Two sumps will be installed around the drilling rigs to collect water during the drilling process and settle out the suspended solids, for recycling of the water. This water will be re-used on the rig and seepage that will occur in the ground is not considered to cause a significant impact.</li> </ul>	Construction, Operational, Closure	<ul style="list-style-type: none"> <li>Vegetation and top soil: Vegetation and top soil will be impacted on by the stripping thereof and excavation of the soil (1x2x0.5m) for a temporary settling pond.</li> <li>Ground water: Limited seepage into the surrounding soil will occur.</li> <li>Surface water: Through the disturbance of runoff.</li> </ul>	On movement between drill sites
Environmental services (monitoring, rehabilitation)	<ul style="list-style-type: none"> <li>Drill sites will be cleaned and cleared of any waste and will form part of the rehabilitation plan.</li> <li>Rehabilitation of the drill area will include:               <ul style="list-style-type: none"> <li>Closure and levelling of sump areas</li> <li>Pouring of concrete into the base of the exploration boreholes</li> <li>Lowering of drill cores into the holes</li> <li>Pouring of concrete to cap the holes</li> <li>Replacing of topsoil and raking</li> <li>Photographs of rehabilitated area for record</li> <li>Decommission and associate infrastructure</li> </ul> </li> <li>Contaminated top soil at the drilling sites will be regarded as significant if oil spills occur. Any spill will be cleaned up through the removal of contaminated soils and disposed of at a registered facility. Containers and drip trays will be kept at the drill site to capture any such substances which could leak from machinery.</li> </ul>	Construction, Operational, Closure, Post-Closure	<ul style="list-style-type: none"> <li>An environmental control officer will monitor the impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	Ongoing
Geotechnical Testing, Metallurgical (washing characteristics) Quality Testing	<ul style="list-style-type: none"> <li>Geotechnical testing of roof and floor conditions</li> <li>Metallurgical testing to indicate wash ability and iron ore and manganese quality.</li> </ul>	Operational	No Impact.	24 months

3.4. ALL THE POTENTIAL PHYSICAL IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES RELATIVE TO THE RESPECTIVE MAIN PROSPECTING ACTIVITIES WHICH REPRESENT THEIR SOURCES.

**TABLE 4 IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES**

MAIN ACTIVITIES	POTENTIAL PHYSICAL IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES
Phase 1 Desktop study	<ul style="list-style-type: none"> <li>• Land Use and Planning</li> </ul>
Phase 2 Diamond drilling	<ul style="list-style-type: none"> <li>• Ground Water</li> <li>• Surface Water</li> <li>• Ecology</li> <li>• Waste Management</li> <li>• Air Quality</li> </ul>
Phase 3 Infill diamond drilling	<ul style="list-style-type: none"> <li>• Noise</li> <li>• Security</li> <li>• Quality of Life</li> <li>• Visual</li> <li>• Nuisance</li> </ul>
Phase 4 Evaluation and prefeasibility	<ul style="list-style-type: none"> <li>•</li> </ul>

Also see TABLE 3 (p. 12)

3.5. POTENTIAL IMPACTS IDENTIFIED BY STATE DEPARTMENTS CHARGED WITH THE ADMINISTRATION OF ANY LAW WHICH RELATES TO MATTERS AFFECTING THE ENVIRONMENT RELATIVE TO THE RESPECTIVE MAIN PROSPECTING ACTIVITIES

See TABLE 3 and TABLE 4 (p. 12)

3.6. AN ASSESSMENT OF ALL THE POTENTIAL IMPACTS IN TERMS OF THEIR SIGNIFICANCE

See TABLE 5 (below)

**TABLE 5 POTENTIAL IMPACTS OF EACH MAIN ACTIVITY IN EACH PHASE AND CORRESPONDING SIGNIFICANCE ASSESSMENT**

ACTIVITY	POTENTIAL IMPACTS	SIGNIFICANCE	
<b>PHASE 1 DESKTOP STUDY</b>			
Consultation	<ul style="list-style-type: none"> <li>Socio economic</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> <li>Positive and Negative</li> </ul>	<ul style="list-style-type: none"> <li>Communication with the Ward Councillor may impact on the social environment and possibly impact on the cultural aspect of the environment due to perceived social change (of the community) of possible employment opportunities. Impact on socio economic and cultural aspects.</li> </ul>
<b>PHASE 2 DIAMOND DRILLING (&amp; PHASE 3 INFILL DIAMOND DRILLING)</b>			
<b>CONSTRUCTION/SITE ESTABLISHMENT</b>			
<b>Off Site - Outside Prospecting Application Area</b>			
Water acquisition	<ul style="list-style-type: none"> <li>Depletion of water resources</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission. Depletion of water resources.</li> </ul>
Transport (transport to and from the drilling sites will be needed for the rig, water and labour(daily))	<ul style="list-style-type: none"> <li>Vegetation and top soil</li> <li>Air quality</li> <li>Security</li> <li>Safety</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> <li>Low significance</li> <li>Medium significance</li> <li>Medium significance</li> </ul>	<ul style="list-style-type: none"> <li>As existing roads and tracks will be used as far as possible but some temporary roads might need to be constructed</li> <li>The tractor and vehicles will generate low levels of dust</li> <li>Should the farm gates be left open, livestock could move out of the camps</li> <li>The transport of labour has a risk to safety.</li> </ul>
<b>OPERATIONAL/DECOMMISSIONING PHASE</b>			
<b>Off Site From Drilling Site</b>			
Site establishment and dis-establishment	<ul style="list-style-type: none"> <li>Site establishment</li> <li>Vegetation and soil</li> <li>Noise</li> <li>Air quality</li> <li>Groundwater</li> <li>Surface water</li> <li>Security</li> <li>Safety</li> <li>Waste management</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Medium significance</li> <li>Medium significance</li> <li>Low significance</li> </ul>	
Water acquisition	<ul style="list-style-type: none"> <li>Depletion of water resources</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission..</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	SIGNIFICANCE	
Access roads (access to and from the drill sites will be needed to transport the rig (daily), water and labour)	<ul style="list-style-type: none"> <li>Vegetation and top soil</li> <li>Air quality</li> <li>Security</li> <li>Safety</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> <li>Low significance</li> <li>Medium significance</li> <li>Medium significance</li> </ul>	<ul style="list-style-type: none"> <li>Existing roads and tracks will be used as far as possible but where needed temporary roads might be constructed</li> <li>The tractor and vehicles will generate low levels of dust</li> <li>Should the farm gates be left open, livestock could move out of the camps</li> <li>The transport of labour has a risk to safety.</li> </ul>
Geological Services	<ul style="list-style-type: none"> <li>Geology</li> <li>Ground water</li> <li>Soil and vegetation</li> <li>Land use</li> <li>Socio economic</li> </ul>	<ul style="list-style-type: none"> <li>Insignificant</li> <li>Insignificant</li> <li>Insignificant</li> <li>Insignificant</li> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>There is no significant impact associated with the geological, technical and metallurgical services taking place off site. Hence the activity is rated as a low significant impact.</li> </ul>
Environmental services	<ul style="list-style-type: none"> <li>Reduction of negligent degradation</li> </ul>	<ul style="list-style-type: none"> <li>Low significance, positive impact</li> <li>Low significance, positive impact</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of impacts - positive impact as the negligent degradation off the environment will be reduced.</li> <li>Will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>Reduction of negligent degradation</li> </ul>	<ul style="list-style-type: none"> <li>Low significance, positive impact</li> </ul>	<ul style="list-style-type: none"> <li>Positive impact as the negligent degradation off the environment will be reduced.</li> </ul>
<b>On Site Activities</b>			
Surveying	<ul style="list-style-type: none"> <li>Vegetation and Topsoil</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>
Site establishment and disestablishment	<ul style="list-style-type: none"> <li>Vegetation and Topsoil</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig.</li> </ul>
	<ul style="list-style-type: none"> <li>Land use</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> </ul>	
Drilling (drilling of 30 Boreholes)	<ul style="list-style-type: none"> <li>Local geology</li> <li>Vegetation and soil</li> <li>Noise</li> <li>Air quality</li> <li>Ground water</li> <li>Surface water</li> <li>Security</li> </ul>	<ul style="list-style-type: none"> <li>Medium significance</li> <li>Medium significance</li> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> <li>Medium significance</li> </ul>	
Water management	<ul style="list-style-type: none"> <li>Vegetation and top soil</li> <li>Ground water</li> <li>Surface water</li> </ul>	<ul style="list-style-type: none"> <li>Low significance</li> <li>Low significance</li> <li>Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and top soil will be impacted on by the stripping thereof and excavation of the soil (1x2x0.5m) for a temporary settling pond.</li> <li>Limited seepage into the surrounding soil will occur.</li> </ul>



### 3.7. AN ASSESSMENT OF THE IDENTIFIED CUMULATIVE IMPACTS IN THEIR CUMULATIVE CONTEXT IN TERMS OF THEIR SIGNIFICANCE

#### **Biophysical**

- Access to the borehole sites along the non-existent farm tracks or roads. Driving big rigs around will impact on the vegetation and topsoil – Low significance
- Release of methane if mining goes ahead. The more boreholes the bigger the cumulative impact – Low significance
- Should there be more than one drill rig operating at the same time there will be potential for cumulative impact of diesel fumes – Low significance

#### **Socio economic**

- The needs and aspirations of the farmers, farm workers and the local community after hearing about the prospecting application – Low significance
- The value of the surface becomes directly linked to the possibility of mining in the area rather than the historical agricultural values. The market value of the surface generally decreases even with the prospect of mining in the area – Medium significance

## **4. SECTION 39(3)(B)(III)**

*Section 39(3)(b)(iii) of the Act, read together with Regulations 52(2)(b) and 52(2)(c) requires an assessment of the significance of the identified potential impacts on any national estate referred to in Section 3(2) of the National Heritage Resources Act, with the exception of the national estate contemplated in Sections 3(2)(i)(vi) and (vii) of that Act. You are herewith required to provide-*

### 4.1. DETAILS OF THE ENGAGEMENT PROCESS WITH INTERESTED AND AFFECTED PARTIES

- An independent consultant was contracted to consult with the I&AP's.
- Notification letters sent to land owners notifying them of the prospecting application along with I&AP Datasheets to the landowners to fill in any information or comments they might have about the project and responded on these issues. A site visit was conducted to deliver the relevant documentation by hand to the landowners that could not be contacted because of wrong contact details.
- The landowners were sent an information pack which describes the prospecting application process as well as the drilling procedure should the prospecting right be granted.
- A newspaper notice was placed in the Middelburg Observer on the 12th of April 2013 notifying the public of the prospecting right application as well as inviting them to a public meeting that was held on the 26th of April 2013.
- A public meeting was held on the 26th of April 2013 where information was given to the IAP's with regards to the prospecting application and issues and concerns were addressed (See Appendix A.1 – Note for the Record).

#### 4.2. DETAILS OF THE POTENTIAL IMPACTS ON NATIONAL HERITAGE SITES THAT WERE IDENTIFIED BY INTERESTED AND AFFECTED PARTIES

There would be no impact on heritage resources because there would be a preclusion zone of a 100m around these sites as determined by local Afro centric and Euro centric knowledge. No specialist report has been done because the proponent has agreed to drill their holes more than 100 m away from any heritage sites.

SAHRA (South African Heritage Resource Agency) was contacted to confirm whether the area has any significant heritage sites. No response has been received.

#### 4.3. POTENTIAL IMPACTS ON NATIONAL HERITAGE SITES IDENTIFIED BY STATE DEPARTMENTS CHARGED WITH THE ADMINISTRATION OF ANY LAW WHICH RELATES TO MATTERS AFFECTING THE ENVIRONMENT.

There would be no impact on heritage resources because there would be a preclusion zone of a 100m around these sites as determined by local Afro centric and Euro centric knowledge. No specialist report has been done because the proponent has agreed to drill their holes more than 100 m away from any heritage sites.

SAHRA (South African Heritage Resource Agency) was contacted to confirm whether the area has any significant heritage sites. No response has been received.

#### 4.4. AN ASSESSMENT OF ALL THE POTENTIAL IMPACTS THUS IDENTIFIED IN TERMS OF THEIR SIGNIFICANCE

See TABLE 5 (p. 22) and Section 4.2

### 5. SECTION 39(3)(D)

*Section 39(3)(d) of the Act, read together with Regulations 52(2)(b) and 52(2)(c), requires a description of the manner in which it is intended to modify, remedy, control or stop any action, activity, or process which causes pollution or environmental degradation, and contain or remedy the cause of pollution or degradation and migration of pollutants, taking into cognizance any prescribed waste standard, management standards, or practices. You are herewith required to provide-*

#### 5.1. MITIGATION MEASURES

See TABLE 6 (below)

**TABLE 6 MITIGATION MEASURES OF POTENTIAL IMPACTS**

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
<b>CONSTRUCTION/SITE ESTABLISHMENT</b>		
Water Acquisition	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission. A lined reservoir will be used to store recycled water in order to minimize the water use.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>
Transport (transport to and from the drilling sites will be needed for the rig, water and labour(daily))	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (as existing roads and tracks will be used as far as possible but some temporary roads might need to be constructed)</li> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>
<b>Off Site From Drilling Site</b>		
<b>OPERATIONAL/DECOMMISSIONING PHASE</b>		
Site establishment and dis-establishment (site which will include, a caravan, ablution facilities and temporary waste disposal facilities)	<ul style="list-style-type: none"> <li>Site establishment: Low significance</li> <li>Vegetation and soil: Low significance</li> <li>Noise: low significance</li> <li>Air quality: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>The site establishment, which includes a caravan, the ablution and temporary waste disposal facilities (waste containers), will impact insignificantly on the vegetation, as these structures will remain on site on a temporary basis only.</li> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>Noise: No management</li> <li>Air quality: No management</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> <li>• Groundwater: Low significance</li> <li>• Surface water: low significance</li> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> <li>• Safety: Medium significance</li> <li>• Waste management: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater: The use of a closed chemical toilet for employees</li> <li>• Surface water: Water will be purchased off site and brought in</li> <li>• Security: Security awareness</li> <li>• Safety: Safety awareness</li> <li>• Waste management: Temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>
Water Acquisition	<ul style="list-style-type: none"> <li>• Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>• Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>• The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>• Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>
Access roads (access to and from the drill sites will be needed to transport the rig (daily), water and labour)	<ul style="list-style-type: none"> <li>• Vegetation and top soil: Unknown (existing roads and tracks will be used as far as possible but where needed temporary roads might be constructed)</li> <li>• Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> <li>• Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation and top soil: The use of existing road and tracks where possible. This will be communicated with the farmer. The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>• Air quality: No management measures. The road infrastructure will be maintained by the Applicant.</li> <li>• Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> <li>• Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>
Environmental services (socio economic impact assessment, environmental studies and	<ul style="list-style-type: none"> <li>• Monitoring of impacts - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>• An environmental control officer will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
reports, feasibility report, closure report)	<ul style="list-style-type: none"> <li>Environmental services will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>
Monitoring (All activities and procedures will be monitored and audits conducted).	<ul style="list-style-type: none"> <li>Monitoring and audits - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>
<b>On site activities</b>		
<b>Operational/Decommissioning phase</b>		
Surveying	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>	<ul style="list-style-type: none"> <li>Surveying – low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>
Site establishment and disestablishment	<ul style="list-style-type: none"> <li>The site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig. Medium significance.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>
Drilling (drilling of 30 Boreholes)	<ul style="list-style-type: none"> <li>Local geology: low significance</li> <li>Vegetation and soil: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Local geology: The removal of an average of 50 metres core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> <li>• Noise: Low significance</li> <li>• Air quality: Low significance</li> <li>• Ground water: Low significance</li> <li>• Surface water: Low significance</li> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>• Noise: The ambient noise level will be raised due to the drilling operation however the noise levels associated with this drilling would be equivalent to the noise induced during any of the activities associated with planting or harvesting of maize. The noise level cannot be further suppressed during drilling. Mitigation of the impact is that drilling will be done in consultation with the local residence so that disturbance is minimised through limited operating times (daylight hours, not on Sundays).</li> <li>• Air quality: No management</li> <li>• Ground water: Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed. Limited seepage of water will occur as temporary settling ponds (2 x 1x.5m) will be constructed</li> <li>• Surface water: no management</li> <li>• Security: security awareness and control</li> </ul>
<p>Water management          (water will be used in the drilling operation and temporarily stored in a sump, to allow the sediment to settle before being re-used)</p>	<ul style="list-style-type: none"> <li>• Vegetation and top soil: Low significance (vegetation and top soil will be impacted on by the stripping thereof and excavation of the soil (1x2x0.5m) for a temporary settling pond.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area. Access road ways will be cleared of any contamination where this occurs.</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> <li>• Ground water: Limited seepage into the surrounding soil will occur.</li> <li>• Surface water: Low significance through the disturbance of runoff.</li> </ul>	<ul style="list-style-type: none"> <li>• Ground and surface water: Water management will be conducted by the establishment and management of a temporary sump at each drill site to limit the extent of seepage into the surrounding soil. Excess water collected in the sump will be reused on the rig for the cooling and flushing of the hole.</li> </ul>
Environmental services (monitoring, rehabilitation)	<ul style="list-style-type: none"> <li>• An environmental control officer will monitor the impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>
<b>Construction/Site establishment</b>		
Consultation	<ul style="list-style-type: none"> <li>• Socio-economic expectations: communication with the Ward Councillor may impact on the social environment and possibly impact on the cultural aspects of the environment due to perceived social change (of the community) of possible employment opportunities. Impact on socio-economic and cultural aspects.</li> </ul>	<ul style="list-style-type: none"> <li>• Correct and relevant information will be communicated to the Ward Councillors during meetings and written communication will be available on request.</li> </ul>
Water Acquisition (water will be used in the drilling process at an average rate of 5,000 litre per drill rig per day.	<ul style="list-style-type: none"> <li>• Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>• Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>• The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>• Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>
Transport (transport to and from the drilling sites will be needed for the rig, water and labour(daily)	<ul style="list-style-type: none"> <li>• Vegetation and top soil: Unknown (as existing roads and tracks will be used as far as possible but some temporary roads might need to be constructed)</li> <li>• Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation and topsoil: The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>• Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> <li>• Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> <li>• Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>• Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>
	<ul style="list-style-type: none"> <li>• Local social dynamic: low significance</li> <li>• Local socio-economic structure: low significance</li> </ul>	<ul style="list-style-type: none"> <li>• Where possible, management will ensure that only local labour is employed. It is therefore not foreseen that any migrant workers or temporary labourers will migrate into the area to impact on the social, cultural and economic environments.</li> <li>• The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>
<b>Off site from drilling site</b>		
<b>Operational/Decommissioning phase</b>		
Site establishment and de-establishment (site which will include, a caravan, ablution facilities and temporary waste disposal facilities)	<ul style="list-style-type: none"> <li>• Site establishment: Low significance</li> <li>• Vegetation and soil: Low significance</li> <li>• Noise: low significance</li> <li>• Air quality: Low significance</li> <li>• Groundwater: Low significance</li> <li>• Surface water: low significance</li> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> <li>• Safety: Medium significance</li> <li>• Waste management: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>• The site establishment, which includes a caravan, the ablution and temporary waste disposal facilities (waste containers), will impact insignificantly on the vegetation, as these structures will remain on site on a temporary basis only.</li> <li>• Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>• Noise – no management</li> <li>• Air quality: – no management</li> <li>• Groundwater: the using of a closed chemical toilet for employees</li> <li>• Surface water: water will be purchased off site and brought in</li> <li>• Security: – security awareness</li> <li>• Safety: – safety awareness</li> <li>• Waste management: temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>



ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
<p>Water Acquisition            (water will be used in the drilling process at an average rate of 5,000 litre per drill rig per day.</p>	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>
<p>Access roads            (access to and from the drill sites will be needed to transport the rig (daily), water and labour)</p>	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (existing roads and tracks will be used as far as possible but where needed temporary roads might be constructed)</li> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>
<p>Environmental services (socio economic impact assessment, env. studies and reports, feasibility report, closure report)</p>	<ul style="list-style-type: none"> <li>Monitoring of impacts - positive impact as the negligent degradation off the environment will be reduced</li> <li>Environmental services will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>An environmental control officer will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>
<p>Monitoring            (All activities and procedures will be monitored and audits conducted).</p>	<ul style="list-style-type: none"> <li>Monitoring and audits - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>
<b>On site activities</b>		
<b>Operational/Decommissioning phase</b>		
<p>Surveying</p>	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>	<ul style="list-style-type: none"> <li>Surveying – low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
Site establishment and disestablishment	<ul style="list-style-type: none"> <li>The site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig. Medium significance.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>
Drilling (drilling of 20 boreholes)	<ul style="list-style-type: none"> <li>Local geology: low significance</li> <li>Vegetation and soil: Low significance</li> <li>Noise: low significance</li> <li>Air quality: Low significance</li> <li>Ground water: Low significance</li> <li>Surface water: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Local geology: The average removal of 500 meters of core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site</li> <li>Noise: The ambient noise level will be raised due to the drilling operation however the noise levels associated with this drilling would be equivalent to the noise induced during any of the activities associated with planting or harvesting of maize. The noise level cannot be further suppressed during drilling. Mitigation of the impact is that drilling will be done in consultation with the local residence so that disturbance is minimised through limited operating times (daylight hours, not on Sundays).</li> <li>Air quality: No management</li> <li>Ground water: Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> <li>Surface water: no management</li> </ul>

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: security awareness and control</li> </ul>
<p>Water management            (water will be used in the drilling operation and temporarily stored in a portable swimming pool, to allow the sediment to settle before being re-used)</p>	<ul style="list-style-type: none"> <li>Vegetation: Low significance (vegetation in the area where the pool stands will be disturbed)</li> <li>Ground water: Limited seepage into the surrounding soil will occur.</li> <li>Surface water: Low significance through the disturbance of runoff.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area.</li> <li>Ground and surface water: Water management will be conducted by the use of a portable swimming pool at each drill site to limit the extent of seepage into the surrounding soil. This water will be reused on the rig for the cooling and flushing of the hole.</li> </ul>
<p>Environmental services            (monitoring, rehabilitation)</p>	<ul style="list-style-type: none"> <li>An environmental control officer will monitor the impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>

## 5.2. MEASURES FOR ALL THE PHYSICAL IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES

See TABLE 6 (p. 26)

## 5.3. MEASURES FOR ALL THE PHYSICAL IMPACTS IDENTIFIED BY STATE DEPARTMENTS

See TABLE 6 (p. 26)

## 5.4. A CLASSIFICATION OF MEASURES RELATIVE TO THE RESPECTIVE PHASES OF THE PROSPECTING OPERATION

See TABLE 6 (p. 26)

## 6. MONITORING

*Section 39(3)(d) of the Act, read together with Regulations 52(2)(e) and 52(2)(c) requires a description of the arrangements for monitoring and management of environmental impacts. You are herewith required to provide-*

### 6.1. A LIST OF MANAGEMENT ACTIVITIES IN ORDER TO MANAGE THE AFORESAID IMPACTS EFFECTIVELY

#### **Biophysical**

- Mapping and setting out – Providing an updated layout plan at the prospecting site.
- Demarcating the prospecting area.
- Demarcating the river channel and riverine environment.
- The responsibility of rehabilitating falls on the holder of the prospecting right.
- Effective managing of the topsoil.
- Use existing roads as far as possible and if new roads need to be established it must be done in consultation of the landowner/tenant.
- Maintenance of the access roads.
- Dust control on the access roads and haul roads.
- Rehabilitation of access roads.
- Drill must be established in consultation of the landowner and at least a 100metres away from sensitive areas.
- The drill site must be rehabilitated, by the holder of the prospecting right, on completion of operations.
- A vehicle maintenance yard and secure areas need to be established where the maintenance of vehicles and equipment can take place.
- Prospecting shall take place only within the approved demarcated prospecting area.
- Prospecting operations need to be conducted more than a 100m away from any watercourse.
- Final rehabilitation needs to be conducted by the prospecting right holder.
- Inspections and monitoring need to be conducted.

Refer to Appendix B of this report for a more detailed explanation.

### **Socio economic**

- In order to prevent any negative social dynamic with the local inhabitants, the drilling crew will be accommodated off site.
- In order to minimize the threat of the devaluation of agricultural properties as a result of the application for prospecting (and by implications the threat of future mining), the proponent has endorsed the use of affective public participation and effective dialogue between the practitioners responsible for the EMP and the land owners.

### **Heritage**

- In order to preclude the risk of compromising heritage sites such as gravesites, historical buildings, religious sites or symbols, the environmental control officer will be involved collaboratively with the geologist (when citing the boreholes) and the local community in order to make full use of local knowledge of such heritage sites.

## **6.2. CATEGORIZATION OF ACTION PLANS AND A TIME SCHEDULE OF ACTIONS TO BE UNDERTAKEN TO IMPLEMENT MITIGATION MEASURES**

### **List of Identified Impacts Requiring Monitoring Programmes**

- Ground and surface water quality
- Soil contamination and erosion
- Road management
- Waste management
- Stakeholder outrage

### **Compliance Reporting / Submission of Information**

- Any significant variation in the prospecting activity that will require changes to the EMP will be updated and communicated with the department before such changes are implemented.
- Reports confirming compliance with various points identified in the environmental management programme or plans will be submitted to the Regional Manager on a regular basis and as decided by the said manager.
- Any emergency or unforeseen impact will be reported as soon as possible.
- An assessment of environmental impacts that were not properly addressed or were unknown when the programme was compiled shall be carried out and added as a corrective action.
- The geological results of the prospecting program will be communicated with the department on a six monthly bases.

### **Roles and responsibilities for the execution of monitoring programmes**

- The applicant will appoint an independent ECO who will be responsible for the execution of the monitoring programs and reporting to the applicant who will in turn report to the department.

### **Committed time frames for monitoring and reporting**

- At the end of each phase a monitoring report will be compiled for submission to the department.

## **6.3. DETAILS OF THE PLANNED MONITORING AND ENVIRONMENTAL MANAGEMENT PROGRAMME PERFORMANCE ASSESSMENT, (REG. 52(2)(E)).**

### **Functional requirements for monitoring programmes**

- Regular monitoring of all the environmental management measures and components shall be carried out by the holder of the prospecting right in order to ensure that the provisions of this programme are adhered to.
- On-going and regular reporting of the progress of implementation of this programme will be done.
- Various points of compliance will be identified with regard to the various impacts that the operations will have on the environment.
- Inspections and monitoring shall be carried out on both the implementation of the programme and the impact on sensitive environments.
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis.

### **Regulation 55 promulgated in terms of the MPRDA requires the following:**

#### **Monitoring and performance assessments of environmental management programme or plan**

- (1) *As part of the general terms and conditions for a prospecting right, mining right or mining permit and in al management plan and to assess the continued appropriateness and adequacy of the environmental management programme or environmental management plan, the holder of such right must-*
  - (a) *conduct monitoring on a continuous basis;*
  - (b) *conduct performance assessments of the environmental management programme or environmental management plan as required; and*
  - (c) *compile and submit a performance assessment report to the Minister in which compliance with sub-regulation (1)(b) is demonstrated.*
- (2) *The frequency of performance assessment reporting shall be-*
  - (a) *in accordance with the period specified in the approved environmental management programme or plan , or, if not so specified;*
  - (b) *as agreed to in writing by the Minister; or*
  - (c) *biennially (every two years).*
- (3) *The performance assessment report contemplated in sub-regulation (1)(c), shall be in the format provided in guidelines that will from time to time be published by the Department and shall as a minimum contain-*
  - (a) *information regarding the period that applies to the performance assessment;*
  - (b) *the scope of the assessment;*
  - (c) *the procedure used for the assessment;*
  - (d) *the interpreted information gained from monitoring the approved environmental management programme or plan;*
  - (e) *the evaluation criteria used during the assessment;*
  - (f) *the results of the assessment; and*

- (g) *recommendations on how and when deficiencies that are identified and/or aspects of non-compliance will be rectified.*
- (4) *The holder of a prospecting right, mining right or mining permit may appoint an independent qualified person(s) to conduct the performance assessment and compile the performance assessment report provided that no such appointment shall relieve the holder of the responsibilities in terms of these regulations.*
- (5) *Subject to section 30(2) of the Act, the performance assessment report submitted by the holder shall be made available by the Minister to any person on request.*
- (6) *If upon consideration by the Minister, the performance assessment executed by the holder is not satisfactory or the performance assessment report submitted by the holder is found to be unacceptable, the holder must-*

  - (a) *repeat the whole or relevant parts of the performance assessment and revise and resubmit the report; and/or*
  - (b) *submit relevant supporting information; and/or*
  - (c) *appoint an independent competent person(s) to conduct the whole or part of the performance assessment and to compile the report.*
- (7) *If a reasonable assessment indicates that the performance assessment cannot be executed satisfactorily by the holder or a competent person(s) appointed by the holder, the Minister may appoint an independent performance assessment person(s) to conduct such performance assessment. Such appointment and execution shall be for the cost of the holder.*
- (8) *When the holder of a prospecting right, mining right or mining permit intends closing such operation, a final performance assessment shall be conducted and a report submitted to the Minister to ensure that -*

  - (a) *the requirements of the relevant legislation have been complied with;*
  - (b) *the closure objectives as described in the environmental management programme or plan have been met; and*
  - (c) *all residual environmental impacts resulting from the holder's operations have been identified and the risks of latent impacts which may occur have been identified, quantified and arrangements for the management thereof have been assessed.*
- (9) *The final performance assessment report shall either precede or accompany the application for a closure certificate in terms of the Act.*

## B. COMPLIANCE WITH SECTION 39(4)(A)(II) - FINANCIAL PROVISION

*Section 39(4)(a)(ii) of the Act, read together with Section 41(1) requires that you must make the prescribed financial provision for the rehabilitation or management of negative environmental impacts. In compiling the EMP, you are herewith required to-*

### 1. A REHABILITATION PLAN OF THE AREAS AND AERIAL EXTENT OF THE MAIN PROSPECTING ACTIVITIES

- See attached Regulation 2(2) Plan

### 2. COMPATIBILITY OF THE REHABILITATION PLAN WITH THE CLOSURE OBJECTIVES DETERMINED IN ACCORDANCE WITH THE BASELINE STUDY AS PRESCRIBED

The rehabilitation plan has been developed in order to achieve the following critical closure objectives:

- Stability: The disturbed area (s) will need to be landscaped covered with the restriped topsoil and grassed using indigenous grass species in order to prevent erosion of the area.
- The entire core will be collected and taken off at a suitable dump .
- The drill hole will be either sealed with a concrete plug and marked with a concrete collar and 2 m iron stand which will be 5m due north of the drill hole,
- Any oil or diesel that is spilled will be collected together with the contaminated soil and disposed of through a registered waste oil contractor.
- The access road to the site will be rehabilitated as necessary to prevent reoccurrence of erosion.

### 3. THE QUANTUM CALCULATION

The quantum of the financial provision required to manage and rehabilitate the environment accordance with the guidelines has been provided in the table below:

ACTIVITY	YEAR 1 EXPENDITURE	YEAR 2 EXPENDITURE	YEAR 3 EXPENDITURE
<b>PHASE 1 (6 Months)</b>			
Desktop Study	R 18 000		
Plan Preparation	R 3 000		
<b>PHASE 2 (12 months)</b>			
Drilling	R 189 000	R 189 000	
Logging, Sampling and Analysis	R 10 800	R 10 800	
Model Setup and Data Update		R 4 500	
Rehabilitation	R 15 000	R 15 000	
<b>PHASE 3 ( 12 months)</b>			
Drilling			R 378 000



Logging, Sampling and Analysis			R 21 600
Results Update and Modelling			R 4 500
Rehabilitation			R 30 000
<b>PHASE 4 (6 Months)</b>			
Resource Statement			R 5 400
Pre-Feasibility Study			R 14 400
<b>Annual Total</b>	<b>R 235 800</b>	<b>R 219 300</b>	<b>R 453 900</b>
<b>Total Budget</b>			<b>R 909 000</b>

Cash deposit	
Bank guarantee	√
Trust Fund	
Other: (specify) (Note: other methods must be approved by the Minister)	

4. INDICATE THAT THE REQUIRED AMOUNT WILL BE PROVIDED SHOULD THE RIGHT BE GRANTED

The applicant hereby commits providing the required amount should the right be granted.

**R 60 000**

C. COMPLIANCE WITH SECTION 39(4)(A)(III) - CAPACITY TO MANAGE AND REHABILITATE THE ENVIRONMENT

*Section 39(4)(a)(iii) of the Act, read together with Section 37(2) of the Act, requires that you will have the capacity, or have provided for the capacity, to rehabilitate and manage negative impacts on the environment. In order to determine the said capacity requirements, you are herewith required to provide-*

1. DETERMINATION OF THE COST OF EACH OF THE MEASURES CROSS REFERENCED TO THE LIST OF THE MEASURES IDENTIFIED IN TERMS OF SECTION 39(3)(D) OF THE ACT

**TABLE 7 MANAGING COSTS OF EACH OF THE MITIGATION MEASURES**

	<b>MITIGATION MEASURES</b>	<b>MANAGING COSTS</b>
Water quality	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
Transport	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>The road infrastructure will be maintained by the Applicant.</li> </ul>	2 000 per year
Air Quality	<ul style="list-style-type: none"> <li>No management measures.</li> </ul>	none
Security	<ul style="list-style-type: none"> <li>The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> <li>Security awareness</li> </ul>	2 000 per year
Safety	<ul style="list-style-type: none"> <li>The drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> <li>Safety awareness</li> </ul>	2 000 per year
Vetegation and Soil	<ul style="list-style-type: none"> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> <li>Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area.</li> </ul>	10 000 per year
Noise	<ul style="list-style-type: none"> <li>No management</li> </ul>	none

	MITIGATION MEASURES	MANAGING COSTS
Goundwater	<ul style="list-style-type: none"> <li>The use of a closed chemical toilet for employees</li> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed. Limited seepage of water will occur as temporary settling ponds (2 x 1x.5m) will be constructed</li> <li>Water management will be conducted by the establishment and management of a temporary sump at each drill site to limit the extent of seepage into the surrounding soil. Excess water collected in the sump will be reused on the rig for the cooling and flushing of the hole.</li> </ul>	10 000 per year
Surface Water	<ul style="list-style-type: none"> <li>Water will be purchased off site and brought in</li> </ul>	5 000 per year
Waste Management	<ul style="list-style-type: none"> <li>Temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>	5 000 per year
Surveying	<ul style="list-style-type: none"> <li>Low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>	none
Local Geology	<ul style="list-style-type: none"> <li>Local geology: The removal of an average of 50 metres core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> </ul>	2 000 per year
Communication	<ul style="list-style-type: none"> <li>Correct and relevant information will be communicated to the Ward Councillors during meetings and written communication will be available on request.</li> </ul>	2 000 per year
Auditing	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>	2 000 per year
Legal	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year

2. CLASSIFICATION OF THE COST OF EACH OF THE MEASURES IN TERMS OF THE PHASES OF CONSTRUCTION, OPERATIONAL, CLOSURE AND POST CLOSURE AS PRESCRIBED

**TABLE 8 COST OF EACH MITIGATION MEASURE IN TERMS OF PHASES OF CONSTRUCTION**

ACTIVITY		MITIGATION MEASURES	MANAGING COSTS
<b>CONSTRUCTION/SITE ESTABLISHMENT</b>			
<b>Water Acquisition</b>	Water	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Transport</b>	Roads	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> </ul>	2 000 per year
	Air quality	<ul style="list-style-type: none"> <li>No management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	Security	<ul style="list-style-type: none"> <li>The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	Safety	<ul style="list-style-type: none"> <li>The drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year
<b>Consultation</b>	Consultation	<ul style="list-style-type: none"> <li>Correct and relevant information will be communicated to the Ward Councillors during meetings and written communication will be available on request.</li> </ul>	2 000 per year
<b>OPERATIONAL/DECOMMISSIONING PHASE</b>			
<b>Site establishment and dis-establishment</b>	Vegetation and soil	<ul style="list-style-type: none"> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	10 000 per year
	Noise	<ul style="list-style-type: none"> <li>No management</li> </ul>	none
	Air quality	<ul style="list-style-type: none"> <li>No management</li> </ul>	none
	Groundwater	<ul style="list-style-type: none"> <li>The use of a closed chemical toilet for employees</li> </ul>	2 000 per year
	Surface water	<ul style="list-style-type: none"> <li>Water will be purchased off site and brought in</li> </ul>	5 000 per year
	Security	<ul style="list-style-type: none"> <li>Security awareness</li> </ul>	2 000 per year

ACTIVITY		MITIGATION MEASURES	MANAGING COSTS
	Safety	<ul style="list-style-type: none"> <li>Safety awareness</li> </ul>	2 000 per year
	Waste management	<ul style="list-style-type: none"> <li>Temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>	5 000 per year
<b>Water Acquisition</b>	Water	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Access roads</b>	Vegetation and soil	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	10 000 per year
	Air quality	<ul style="list-style-type: none"> <li>No management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	Security	<ul style="list-style-type: none"> <li>The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	Safety	<ul style="list-style-type: none"> <li>The drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year
<b>Environmental services</b>	Monitoring	<ul style="list-style-type: none"> <li>An environmental control officer will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	ongoing
		<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	ongoing
<b>Monitoring</b>	Monitoring	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>	ongoing

ACTIVITY		MITIGATION MEASURES	MANAGING COSTS
Surveying	Surveying	<ul style="list-style-type: none"> <li>No pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>	None
<b>Drilling (drilling of 30 Boreholes)</b>	Local geology	<ul style="list-style-type: none"> <li>The removal of an average of 50 metres core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> </ul>	none
	Vegetation and soil	<ul style="list-style-type: none"> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>	10 000 per year
	Noise	<ul style="list-style-type: none"> <li>The ambient noise level will be raised due to the drilling operation however the noise levels associated with this drilling would be equivalent to the noise induced during any of the activities associated with planting or harvesting of maize. The noise level cannot be further suppressed during drilling. Mitigation of the impact is that drilling will be done in consultation with the local residence so that disturbance is minimised through limited operating times (daylight hours, not on Sundays).</li> </ul>	none
	Air quality	<ul style="list-style-type: none"> <li>No management</li> </ul>	none
	Groundwater	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed. Limited seepage of water will occur as temporary settling ponds (2 x 1x.5m) will be constructed</li> </ul>	5 000 per year
	Surface water	<ul style="list-style-type: none"> <li>No management</li> </ul>	none
	Security	<ul style="list-style-type: none"> <li>Security awareness and control</li> </ul>	2 000 per year

3. A SUMMARY OF THE COST OF EACH OF THE MEASURES TO EITHER, MODIFY, REMEDY, CONTROL OR STOP ANY ACTIONS, ACTIVITIES, PROCESSES LEADING TO, OR CAUSES OF, POLLUTION OR DEGRADATION

**TABLE 9 SUMMARY OF THE COST OF EACH OF THE MITIGATION MEASURES**

	<b>MITIGATION MEASURES</b>	<b>MANAGING COSTS</b>
Water quality	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
Transport	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>The road infrastructure will be maintained by the Applicant.</li> </ul>	2 000 per year
Air Quality	<ul style="list-style-type: none"> <li>No management measures.</li> </ul>	none
Security	<ul style="list-style-type: none"> <li>The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> <li>Security awareness</li> </ul>	2 000 per year
Safety	<ul style="list-style-type: none"> <li>The drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> <li>Safety awareness</li> </ul>	2 000 per year
Vegetation and Soil	<ul style="list-style-type: none"> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> <li>Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area.</li> </ul>	10 000 per year
Surface Water	<ul style="list-style-type: none"> <li>Water will be purchased off site and brought in</li> </ul>	5 000 per year
Surveying	<ul style="list-style-type: none"> <li>Low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>	none
Local Geology	<ul style="list-style-type: none"> <li>Local geology: The removal of an average of 50 metres core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> </ul>	2 000 per year

	MITIGATION MEASURES	MANAGING COSTS
Waste Management	<ul style="list-style-type: none"> <li>Temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>	5 000 per year
Noise	<ul style="list-style-type: none"> <li>No management</li> </ul>	none
Goundwater	<ul style="list-style-type: none"> <li>The use of a closed chemical toilet for employees</li> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed. Limited seepage of water will occur as temporary settling ponds (2 x 1x.5m) will be constructed</li> <li>Water management will be conducted by the establishment and management of a temporary sump at each drill site to limit the extent of seepage into the surrounding soil. Excess water collected in the sump will be reused on the rig for the cooling and flushing of the hole.</li> </ul>	10 000 per year
Communication	<ul style="list-style-type: none"> <li>Correct and relevant information will be communicated to the Ward Councillors during meetings and written communication will be available on request.</li> </ul>	2 000 per year
Auditing	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>	2 000 per year
Legal	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year

## D. GENERAL MATTERS

*In terms of the provisions of Section 29 of the Act, you are herewith directed to-*

1. PROVIDE TABULATION IN THE EMP OF THE ACTIVITIES WITH THEIR IMPACTS, MANAGEMENT MEASURES AND ASSOCIATED COSTS.



**TABLE 10 COST OF EACH OF THE MITIGATION MEASURES**

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
<b>CONSTRUCTION/SITE ESTABLISHMENT</b>			
<b>Water Acquisition</b>	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission. A lined reservoir will be used to store recycled water in order to minimize the water use.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Transport  (transport to and from the drilling sites will be needed for the rig, water and labour(daily))</b>	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (as existing roads and tracks will be used as far as possible but some temporary roads might need to be constructed)</li> </ul>	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> </ul>	<ul style="list-style-type: none"> <li>Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year
<b>Off Site From Drilling Site</b>			
<b>OPERATIONAL/DECOMMISSIONING PHASE</b>			

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
<b>Site establishment and dis-establishment (site which will include, a caravan, ablution facilities and temporary waste disposal facilities)</b>	<ul style="list-style-type: none"> <li>Site establishment: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>The site establishment, which includes a caravan, the ablution and temporary waste disposal facilities (waste containers), will impact insignificantly on the vegetation, as these structures will remain on site on a temporary basis only.</li> </ul>	none
	<ul style="list-style-type: none"> <li>Vegetation and soil: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Noise: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Noise: No management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Air quality: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Air quality: No management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Groundwater: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater: The use of a closed chemical toilet for employees</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Surface water: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Surface water: Water will be purchased off site and brought in</li> </ul>	5 000 per year
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: Security awareness</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance</li> </ul>	<ul style="list-style-type: none"> <li>Safety: Safety awareness</li> </ul>	2 000 per year
<ul style="list-style-type: none"> <li>Waste management: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Waste management: Temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>	5 000 per year	

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
<b>Water Acquisition</b>	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Access roads</b>  <b>(access to and from the drill sites will be needed to transport the rig (daily), water and labour)</b>	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (existing roads and tracks will be used as far as possible but where needed temporary roads might be constructed)</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and top soil: The use of existing road and tracks where possible. This will be communicated with the farmer.</li> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> </ul>	<ul style="list-style-type: none"> <li>Air quality: No management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year
<b>Environmental services (socio economic impact assessment, environmental studies and</b>	<ul style="list-style-type: none"> <li>Monitoring of impacts - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>An environmental control officer will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	2 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
reports, feasibility report, closure report)	<ul style="list-style-type: none"> <li>Environmental services will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year
Monitoring  (All activities and procedures will be monitored and audits conducted).	<ul style="list-style-type: none"> <li>Monitoring and audits - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>	2 000 per year
<b>On site activities</b>			
<b>Operational/Decommissioning phase</b>			
Surveying	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>	<ul style="list-style-type: none"> <li>Surveying – low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>	None
Site establishment and disestablishment	<ul style="list-style-type: none"> <li>The site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig. Medium significance.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>	5 000 per year
Drilling  (drilling of 30 Boreholes)	<ul style="list-style-type: none"> <li>Local geology: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Local geology: The removal of an average of 50 metres core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> </ul>	2 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>Vegetation and soil: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Noise: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Noise: The ambient noise level will be raised due to the drilling operation however the noise levels associated with this drilling would be equivalent to the noise induced during any of the activities associated with planting or harvesting of maize. The noise level cannot be further suppressed during drilling. Mitigation of the impact is that drilling will be done in consultation with the local residence so that disturbance is minimised through limited operating times (daylight hours, not on Sundays).</li> </ul>	none
	<ul style="list-style-type: none"> <li>Air quality: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Air quality: No management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Ground water: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Ground water: Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed. Limited seepage of water will occur as temporary settling ponds (2 x 1x.5m) will be constructed</li> </ul>	10 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>• Surface water: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>• Surface water: no management</li> </ul>	5 000 per year
	<ul style="list-style-type: none"> <li>• Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>• Security: security awareness and control</li> </ul>	2 000 per year
<b>Water management</b> <b>(water will be used in the drilling operation and temporarily stored in a sump, to allow the sediment to settle before being re-used)</b>	<ul style="list-style-type: none"> <li>• Vegetation and top soil: Low significance (vegetation and top soil will be impacted on by the stripping thereof and excavation of the soil (1x2x0.5m) for a temporary settling pond.</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>• Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area.</li> <li>• Access road ways will be cleared of any contamination where this occurs.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>• Ground water: Limited seepage into the surrounding soil will occur.</li> <li>• Surface water: Low significance through the disturbance of runoff.</li> </ul>	<ul style="list-style-type: none"> <li>• Ground and surface water: Water management will be conducted by the establishment and management of a temporary sump at each drill site to limit the extent of seepage into the surrounding soil. Excess water collected in the sump will be reused on the rig for the cooling and flushing of the hole.</li> </ul>	10 000 per year
<b>Environmental services (monitoring, rehabilitation)</b>	<ul style="list-style-type: none"> <li>• An environmental control officer will monitor the impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year
<b>Construction/Site establishment</b>			

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
<b>Consultation</b>	<ul style="list-style-type: none"> <li>Socio-economic expectations: communication with the Ward Councillor may impact on the social environment and possibly impact on the cultural aspects of the environment due to perceived social change (of the community) of possible employment opportunities. Impact on socio-economic and cultural aspects.</li> </ul>	<ul style="list-style-type: none"> <li>Correct and relevant information will be communicated to the Ward Councillors during meetings and written communication will be available on request.</li> </ul>	2 000 per year
<b>Water Acquisition</b>  (water will be used in the drilling process at an average rate of 5,000 litre per drill rig per day.	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Transport</b>  (transport to and from the drilling sites will be needed for the rig, water and labour(daily))	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (as existing roads and tracks will be used as far as possible but some temporary roads might need to be constructed)</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and topsoil: The use of existing road and tracks where possible. This will be communicated with the farmer.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> </ul>	<ul style="list-style-type: none"> <li>Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>Local social dynamic: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Where possible, management will ensure that only local labour is employed. It is therefore not foreseen that any migrant workers or temporary labourers will migrate into the area to impact on the social, cultural and economic environments.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Local socio-economic structure: low significance</li> </ul>	<ul style="list-style-type: none"> <li>The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	2 000 per year
<b>Off site from drilling site</b>			
<b>Operational/Decommissioning phase</b>			
<b>Site establishment and de-establishment</b>  <b>(site which will include, a caravan, ablution facilities and temporary waste disposal facilities)</b>	<ul style="list-style-type: none"> <li>Site establishment: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>The site establishment, which includes a caravan, the ablution and temporary waste disposal facilities (waste containers), will impact insignificantly on the vegetation, as these structures will remain on site on a temporary basis only.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Vegetation and soil: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> </ul>	5 000 per year
	<ul style="list-style-type: none"> <li>Noise: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Noise – no management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Air quality: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Air quality: – no management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Groundwater: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater: the using of a closed chemical toilet for employees</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Surface water: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Surface water: water will be purchased off site and brought in</li> </ul>	5 000 per year
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: – security awareness</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance</li> </ul>	<ul style="list-style-type: none"> <li>Safety: – safety awareness</li> </ul>	2 000 per year



ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>Waste management: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Waste management: temporary waste containers will be placed on site for utilisation of labour. Disposal of domestic waste will be done at the nearest, registered municipal site.</li> </ul>	2 000 per year
<b>Water Acquisition</b> (water will be used in the drilling process at an average rate of 5,000 litre per drill rig per day.	<ul style="list-style-type: none"> <li>Water acquisition will not impact the prospecting area directly as water will be sourced from farm reservoirs and existing boreholes with the farmer's permission.</li> </ul>	<ul style="list-style-type: none"> <li>Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location.</li> <li>The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level.</li> <li>Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
<b>Access roads</b> (access to and from the drill sites will be needed to transport the rig (daily), water and labour)	<ul style="list-style-type: none"> <li>Vegetation and top soil: Unknown (existing roads and tracks will be used as far as possible but where needed temporary roads might be constructed)</li> </ul>	<ul style="list-style-type: none"> <li>The use of existing road and tracks where possible. This will be communicated with the farmer.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Air quality: Low significance (the tractor and vehicles will generate low levels of dust)</li> </ul>	<ul style="list-style-type: none"> <li>Air quality no management measures. The road infrastructure will be maintained by the Applicant.</li> </ul>	none
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: The drilling contractor personnel will be made aware of their responsibility to keeping the gates closed.</li> </ul>	2 000 per year
	<ul style="list-style-type: none"> <li>Safety: Medium significance (the transport of labour has a risk to safety).</li> </ul>	<ul style="list-style-type: none"> <li>Safety: the drilling contractor drivers and personnel will be made aware of their responsibility to ensure safe transportation.</li> </ul>	2 000 per year
<b>Environmental services (socio economic impact assessment, env. studies and reports,</b>	<ul style="list-style-type: none"> <li>Monitoring of impacts - positive impact as the negligent degradation off the environment will be reduced</li> </ul>	<ul style="list-style-type: none"> <li>An environmental control officer will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	2 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
<b>feasibility report, closure report)</b>	<ul style="list-style-type: none"> <li>Environmental services will monitor any impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year
<b>Monitoring</b> <b>(All activities and procedures will be monitored and audits conducted).</b>	<ul style="list-style-type: none"> <li>Monitoring and audits - positive impact as the negligent degradation off the environment will be reduced.</li> </ul>	<ul style="list-style-type: none"> <li>Regular audits will be conducted and any non-compliance recorded and Corrective Actions Instruction Issues.</li> <li>An incidence register will be kept on site and annual reports submitted to the DMR.</li> </ul>	2 000 per year
<ul style="list-style-type: none"> <li>On site activities</li> </ul>			
<ul style="list-style-type: none"> <li>Operational/Decommissioning phase</li> </ul>			
<b>Surveying</b>	<ul style="list-style-type: none"> <li>Surveying will have an insignificant impact on the soils and vegetation through the pegging of the proposed drilling site.</li> </ul>	<ul style="list-style-type: none"> <li>Surveying – low significance as no pegging will be allow within any sensitive environmental features e.g., wetlands and watercourses.</li> </ul>	2 000 per year
<b>Site establishment and disestablishment</b>	<ul style="list-style-type: none"> <li>The site establishment of the drilling rig will have an impact on the topsoil, vegetation and land use by the stripping of the vegetation surrounding the immediate vicinity of the rig. Medium significance.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site.</li> </ul>	10 000 per year
<b>Drilling</b> <b>(drilling of 20 boreholes)</b>	<ul style="list-style-type: none"> <li>Local geology: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Local geology: The average removal of 500 meters of core per hole and associated vibration of the drilling may result in pressure release of the underlying geological strata as well as the seepage of underground water/gas through the holes, however this is highly unlikely. The drilling sites will as far as possible be positioned not to be above any weak geological strata</li> </ul>	2 000 per year

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>Vegetation and soil: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation and soil: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site. Suitable re-vegetation by the re-establishment of the vegetation layer will be conducted once the drill rig is removed from site</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Noise: low significance</li> </ul>	<ul style="list-style-type: none"> <li>Noise: The ambient noise level will be raised due to the drilling operation however the noise levels associated with this drilling would be equivalent to the noise induced during any of the activities associated with planting or harvesting of maize. The noise level cannot be further suppressed during drilling. Mitigation of the impact is that drilling will be done in consultation with the local residence so that disturbance is minimised through limited operating times (daylight hours, not on Sundays).</li> </ul>	none
	<ul style="list-style-type: none"> <li>Air quality: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Air quality: No management</li> </ul>	none
	<ul style="list-style-type: none"> <li>Ground water: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Ground water: Water will be sourced from existing farm reservoirs and existing boreholes. If no water is available, it will be purchased at an off-site location. The water resources will not be significantly impacted on by the drilling of the core boreholes as the water will return to its natural rest level. Should an artesian aquifer be opened by the drilling of a borehole, as per the landowner's decision, it will either be equipped as a production borehole or sealed.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Surface water: Low significance</li> </ul>	<ul style="list-style-type: none"> <li>Surface water: no management</li> </ul>	none

ACTIVITY	POTENTIAL IMPACTS	MITIGATION MEASURES	MANAGING COSTS
	<ul style="list-style-type: none"> <li>Security: Medium significance (should the farm gates be left open, livestock could move out of the camps)</li> </ul>	<ul style="list-style-type: none"> <li>Security: security awareness and control</li> </ul>	2 000 per year
<b>Water management</b> <b>(water will be used in the drilling operation and temporarily stored in a portable swimming pool, to allow the sediment to settle before being re-used)</b>	<ul style="list-style-type: none"> <li>Vegetation: Low significance (vegetation in the area where the pool stands will be disturbed)</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation: The affected areas will be managed and encouraged to return to its natural state once the units have been removed from site.</li> <li>Top soil will be replaced and suitable re-vegetation by the re-establishment of the vegetation layer will be conducted on the excavated area once the drill rig is removed from site and to ensure complete rehabilitation of the affected area.</li> </ul>	10 000 per year
	<ul style="list-style-type: none"> <li>Ground water: Limited seepage into the surrounding soil will occur.</li> <li>Surface water: Low significance through the disturbance of runoff.</li> </ul>	<ul style="list-style-type: none"> <li>Ground and surface water: Water management will be conducted by the use of a portable swimming pool at each drill site to limit the extent of seepage into the surrounding soil. This water will be reused on the rig for the cooling and flushing of the hole.</li> </ul>	10 000 per year
<b>Environmental services</b> <b>(monitoring, rehabilitation)</b>	<ul style="list-style-type: none"> <li>An environmental control officer will monitor the impacts on any element of the environment thereby reducing negligent degradation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Management will ensure that the required structures and procedures are put in place to ensure environmental and legal compliance with the stipulated conditions as set out by the Authorities.</li> </ul>	2 000 per year

2. CALCULATE YOUR ENVIRONMENTAL LIABILITY ON AN ANNUAL BASIS, AND INCREASE THE FINANCIAL PROVISION ACCORDINGLY.

The quantum of the financial provision required to manage and rehabilitate the environment accordance with the guidelines has been provided in the table below:

ACTIVITY	YEAR 1 EXPENDITURE	YEAR 2 EXPENDITURE	YEAR 3 EXPENDITURE
<b>PHASE 1 (6 Months)</b>			
Desktop Study	R 18 000		
Plan Preparation	R 3 000		
<b>PHASE 2 (12 months)</b>			
Drilling	R 189 000	R 189 000	
Logging, Sampling and Analysis	R 10 800	R 10 800	
Model Setup and Data Update		R 4 500	
Rehabilitation	R 15 000	R 15 000	
<b>PHASE 3 ( 12 months)</b>			
Drilling			R 378 000
Logging, Sampling and Analysis			R 21 600
Results Update and Modelling			R 4 500
Rehabilitation			R 30 000
<b>PHASE 4 (6 Months)</b>			
Resource Statement			R 5 400
Pre-Feasibility Study			R 14 400
<b>Annual Total</b>	<b>R 235 800</b>	<b>R 219 300</b>	<b>R 453 900</b>
<b>Total Budget</b>			<b>R 909 000</b>

## APPENDIX A

### REGULATION 2(2) PLAN



## APPENDIX B

# SIGNIFICANCE RATINGS



**TABLE 11 THE SIGNIFICANCE RATING SCALE**

MAGNITUDE	TIMING	DURATION	INTENSITY		LEVEL OF SIGNIFICANCE
			PROBABILITY	RISK	
<i>How big is it? (Relative to what?)</i>	<i>When will it happen?</i>	<i>How long will it last?</i>	<i>Severity, certainty of happening or fact / perception?</i>		<i>How serious is it? +ve / -ve Actual /Potential</i>
Negligible <i>(to the project area)</i>	Past	Reversible (? Yr.)	Unlikely: < = 40% not predicted to occur	Very low	Very low
Small <i>(limited to part of the project area)</i>	Present	Temporary: S/T <1 year.	Possible: >40%	Low	Low
Moderate <i>(limited to the project area)</i>	Future: S/T (<6 months)	Temporary: M/T 1- <5 years	Probable: >70%	Medium	Medium
Large <i>(extends beyond the project area: contained)</i>	Future: M/T 0.5 – 3 years (duration of the activity)	Temporary: L/T 5 - 20 years (project duration)	Definite: >90%	High	High
			Already happened 100%	High	
Extensive <i>(extends beyond the project area: un-contained)</i>	Future: L/T (>3 years) After the activity	Permanent: >20yr. after prospecting	Unsure	High	Very high

**TABLE 12 IMPLICATIONS OF THE SIGNIFICANCE RATING SCALE**

LEVEL	ORDER	IMPACT	
		NEGATIVE (ALTERNATIVES)	POSITIVE (ALTERNATIVES)
Very low	Negligible	Virtually unnecessary; easy, cheap, simple	Generally better than means of achieving the benefit.
Low	Little real effect	Easily achieved and / or little required	Easier, cheaper, more effective and / or less timeous.
Medium	Not substantial, but real	Feasible and fairly easily possible	Equal in time, cost and effort.
High	Substantial	Feasible, difficult, expensive, or time consuming	Feasible, difficult, expensive and / or time consuming.
Very high	Highest	Not possible	Nothing practicable