



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: MUKOPE GROUP (PTY) LTD

REFERENCE NUMBER: NC30/5/1/1/2/11049PR

ENVIRONMENTAL MANAGEMENT PLAN

FOR

PROSPECTING APPLICATION

OF

LIMESTONE

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)

STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

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



Figure 1.1: Indicating Location of Griqua town in South Africa

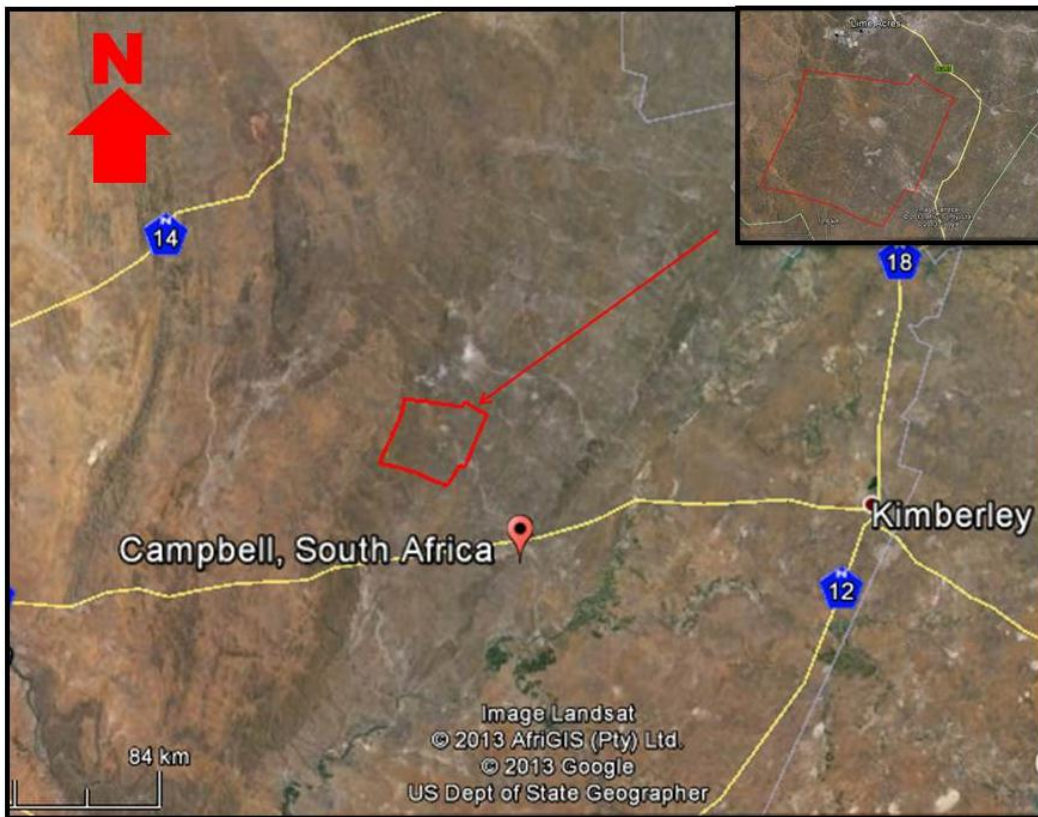


Figure 1.2: Indicating the applied area in relations to Kimberley

1 REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or mining operation

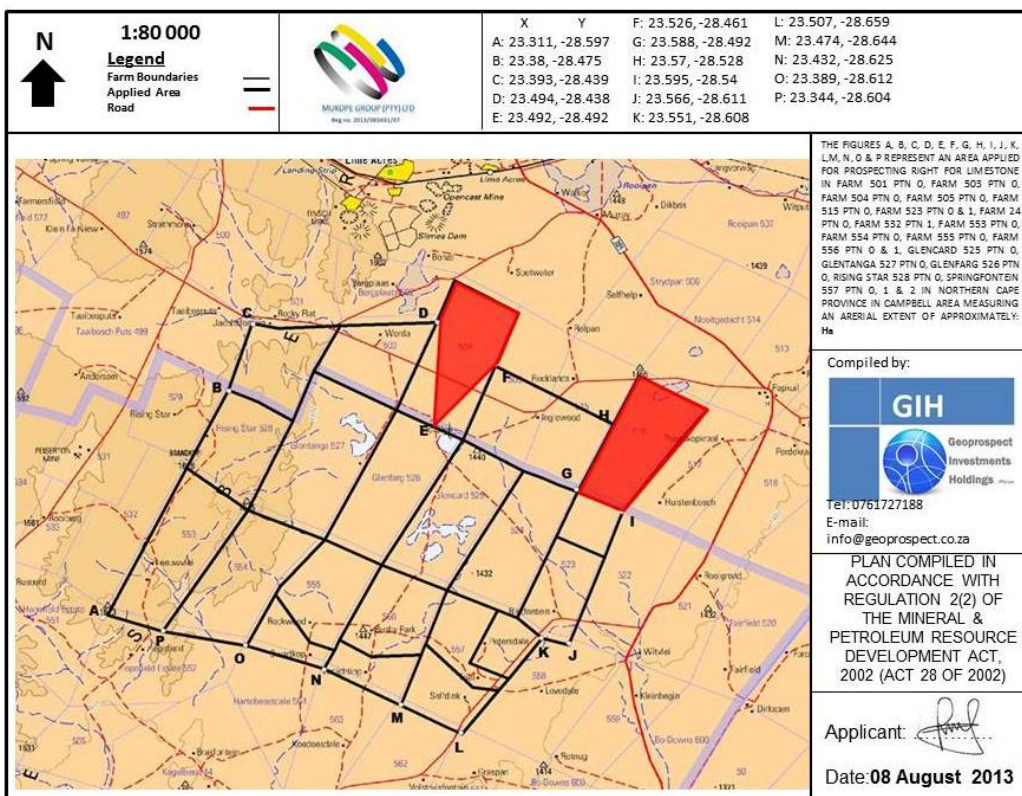


Figure 1.3: Indicating the topographical map of the applied area



Figure 1.4: Indicating the area relative to Griqua town and the road

1.1 The environment on site relative to the environment in the surrounding area.

Climate: Northern Cape Province that can be described as a semi-desert region with a temperature above 40°C in summer. To find the most accurate and reliable information about the climate and precipitation of Griekwastad, the published results of asurements taken in Kimberley (152 km away from Griekwastad) are used. The climate in Griekwastad is a steppe climate. This climate is characterized by the drought that dominates in this area. The annual rainfall is between 250 and 500 mm, mainly in the summer.

The winters in a steppe climate are much colder. The temperature of the country may drop during the winter months. the average precipitation lies between 61-100 mm in January, February and March. In October, November and December it amounts 31-60 mm, and less than 30 mm in the other months of the year. The highest temperatures are expected in the summer months, mainly November, December, January and February. Possible winters can appear in June, July and August, which brings risks like night frost for the crops. These climatic conditions make the area rather dry and cause problems regarding water supply for the inhabitants. Hence, these people lack the basic needs to be able to have a good living standard.

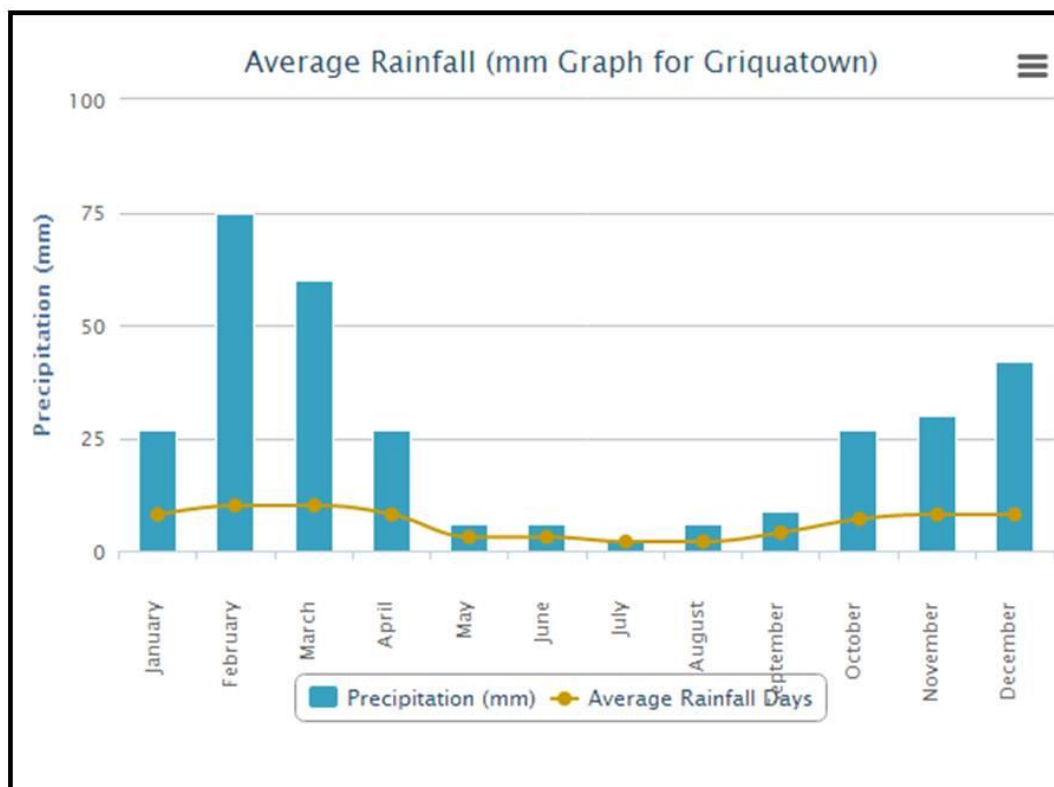


Figure 1.5: Chart showing rain patterns

Topography: The general topography of the area is in a flat.

Land use: The land-use on the proposed prospecting area and the surrounding area are mainly for extensive grazing for livestock activities. The closure objectives will be to return the land to farming use as it was found in before prospecting activities or even better than before.

Soil Type: (Rock areas with miscellaneous soils (*in dark purple*)). These are areas where 60-80% of the surface is occupied by exposed rock and stones/boulders and the slopes are usually steep. The rest of the area comprises mostly shallow soils, directly underlain by hard or weathered rock.



Figure 1.6: Soil type around Griqua town

Red-yellow apedal, freely drained soils (Red, high base status soils, > 300 mm deep, without dunes (*in light pink*)). These are moderately deep (average 500-1200 mm) red, freely drained, apedal (= structureless) soils. Soils occur in areas associated with low to moderate rainfall (300-700 mm per annum) in the interior of South Africa and have a high fertility status. A wide range of texture occurs (usually sandy loam to sandy clay loam).

Glenrosa and/or Mispah forms (Other soils may occur (*in brown*)); lime generally present in the entire landscape. These are generally shallow soils consisting of a topsoil directly underlain by weathered rock (Glenrosa form) or hard rock (Mispah form), sometimes with surface rock and steep slopes. Found in drier areas than Broad Soil Pattern Fa or Fb (high quality blend of compost and humus) or areas on base-rich parent materials, so that lime occurs throughout the landscape.

Red-yellow apedal, freely drained soils (Red, high base status soils, < 300 mm deep (in *yellow*)) These shallow (< 300 mm), red, freely-drained, apedal (= structureless) soils occur in arid to semi-arid areas associated with low rainfall (< 500 mm per annum) and are underlain by hard to weathered rock. A wide range of textures may occur (usually loamy sand to sandy loam). Stones or rocks are often present on the soil surface.

Geology: Local Geology

The area is found in the Cambell Rand Sub-group of the Ghaap Group within the Transvaal Super group. The Transvaal Supergroup lithologies were deposited in an extensive epeiric sea on the central part of the Kaapvaal Craton. The strata developed within two related basins of which the westernmost (the Griqualand West basin) is preserved in the Northern Cape Province. The Transvaal Supergroup, as preserved within the Griqualand West basin, comprises an extensive, basal carbonate platform sequence (the Campbell Rand Subgroup) conformably overlain by iron-formations of the Asbestos Hills Subgroup.



Figure 1.7: Geological map of the applied area

Vegetation and Common Crops

Because of the subtropical climate of South Africa 'subtropical fruit' are the best to cultivate in this area, mainly because they are climate adaptive crops. Subtropical fruits are citrus fruits, as well as olives, dates, figs, currants, raisins and nuts. Different nut trees are possible, like almonds, hazelnuts, walnuts, cashews, Brazil nuts and pecans. Citrus fruits such as oranges, tangerines, grapefruit and lemons are also an option. The only disadvantage of those three is that they need 2000 millimeter water per year.

Other crops like cucumber, asparagus, baby marrows, barley, beetroot and even carrots are possible to grow in this region. The best types to grow in combination with the irrigation system are carrots, baby marrows, sweet corn, tomatoes, brinjals and chillies. Most of those plants can be harvest in 11 till 17 weeks and Baby marrows can be harvested in 6 weeks

Ground water: Ground water on the farms was not analysed to determine the water quality in the area because of the insignificant impact that the prospecting activities may have on the water quality and quantity. Groundwater is not extensively been used in the area and is primarily used for stock watering and domestic purposes at farmhouses. The ground water quality is assumed to be good as most farm owners use it for domestic purposes without any treatment.

Air quality: The air quality is essentially unpolluted but is can be disturbed by the fast movement of heavy earthmoving equipment which can generate dust and cause nuisance and health implication to workers and people living nearby. The prospecting operation will ensure that the dust suppression method is implemented and minimum speed is adhered to during the prospecting period. There is a potential threat of air pollution which can be generated from **LimeAcres** mine which is situated approximately 6km north of this application.

Transport and logistic

The area applied for has a well developed and maintained infrastrure in terms of roads and rail. The area has a well mainted railway system which is approximately 10km North of this area, it is currently servicing the mine house of Lime Acres which is mining Limestone and Ulco on the North eastern side. The roads envelope the area with the R385 on the North and the R64 on the south. This does put this project in a very lucrative area in terms of transportation and logistics wise.

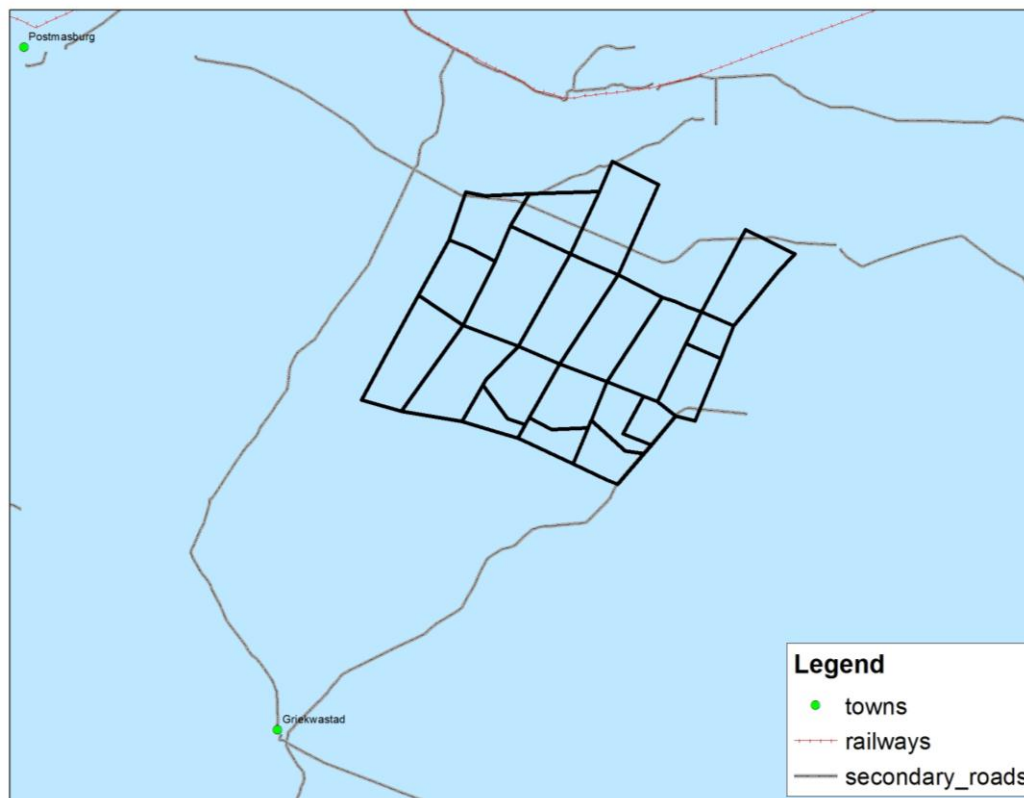


Figure 1.8: Transport systems relative to the application area

Sites of archaeological and cultural interests: No assessment has been done as of yet and this will be done during an HIA studies which will determine if there is any of such a site before drilling commences.

Protected Areas: There are no protected areas near the site, or within 5 km of it. The site is not within any threatened ecosystem as per government notice 1002 of 2011.

1.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

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

Soil

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

Preventive measures that should be taken include;

- ❖ The use of oil drip trays on leaking vehicles and equipment

- ❖ No major vehicle repairs should be done on site
- ❖ Oils and fuel should be stored on bounded areas to avoid spillages
- ❖ An emergency plan for spillages should be available on site.

Flora and Fauna

Only areas demarcated for drilling should be cleared of vegetation if needed, firewood harvesting and animal hunting should not be allowed to be done on site during the prospecting activities.

Surface Water

There were a few streams observed in the area applied and with no critical (sensitive) areas having such streams or requiring mitigation, though all environmental areas will require protection from pollution, not all areas are regarded as sensitive and critical. All areas with water bodies that may require acquiring of data through drilling, a buffer zone of 100 metres should be left protected to avoid contamination of surface water. If there is any need to extract water for use during the drilling period, permission should be granted by the relevant people or organisation.

Air Quality

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

- The use of water to keep the soil moist in order to avoid the generation of dust.
- Vegetation clearing should only be limited to the demarcated areas in which there is a need for a road and maximum care must be taken to avoid vegetation loss should it be present in that particular area.

Soil stockpiles should be kept at a height of less than 1.5metres to minimise dust and they should be sprayed with water on a regular basis, where possible, compaction of the stock piled soil should be done in order to minimise the erosion and sedimentation rate

1.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

Please refer to figure 1.9

1.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties,

We confirm that consultation was done with affected and/or interested parties (Land Owners) and they at this point haven't given a conclusive response. A newspaper advert has been placed in a local newspaper and to date, there has not been received. Interested and Affected Parties have also been consulted and most of them have not responded though more efforts have been made more than once.

Please find the below List for farm owners

Land Owner		
NO.	Farm Name & Portions	Farm Owner
1	FARM 501, 0	OOSTHUIZEN JOHANNES JURGENS
2	FARM 503, 0	OOSTHUIZEN JOHANNES JURGENS
3	FARM 504, 0	GOUS BOERDERY CC
4	FARM 505, 0	CORNELISSEN JOHANNES JOACHIMUS
5	FARM 515, 0	BURGER LUKAS MARTHINUS
6	FARM 555, 0	DIBROS BEEF CC
7	FARM 555, 1	DIBROS BEEF CC
8	FARM 524, 0	SCHOLTZ GETRUDEIA RACHEL
9	FARM 532/531, 1	NORTHWEST DIAMOND CO PTY LTD
10	FARM 553, 0	OCO PROPERTIES CC
11	FARM 554, 0	PALLOCK RANCHES (PTY) LTD
12	FARM 556, 0	BUSHY PARK TRUST
13	FARM 556, 1	KAMFER

		PETRUS ABEL
14	FARM 525, 0	E J ROSSOUW FAMILIE TRUST
15	FARM 527, 0	GLENTANGA LANDGOED CC
16	FARM 526, 0	DIESEL MECHA CC
17	FARM 528, 0	POSTMASBURG ENGINEERING PTY LTD
18	FARM 557, 0	STEENKAMP PAUL ROUX
19	FARM 557, 1	BURGER SCHALK JACOBUS
20	FARM 557, 2	BURGER SCHALK JACOBUS

2 REGULATION 52 (2) (b): Assessment of the potential impacts of the proposed prospecting or mining operation on the environment, socio- economic conditions and cultural heritage.

2.1 Description of the proposed prospecting or mining operation.

2.1.1 The main prospecting activities (e.g. access roads, topsoil storage sites and any other basic prospecting design features)

The prospecting period applied for prospecting is 5 years. We assume that all processes will be completed in the applied and specified period thereof including rehabilitation.

The project will use existing access roads as much as possible. If there is a need to establish access roads, they will be constructed in such a way that minimum number of vegetation/bushes/trees is removed and existing structures such as fence lines shall be followed as far as possible. If required, topsoil will be removed and protected. Topsoil removed will be used during rehabilitation process. If there is a need to erect gate in fence lines the applicant will consult and reach an agreement with the landowner/s and other affected parties before erecting a gate. The opening and closing status of gates shall be clarified with the landowner and other affected parties. The applicant will also negotiate with the landowner/s to use existing toilet facilities and if this is not possible chemical toilet facilities will be provided on site.

(i) DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Desktop analysis (Satellite imagery, available mapping, literature review, etc).

This phase has already been initiated through a literature review of geological articles and previous prospecting which took place on site. The synthesis of this information and the use of the information gained from this prospecting cycle will provide the full picture of the deposit as required by the applicants.

Geophysical Survey is conducted through the passing of an electric field through two points in the field. The aim of such survey is to determine any anomalies which may be present in the underlying geology. This phase merely requires the carrying of the two machines into the field and the passing of the electric current through the underlying substrate/ore body at regular intervals in order to determine the results. No samples are taken and no digging is required.

The information gained from **the geophysical Survey** may result in a possible review of proposed drill positions. If this does prove to be the case, then such minor amendment to both the Prospecting Work Programme and Environmental Management Plan will be lodged with the DMR to cater for such changes. Note however that even though the positions of the drill holes may alter slightly, the method and environmental impact attenuation measures will not require adjustment but only the positions of the drill holes. This method only helps us to determine the depth and size of the possible ore body.

(ii) DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

Drilling:

Drilling will be conducted by contractor using core drill to yield samples to varying depths. The samples will be logged by geologist and transported to Geo-Science lab for full analysis.

Note that at each drill site it may be required to drill a series of fanned holes (i.e. holes at different angles from the same position). Drilling will be conducted vertically and inclined. This will result in less environmental damage given that fewer sites will be disturbed. Given the size of the area, we anticipate to drill approximately 10 boreholes.

This method will be able to compensate and supplement the geophysical method which was used to locate the ore and also to assist in borehole sitting. This method of prospecting can be increased in terms of intervals based on the results of the core being logged.

Geochemistry:

This is the sampling of soil around the site in order to see if there are any traces of the ore being prospected for in the soil. This will assist in also identifying the source in which is being washed from, this can also be done by looking at the down and uphill. As much as this method may be invasive, it does very little to no harm of the environment.

2.1.2 Plan of the main activities with dimensions

The planned prospecting work is summarised in the Table below:

Type of prospecting activities planned	Dimensions
Boreholes	A total of 10 drilling holes is estimated. An average depth is 120 m. Drill rigs producing core of NQ diameter will be utilised.
Access roads	Decision not yet made. The plan is to make use of existing access roads, however this is subject to approval by the landowner/s and other affected parties and if access roads have to be constructed they will be similar to existing roads in width (generally less than 4 m). Length will be determined by condition of existing access roads.
Ablution facilities	Chemical toilet facilities will be utilised if use of existing facilities is not possible (number of toilets will be controlled by the project phase and number of employees and contractors on-site).

Geochemistry	Geochemistry involves the taking of soil sample on site to test them in order to test them for their mineral or heavy metal content. This will be done in order to supplement other prospecting methods which are in place.
Geophysics	Geophysics lays a foundation for drilling by able to locate the ore as well as the depth and width. Airborne or ground geophysics will conducted. 1000m x 1000m grid lines will be used for reconnaissance while closely spaced intervals of about 500m x 500m will be used once the target is located to enhance our data as well as the chances of accuracy.

2.1.3 Description of construction, operational, and decommissioning phases.

The construction phase:

During the construction phase, it is anticipated that there will be site clearance for the road construction, though the total length cannot be determined, it will be determined once we have done geophysics and also sited the boreholes but its width will not exceed a total of about 3-4m. The construction equipment which will be used is a TLB and a dozer; there will be some vegetation cover that will be removed. This is a preparation stage of the site before actual drilling takes place. While all soil will be stock piled for the rehabilitation process. This will cause a lot of dust accumulation that will be prevented by spraying water on the soil to minimise the dust accumulation.

The area which will be used for accommodation needs to be identified, fenced around, accommodation prepared, lavatories installed as well as the area which the equipment will be stored. This is also designated in order to minimise the pollution from oil leakages and so forth. It should be noted that no permanent structures will be erected but temporal ones.

The operational phase

The operational phase of the project will involve the actual drilling, survey and the use of Geophysical equipment, geochemistry in order to know which area can be drilled to understand the ore body much better as well as the actual drilling. Noise will also be experienced due to the drilling machinery, ear plugs will be used to minimise the noise from machinery as well as drilling during working hours of between 6am and 7pm to

give land owners/occupiers time to rest and a break from the drill noise. A total of approximately 10 holes will be drilled to a depth of not less than 45m. Both RC and Core drilling will be used to maximise the activity as well as minimising the costs.

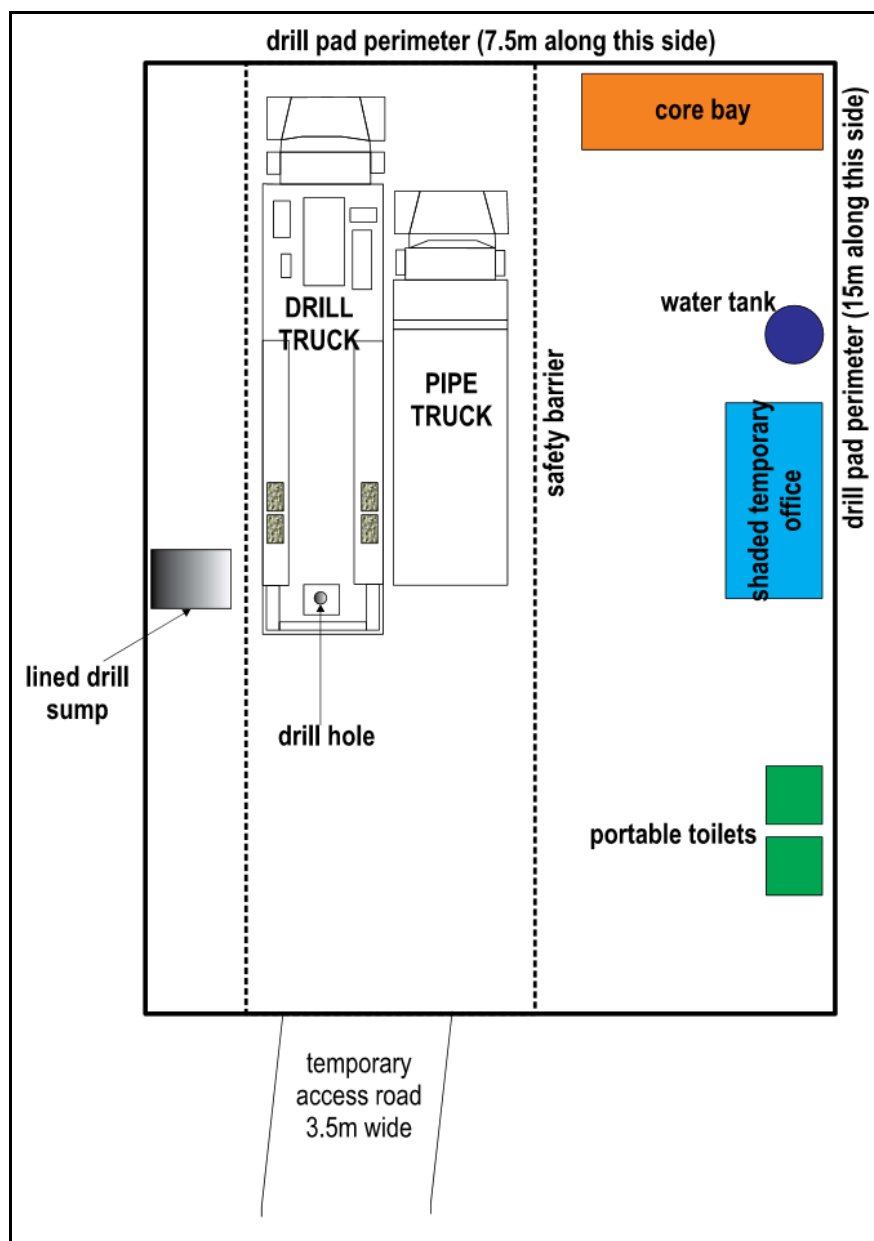


Figure 1.10: Indicating a typical drilling layout

The decommission phase

Decommissioning phase involve ceasing of operations as well as rehabilitation of the area to the state in which it was in before prospecting or even better. During decommissioning phase, all areas that have been disturbed will have to be rehabilitated. All equipment will be removed from the site and left in the state at which it was before the prospecting or even better than before. All the stock piled soil and any crops and vegetation removed must be place back into their original places.

2.1.4 Listed activities (in terms of the NEMA EIA regulations)

Activity 19: Any activity which requires a prospecting right or renewal thereof in terms of section 16 and 18 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

2.2 Identification of potential impacts

(Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

Potential Environmental Impacts & Sources	Measures to prevent, mitigate, minimise or manage the impacts
<p>Impact: Air pollution (dust, gaseous emissions)</p> <p>Source : Establishment of camp site, movement of vehicles and drill rigs,</p>	<ul style="list-style-type: none"> ➤ Dust suppression measures will be implemented and the area will be sprayed with water. ➤ A low speed limit will be imposed to reduce generation of dust. ➤ All the equipment and vehicles will be equipped with the manufactures stock standard exhaust systems which will minimise the amount of emissions from their engines. ➤ Burning of waste will not be allowed on site.
<p>Impact: Water pollution (surface water, groundwater and wetlands)</p> <p>Source: Spillages from machines on site</p>	<ul style="list-style-type: none"> ❖ Prospecting activities will not be conducted within 100m radius from a dam, river, stream, wetland or any water body and the following will be ensured: <ul style="list-style-type: none"> ➤ Control and manage storm water ➤ Prevent soil erosion and keep the water channel clean ➤ Monitor the ground water
<p>Impact: Land degradation, land-use and capability</p> <p>Source: Poor waste management</p>	<ul style="list-style-type: none"> ➤ Completed boreholes will be rehabilitated and re-vegetated. ➤ Areas which do not form part of drilling site will not be disturbed ➤ Prospecting will be conducted in an environmental sustainable manner. ➤ One of the prospecting objective is to turn the area into other land use/s after closure. ➤ Waste material will be properly managed
<p>Impact: Ecological degradation</p> <p>Source: Uncontrolled vehicle movement and poor rehabilitation</p>	<ul style="list-style-type: none"> ➤ All of the biodiversity which will be disturbed will be restored after closure. ➤ Indigenous species will be used to re-vegetate the area. ➤ No animals will be killed and collection of firewood will not be allowed. ➤ Movement of vehicles will be restricted to designated area only
<p>Impact: Land pollution</p>	<ul style="list-style-type: none"> ➤ It is anticipated that domestic waste of small quantity will be generated by workers. Such waste materials will be kept in waste bins which will be disposed of on a regular basis at the registered waste disposal. The same will apply to the waste from the offices. ➤ Any spillages which may occur will be investigated and immediate action will be taken. In the event of significant spills (>35 litres) of any hazardous substance, this will be recorded and reported to the environmental personnel, Department of Water Affairs, DMR and any other relevant

<p>Source: Lack of proper waste management</p>	<p>authorities.</p> <ul style="list-style-type: none"> ➤ Scraps will be kept in designated areas prior delivery to the scrap yard. ➤ All machinery will serviced off site and also inspected for any leaks.
<p>Impact: Aesthetic Pollution Source: Machinery</p>	<ul style="list-style-type: none"> ➤ The visual impact will be of temporary nature. ➤ The surrounding trees and dense vegetation will also serves as the screen to the prospecting area.
<p>Impact: Noise Source: Vehicle movements and Drill rigs</p>	<ul style="list-style-type: none"> ➤ The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulation as well as other applicable legislations regarding noise control. ➤ Employees will be supplied with ear plugs. All prospecting vehicles are equipped with silencers and maintained in a road worthy condition. ➤ All work will be carried out between 6 am and 6pm, this will also allow the land owners and occupiers to have some peace of mind in terms of noise.

2.2.2 Potential cumulative impacts.

Clearing of vegetation (in preparation of drilling activities) if not well managed can cause soil erosion. This can lead to recurring loss of habitat in areas that are disturbed and re-disturbed over an extended periods. Soil erosion will wash chemicals in soils (mainly from fertilisers) into nearby water bodies. This has the potential to cause water pollution and might also negatively affect the organisms in the affected water bodies. Contaminated sediments may also lower the pH of soils to the extent that vegetation and suitable habitat are lost.

The ongoing development of employment opportunities and enhancement of local labour skills base as successive projects come on stream.

2.2.3 Potential impact on heritage resources

The area in question will be assessed for any potential heritage impact before any drilling can take place. This is in line with what the South African Heritage Resources Agency require in terms of the provisions of the National Heritage Resources Act of 1999 (Act 25 of 1999). However, this assessment will be done towards the granting of

the right or after the right has been granted with **special condition** or a clause that state that no drilling may commence without any **Heritage** studies.

Mukope Group (Pty) Ltd understands issues around the importance of conserving the National and Cultural Heritage sites and will follow and respect the findings of the heritage consultants the standards on the protection of national heritage resources with the assistance and guidance of the assessment and findings of the HIA studies which will be done

2.2.4 Potential impacts on communities, individuals or competing land uses in close proximity.

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

Although drilling will be limited in spatial extent, this proposed prospecting will somewhat reduce the grazing available to famers. Vehicle movement will also disturb some other farming activities but very little of such an activity. We then propose doing it on seasons which have very little to no impact on agricultural farming, this is done to minimise risks and loss on the farm owners side.

Noise pollution and visual impact are the most common potential impacts that can affect the land occupiers, individual or competing land users in close proximity. However, mitigation measures to minimise such impacts are in place as already discussed above. It should also be noted that dust and noise impacts will be minimal because they are in most cases localised to the drill sites and access tracks and this is for a shorter period. The prospecting activities will be conducted in a manner that will ensure that the above-mentioned are not negatively affected by the proposed prospecting activities.

2.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties,

We confirm that consultations was done with affected and/or interested parties

and we are still waiting for response and also engaging further in terms of consultation process itself.

2.2.6 Confirmation of specialist report appended.

(Refer to guideline)

There is no specialist report appended on this EMP.

A specialist studies will be done towards the granting of the Prospecting Right or after with special conditions of not drilling before the studies is done.

3 REGULATION 52 (2) (c): Summary of the assessment of the significance of the potential impacts and the proposed mitigation measures to minimise adverse impacts.

3.1 Assessment of the significance of the potential impacts

3.1.1 Criteria of assigning significance to potential impacts

The assigning of the significance to potential impacts is integration of the severity (magnitude of the potential impacts), type of the impact, extent to which the impact will occur, probability of the impact (the likelihood of the impact occurring) and the duration of the impact. This is the best judgement of whether the impact is important or not within the broad context, once the mitigation is taken into account.

By using the combination of these criteria, impacts have been assigned a rating of high (H), medium/moderate (M), low (L), very low (VL) or no impact. A significance rating is assigned twice to the impact. Firstly, to indicate significance without mitigation or optimization and secondly, to indicate significance after mitigation or optimization. This is done to highlight the importance of mitigation or optimization of potential impacts.

CATEGORY	DESCRIPTION/DEFINATION
High	<p>Impacts will be of high significance if one of the following apply:</p> <p>The extent is national to international;</p> <p>The duration is long term to permanent;</p>

	The severity will be high; Probability is definite
Moderate	Impacts will be of moderate significance if one of the following apply: The extent is local to regional; The duration is medium to long term; The severity is major; The probability is highly probable
Low	Impacts will be of low significance if one of the following apply: The extent is local; The duration is temporary to permanent; The severity is low; The probability is probable
Very Low	Impacts will be of very low significance if one of the following apply: The extent is site-specific The duration is temporary to permanent; The severity is very low The probability is improbable
No impacts	A potential concern of impact which, upon evaluation, is found to have no impact

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

Main Activity	Impact	Significant Assessment
Movements of vehicles & machinery	Noise, dust, leakages of oils & diesel,	Very Low
Establishment of site camp	Noise, dust, leakages of oils & diesel,	Low
Drilling	Water pollution	Very low
Vehicle maintenance	Spillages	Low
Road construction	Noise, dust, leakages of oils & diesel,	Low
Drilling	Ecological degradation	Moderate

3.1.3 Assessment of potential cumulative impacts.

Based on the nature of the prospecting activities, there are no cumulative impacts anticipated. Poor management of access roads and rehabilitation activities can create

cumulative impacts on vegetation of the proposed prospecting area if not properly managed.

3.2 Proposed mitigation measures to minimise adverse impacts.

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

Prospecting activities such as transporting or dispatching activities, on site supporting activities, drilling, excavating, fencing, construction of roads, etc can have negative environmental impacts if not managed properly. They can result in:

Air pollution (dust, gaseous emissions)

- Dust suppression measures will be implemented and the area will be sprayed with water.
- Speed limits will be erected to reduce generation of dust.
- All the equipment and vehicles will be equipped with the manufactures stock standard exhaust systems which will minimise the amount of emissions from their engines.
- Burning of waste will not be allowed on site.

Water pollution (surface water, groundwater and wetlands)

- Prospecting activities will not be conducted within 100m radius from a dam, river, stream, wetland or any water body and the following will be ensured:
 - Control and manage storm water
 - Prevent soil erosion and keep the water channel clean
 - Monitor the ground water

Land degradation, land-use and capability

- Areas which do not have gravel will not be disturbed
- Prospecting will be conducted in an environmental sustainable manner.
- One of the prospecting objective is to turn the area into other land use/s after closure

Ecological degradation

- Most of the biodiversity will be restored after closure.

- Indigenous sp will be used to re-vegetate the area.
- No animals will be killed and collection of firewood will not be allowed

Land pollution

- It is anticipated that domestic waste of small quantity will be generated by workers. Such waste materials will be kept in waste bins which will be disposed of on a regular basis at the registered waste disposal site. The same will apply to the waste from the offices.
- Any spillages which may occur will be investigated and immediate action will be taken. In the event of significant spills (>35 litres) of any hazardous substance, this will be recorded and reported to the environmental personnel, Department of Water Affairs, DMR and any other relevant authorities.
- Scraps will be kept in designated areas prior delivery to the scrap yard.

Noise

- The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulation as well as other applicable legislations regarding noise control.
- Employees will be supplied with ear plugs. All prospecting vehicles are equipped with silencers and maintained in a road worthy condition.

3.2.2 Concomitant list of appropriate technical or management options

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

Soil monitoring:

Topsoil stockpiles should be re-vegetated and the performance of the vegetation should be assessed by a specialist once a year. Topsoil will be removed separately from the sub-soils and will be stockpiled separately. These stockpiles will be sloped to approximately 18-25 degrees and grassed to protect it from the elements such as rain and wind. Topsoil will be used to backfill the portal area and when prospecting discontinues. Sub-soils will mainly be utilised for backfilling with topsoil to be spread evenly over the area to be rehabilitated. Topsoil will be

replaced in a minimum layer of 300 mm over the backfilled area. A suitable seed mix will be spread over the backfilled area to promote the establishment of vegetation.

Surface water:

The upstream water quality and quantity should be maintained for the duration of the activities. No construction activities are to take place within the 1:100 year flood-line of any water courses. Monthly monitoring of all surface water resources is to take place.

Groundwater:

A monitoring procedure should be compiled that covers the location and frequency of sampling as well as the parameters to be analysed. Monitoring results will be captured in an electronic database as soon as results become available allowing:

- Data presentation in tabular format;
- Time-series graphs with comparison abilities;
- Statistical analysis (minimum, maximum, average) in tabular format;
- Graphical presentation of statistics;
- Linear trend determination;
- Performance analysis in tabular format;
- Presentation of data, statistics and performance on diagrams and maps;
- and
- Comparison and compliance to legal or best practice water quality standards

Air quality:

Air quality monitoring should be conducted and points should be located to assess impacts on the nearest sensitive receptors, taking prevalent wind direction into account. There are no settlements of communities within the 500 m dust fallout zone. Dust suppression by means of a water cart or any other method

should be done at least once a day with water which has been brought in by tankers.

Noise:

The recommended noise levels during operational activities will not exceed the recommended 40 dBA during night times and 50 dBA during day times. Complaints from locals relating to noise and dust will be treated as serious and will be recorded.

Waste Management

Domestic waste will be collected in waste skips and disposed of at a registered domestic waste disposal site.

Hydrocarbon spills

All contaminated soils will be removed and placed in a waste disposal receptacle and disposed of at a licensed facility. Bioremediation methods could also be used to clean the contaminated soils from hydrocarbons. The clean soils can then be replaced.

Fauna, Flora and Sensitive Landscapes:

Rocky outcrops will be avoided. All surface infrastructures will be sited in such a manner as to minimise the removal of trees. No trees will be felled for wood. Should it be required to remove trees, these trees are to be cut for firewood and given to the local communities and workers residing in the surrounding communities. Animals will most likely escape the area when bush clearing starts. Bush clearing will be done from one side only in order to give larger animals time to escape. The drilling area will be fenced to prevent animals from entering the site.

3.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

The identified potential impacts which range from air pollution, dust, noise pollution, spillages, aesthetic impacts, invasion of alien species, land degradation,

water pollution and land pollution will be properly managed. None of these impacts will be significant since the proposed prospecting activities will be of small scale, mitigation measures will be adhered to and concurrent rehabilitation will be practiced.

4 REGULATION 52 (2) (d): Financial provision. The applicant is required to-

4.1 Plans for quantum calculation purposes.

(Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

See attached Quantum

4.2 Alignment of rehabilitation with the closure objectives

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

The closure objectives are;

- To leave the site in a safe state for humans and animals,
- Ensure that the water resource and underground water is not affected by rehabilitation activities
- To consolidate and remove the stockpile material remaining on the site and hence restoring the original topography of the site.
- To promote indigenous vegetation growth suitable for animals that graze over the disturbed areas on the site.
- To remove all category 1 invader vegetation and demarcate the Eucalyptus sp. on the site.
- To leave the prospecting area at a potential stage for any other land use including the pre-prospecting land-use.
- Drill holes will be capped and/or backfilled where necessary.

4.3 Quantum calculations.

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

See attached Quantum

4.4 Undertaking to provide financial provision

(Indicate that the required amount will be provided should the right be granted).

It is hereby undertaken that the financial provision for rehabilitation purposes as required in terms of section 41 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) as read with regulations 53 and 54 of the Regulations to the said Act will be submitted to the Department of Mineral Resources; North West Regional Office once a prospecting right has been granted by the minister or the delegates of the minister. **Mukope Group (Pty) Ltd** is committed to has set aside an amount of **R35 656.00** for rehabilitation of the proposed prospecting activities.

5 REGULATION 52 (2) (e): Planned monitoring and performance assessment of the environmental management plan.

5.1 List of identified impacts requiring monitoring programmes.

Environmental Impact	Components affected and risk factor
Air pollution (dust, gaseous emissions)	<ul style="list-style-type: none"> ➤ Gaseous and dust emissions have adverse impact on human health. ➤ Long term atmospheric impacts, e.g. can change microphysical properties of clouds, change local climates, act as condensation nuclei. ➤ Reduction in visibility
Water pollution (surface water, groundwater and wetlands)	<ul style="list-style-type: none"> ➤ Contamination of surface and underground water-adverse impacts on human health. ➤ Soil erosion and storm-water management. ➤ Disturbance on surface run-off patterns.
Land degradation, land-use and capability	<ul style="list-style-type: none"> ➤ Soil erosion-loss of top soil, siltation. ➤ Soil contamination-loss of vegetation cover and soil fauna. ➤ Soil compaction
Ecological degradation	<ul style="list-style-type: none"> ➤ Loss of plant and animal species, wetlands affected. ➤ Impact on soils, water quality and aquatic life.
Invasion of alien plants	<ul style="list-style-type: none"> ➤ Loss of indigenous plant species and loss of water
Aesthetic pollution	<ul style="list-style-type: none"> ➤ Can be through open pits, improper disposal of waste. Hazardous waste (chemical and radioactive) can have adverse impacts on human health due to high radiation and corrosive hazard. ➤ Coating of houses etc with dust
Noise	<ul style="list-style-type: none"> ➤ Can be nuisance noise (disturbing noise) or 'industrial' noise, which can have negative impacts on health, also depending on proximity to residential areas.
Fire	<ul style="list-style-type: none"> ➤ Loss of life (animal and human) and biodiversity

5.2 Functional requirements for monitoring programmes.

Every year, a qualified environmental consultant will be employed to undertake an environmental performance of the prospecting activities. As part of the terms of reference to the consultant, the consultant will inform the employees of his/her findings and provide tips of reducing some of the environmental impacts noted. The employees will be requested to sign a register of proof of training.

Regulation 55 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) clearly describes the process and procedure as well as requirements for monitoring and auditing of the performance of this plan to adequately address environmental impacts from the operation. The following information must be provided. The monitoring and performance assessment of the prospecting activities will be conducted as prescribed in terms of regulation 55 of the Mineral and petroleum Resources Development Act, 2002 (Act 28 of 2002). Section 38 of the said Act is also relevant as far as monitoring of impacts is concerned. This Section requires the holder of a prospecting right and mining right or permit to rehabilitate the land to its natural state or predetermined condition.

The holder is also responsible for any environmental damage or pollution as a result of his operations, both inside and outside the prospecting right area. This Section places the responsibility for any environmental damage squarely with the holder of the right. The holder therefore has the obligation to control such damage before it becomes unmanageable. The continuous monitoring of key environmental indicators throughout the life of the mine operation will ensure that these impacts are recognised before they get out of hand.

Appropriate monitoring and performance assessments specifically for the Environmental Management Plan, will be conducted taking into account all the environmental features. Monitoring and performance assessment of approved EMP will be applicable to the whole life cycle of the prospecting operation.

5.3 Roles and responsibilities for the execution of monitoring programmes.

Mitigation: Action/mitigation	Responsibility	Timeframe
<p>Soil pollution from spillages: Drill pans will be in place under all stationary machinery. Servicing of vehicles and other equipment will be done regularly to avoid spillages and it will be done off-site. No equipment shall be extensively repaired in any place other than in the maintenance yard. Rehabilitation of disturbed areas should be undertaken as soon as possible and properly monitored. Disposal of contaminated soils will be done at approved sites.</p>	Mukope Group (Pty) Ltd/Consultant	Full duration of the project
<p>Noise impacts to people: Make use of personal hearing devices (i.e. noise clippers). Drilling activities will also utilise machines producing less noise (i.e. noise level equivalent to that produced by agricultural tractor). Drilling will also be done during the day and this will not be done throughout the life of the project, thereby making the impacts temporary. If there is a need to drill at night, arrangements will be done with all affected parties and drilling will also be far from residential areas to ensure that no or minor impacts are caused by such activities.</p>	Mukope Group (Pty) Ltd/Consultant	Drilling phase and when working close to equipment generating high noise levels (i.e. core cutting machine).
<p>Dust emission: Control speed of vehicles entering and leaving the project area and spray water from water carts brought on site.</p>	Mukope Group (Pty)	Full duration of the project
<p>Soil erosion: Rehabilitation of disturbed areas will be undertaken as soon as possible and properly monitored. Rehabilitation will involve the replacement of suitable and adequate topsoil and the encouragement of indigenous local vegetation to stabilise the soil.</p>	Mukope Group (Pty) Ltd/Consultant	Full duration of the project
<p>Generation of domestic waste: Dust bins will be provided for domestic waste. These bins will be emptied at approved disposal sites.</p>	Mukope Group (Pty)	Full duration of the project

<p>Surface water contamination: Erosion will be avoided to ensure that washing of chemicals from soils into the nearby water bodies does not occur. Water samples will be taken from these water bodies for analyse in order to ensure that the water is still in condition similar to that before prospecting. If there are some changes, corrective action will be taken.</p>	<p>Mukope Group (Pty) Ltd/Consultant</p>	<p>Full duration of the project</p>
<p>Impacts on cultural/heritage resources: A study to be conducted before commencement of drilling.</p>	<p>Mukope Group (Pty) Ltd/Consultant</p>	<p>Full duration of the project</p>

5.4 Committed time frames for monitoring and reporting.

Monthly meetings are ideal to facilitate awareness of job-specific environmental dangers and to educate employees as to how they can live a more sustainable lifestyle outside work. The method and medium of communication during the monthly meetings will be determined by the team leader facilitating the meeting. The topics discussed in monthly meeting will be recorded in a log book, with all employees present signing an attendance register.

The team leader who is to undertake the monthly meeting will be provided with the necessary training so that he/she can effectively inform the other employees about the topics listed below.

The topics for discussion have been identified as both topics specific to the prospect but also topics that the employees can take home and use in their personnel life. Various topics have been chosen for the year in such a way that one topic is addressed per month (**except December**). The topics include:

- ❖ **Dust** generation related impacts (particularly health related impacts)
 - Which prospecting activities causes dust
 - How the dust generation from these activities can be reduced such as reducing drop heights.
 - The need for enforcing a speed limit.

- ❖ **Noise** generation and related impacts (particularly health related).
 - The importance of wearing hearing protection in noisy areas
 - How noise can impact on surrounding land owners and the need to restrain from creating unnecessary noise (especially at night).

- ❖ **Waste** minimisation and recycling.
 - Training on the difference between domestic waste and industrial waste
 - The importance on separating waste into the demarcated receptacles
 - The importance of disposing of industrial waste correctly
 - Good housekeeping tips and making use of bins provided
 - Why it is important to minimise waste

- What can be recycle
- Why it is important to recycle

- ❖ **Alien vegetation** identification and removal, and the importance of indigenous vegetation.
- Which are the common alien vegetation plants
- Why alien vegetation must be eradicate
- The benefits of indigenous vegetation

- ❖ **Hydrocarbon spillages-** The problem associated with spills
- What hydrocarbon spillages
- Why they are regarded as bad

- ❖ **Practical training** regarding the clean-up a major and minor hydrocarbon spills.
- One meeting will be dedicated to showing the employees how to deal with a hydrocarbon spill. They will take the absorbent provided on the site and spread it over a hydrocarbon spill. The absorbent and polluted soil will be dug up and placed in the contained area for bioremediation. The bioremediation substance will be used to assist in of the soil remediation process.

- ❖ **Fire**
- Trained on what procedure to follow in the event of a fire including who to contact in the case of an emergency
- Trained on how to use fire extinguishers
- Informed on the importance of fire breaks
- Taught about the different fire containment techniques for different fire
- Taught on what first aid is required for smoke inhalation and for burns.
- Provided with tips to ensure that fires don't ever pose a threat.

- ❖ **Environmental Management Plan training**
- One meeting will be dedicated to discuss the environmental management plan and which management aspects are relevant to individual employees.

- ❖ **Concurrent Rehabilitation**
- Why concurrent rehabilitation is necessary

- What activities are required for concurrent rehabilitation of a prospecting operation
- The benefits of concurrent rehabilitation
- Water and electricity consumption and conservation
- Why is it important to conserve water and electricity
- Practical tips on how an individual/ household can save water and electricity

❖ **Environmental Reporting**

- What is an environmental incident such as excessive tailpipe emissions
- When should you report an environmental incident
- How should you respond to an environmental incident

In addition to a once a month dedicated meeting, environmental topics will be discussed at a meeting if the environmental incident occurred during the previous day. Such incident may include a fuel spill or a complaint from the surrounding landowner. During the meeting, the following topics will be discussed (this is not an exhaustive list):

- ❖ How and why the incident occurred?
- ❖ How the incident was dealt with (if applicable)?
- ❖ Evaluation of the response taken by staff?
- ❖ Can the response be improved?
- ❖ What preventative measures should be implemented?
- ❖ What can be done to prevent the likelihood of the incident recurring?

The outcome of the discussion will be noted and implemented by the employees

6 REGULATION 52 (2) (f): Closure and environmental objectives.

6.1 Rehabilitation plan

(Show the areas and aerial extent of the main prospecting activities, including the anticipated prospected area at the time of closure).

The main purpose of rehabilitation is to remediate the negative impacts which were caused by prospecting. All efforts will be done to rehabilitate the affected areas. This will mean that drill holes will be capped, vegetation removed will be re-vegetated, as well as roads excavated, any piling of drill material will be removed from site, any stockpiled soil will be returned back where it was

excavated and any fuel and oil leaks cleaned. All efforts will be made to rehabilitate the land and to also make sure that the area is better than the time prospecting commenced where possible.

6.2 Closure objectives and their extent of alignment to the pre-mining environment.

The closure objectives are;

- To leave the site in a safe state for humans and animals,
- Ensure that the water resource and underground water is not affected by rehabilitation activities
- To consolidate and remove the stockpile material remaining on the site and hence restoring the original topography of the site.
- To promote indigenous vegetation growth suitable for animals that graze over the disturbed areas on the site.
- To remove all category 1 invader vegetation and demarcate the Eucalyptus sp. on the site.
- Cap drill holes and or backfill them.

To leave the prospecting area at a potential stage for any other land- use including the pre-prospecting land-use.

SMALL AND LARGE DIAMETER DRILLING

- Any drill holes which have intersected water are to be left open at the request of the landowner, may only be left open if the landowner takes responsibility for completion of the necessary forms and lodging these with DWA in order to obtain their approval.
- These will be capped as described in the drilling procedure.
- The areas around the hole will be cleared of all drilling chips.
- Drill holes not be used in the future are to be grouted with bentonite as described in the drilling procedure so as to reduce the possibility of the formation of any acid leachate and the possibility of the transfer of any pollutants to ground water, where this has been identified as a concern.
- Other drill holes must be closed as per the drilling procedure.
- Remove the lining of the sump.
- Fill the sump with the material originally moved to make the excavation, and which has been stored on a tarpaulin.

- Restore profile of site to fit in with adjacent ground.
- Loosen compacted ground.
- Replace any topsoil that has been removed.
- Replace stored rocks and stones evenly over site to prevent wind and water erosion, trap seeds and aid water retention.
- If quartz or other light coloured pebbles were collected separately (in arid areas), these must be scattered evenly over the area – causing heat to be reflected and thus cooling the surface, creating microhabitats.
- If any soil on the site has been severely compacted, it must be loosened /scarified to allow water and seed penetration. If the gradient is steep, this loosening / scarifying should be done in bands on the contour, leaving some undisturbed sections between the loosened sections.
- If the slope is very steep the advice of a competent person must be obtained regarding rehabilitation measures so as to ensure minimal chance of erosion.
- Determine if the gradient requires berms to be constructed across the site from natural materials (stones, rocks, branches) to reduce the velocity of rain water and catch soil and reduce the chances of erosion.
- If vegetation was removed and stored, scatter this over the pit site as a mulch to hold soil and seeds, and help prevent erosion.
- Check with project geologist if a) seeding is to be done and if b) Eco-T is to be used.
- All equipment, fencing, fuel etc must be removed from site.
- All waste must be removed from site and disposed of at the appropriately licenced facility.
- Portable toilets/chemical toilets will be used and will be removed and the contents disposed of at an approved facility.
- All tarpaulins must be removed from the site.
- Photograph the site, file information with date and note when first monitoring is due.

REHABILITATION OF FOOTPATHS, ROADS AND TRACKS

- Ensure all equipment, fuel, waste, tarpaulins etc have been removed from site.

- Place a natural barrier at the junction to the footpath/track/road being rehabilitated e.g. rocks to prevent further access.
- Remove any cemented strips on steep / loose slopes but create contour barriers in their place.
- Loosen compacted soil on tracks when track not needed again.
- If on a slope, reduce potential water erosion with contour barriers
- Check with project geologist if a) seeding is to be done and if b) Eco-T is to be used.
- Photograph rehabilitated footpath, track / road and update record.

INVASIVE SPECIES CONTROL

- Newly created access roads, large diameter drilling and/or mechanised excavation sites will be monitored 12 monthly after rehabilitation, until prospecting right closure is obtained, to check for the appearance of invasive alien species.
- Any species present will be recorded and photographed.
- Some of the more common species likely to be encountered are *Acacia dealbata* & *mearnsii* (Black & Silver Wattle), *Pinus* species, *Eucalyptus* species, *Solanum mauritianum* (Bugweed), *Cestrum* (Inkberry)

6.3 Confirmation of consultation

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

Consultation of the land owners has been done though not complete, we still feel that there is room for more engagement and also the fact that the land owners will like to give inputs to this EMP after they have gone through it.

REGULATION 52 (2) (g): Record of the public participation and the results thereof.

6.4 Identification of interested and affected parties.

(Provide the information referred to in the guideline)

Interested and affected parties were identified as stipulated in the departmental guideline drafted in terms of regulation 16(4)(b) in respect of prospecting tight application as well as other related regulations for mining

permit and right. The landowner has also been identified as the interested and affected party hence the consultation negotiations are still taking place to ensure that a proper consultation process is undertaken and completed.

6.5 The details of the engagement process.

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

The land owners/right holders were consulted and have not yet provided objection to the proposed project. A further Background Information Document (BID) has been sent to provide more information to the land owners as we feel that they are entitled to as much accurate information as possible in order for them to make sound and well informed decisions.

6.5.2 List of which parties identified in 7.1 above that were in fact consulted, and which were not consulted.

Land owners. As well as entities which hold prospecting rights in the same land as Mukope Group (Pty) Ltd has applied but of different mineral (s).

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

The consulted parties have not yet raised any issues regarding the above-mentioned factors. This may also be contributed by the fact that there has not been any response as of yet.

6.5.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation.

There are no concerns raised at this stage. Any information that will be received regarding this project will be submitted to the DMR offices and depending on the nature of information, a revised EMP can be submitted for consideration and further evaluation.

6.5.5 Other concerns raised by the aforesaid parties.

There are no concerns raised at this stage. Any information that will be received regarding this project will be submitted to the DMR offices and depending on the nature of information, a revised EMP can be submitted for consideration and further evaluation. There are also no objections received to date and any objections received will be forwarded to the DMR for considerations.

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

There are no minutes which are appended as no I&AP's have registered to date in order for a public meeting to take place.

6.5.7 Information regarding objections received.

None

6.6 The manner in which the issues raised were addressed.

There are no issues raised at this stage. Any issues or concerns that will be raised will be addressed in an appropriate manner following all necessary processes.

7 SECTION 39 (3) (c) of the Act: Environmental awareness plan.

All employees will undergo an induction course when they are employed at the prospecting area and an annual refresher thereafter. Environmental awareness forms part of the induction course. The following syllabus of environmental training is to be included within the induction course:

1. Discuss the concepts of sustainability which must include:

- ❖ Definition of sustainable development – “development that meets the needs of the present and the future generation without compromising the ability of future generation to meet their own needs”.
 - ❖ An explanation of the “*Triple Bottom Line*” of sustainable development; i.e. balancing environmental, social and economic factors.
 - ❖ An example of sustainable developments. These should be selected based on the audience, selecting a development that they can relate to.
2. Discuss the latest specific environmental goals and objectives and the benefits of achieving such goals. As these goals change the induction course must be updated accordingly. Where possible the goals and objectives covered should be selected on the basis of topics that personnel can relate to. These could include, but are not limited to the following:

❖ Concurrent rehabilitation

- *Goal:* Rehabilitate mined out areas concurrently (where practical)
- *Objective:* To ensure that all mined out areas are concurrently rehabilitated. The close corporation will aim to 100% concurrent in terms of rehabilitation.
- *Benefits:*
 - Reduce the costs of final rehabilitation
 - Reduces the time to implement final rehabilitation and to obtain a closure certificate.
 - Improve the ecological status of the site.
 - The more surface rehabilitated the less chance of dust and erosion from the exposed surfaces.
 - Increases the aesthetical appeal of the prospecting area.

❖ Waste minimisation

- *Goal:* Reduce waste generation and recycle and re-use where possible.
- *Objective:* To initiate recycling project where possible.
- *Benefits:*
 - Reduction of waste and promotion of recycling reduces the economic and environmental costs of dealing with waste.
 - Recycling reduces the need to use non-renewable resources, ensuring that these resources will be available for future generations.

❖ Reducing amounts of hydrocarbon spillage

- *Goal:* Reduce the amounts of hydrocarbon spillages and the impact from spillages that occur.
- *Objective:* To initiate recycling project where possible.
- *Benefits:*
 - Saving oil reduces the need to use non-renewable resources.
 - Reduce the potential for soil contamination.
 - Reduce the potential to pollute the ground water.

3. Concepts surrounding the living of a sustainable lifestyle that can be implemented both at work and at home should be discussed. This could include, but are not limited to the following:

❖ Save water

- Close or turn the tap off when not using water, e.g. while brushing your teeth
- Only water gardens or crops when necessary and not during the heat of the day (between 10am and 3pm).

❖ Save electricity

- Use energy efficient light bulbs.
- Do not leave the lights on when not required
- During cold weather, close doors and cover windows to keep the heat in the house

❖ Waste-Reduce, Re-use and Recycling

- Recycle where possible
- Collect used oil for recycling

4. Questions/comments

After undergoing training the employees will be requested to sign a register of proof of training.

7.1 Employee communication process

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

Environmental awareness of the employees will be provided by implementing the environmental awareness training in the following forums:

- Monthly meetings
- Induction courses (annually)
- Training from an environmental consultant (every two years)

It is important to note that the environmental awareness programme is a living document and should be reviewed regularly to ensure that relevant environmental concerns are discussed and the potential impacts of such concerns are minimised. The syllabus to be taught to employees has been determined through identification of the major environmental concerns raised in the impact assessment of this report.

Monthly meetings: Monthly meetings are ideal to facilitate awareness of job-specific environmental dangers and to educate employees as to how they can live a more sustainable lifestyle outside work.

Induction training: All employees will undergo an induction course when they are employed by the mine and an annual refresher thereafter. Environmental awareness forms part of this induction course. After undergoing training the employees will be requested to sign a register of proof of training.

Environmental training from an environmental consultant: Every two years, a qualified environmental consultant will be employed to undertake an environmental performance of the operation. As part of the terms of reference to the consultant, the consultant will inform the employees of his/her findings and provide tips of reducing some of the environmental impacts noted. The employees will be requested to sign a register of proof of training.

7.2 Description of solutions to risks

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

The above-set measures will be adhered to ensure prevention of risky situations during prospecting operation. Each activity and associated risks is

linked in aspects and impacts register to relevant procedures to prevent pollution and other significant impacts. The compliance to the procedures is the duty of all staff and contractors. This is monitored by supervisors and reported to the management team as well as environmental officer.

7.3 Environmental awareness training.

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

The environmental awareness training will comprise of the following:

- General induction to the environmental management system including the aspects and impacts register
- Activity specific induction, based on procedures, including emergency response on spill handling (use of spill kit etc)
- On site confirmation of these procedures, with demonstration of requirements. Periodic awareness section (toolbox talks) on safety, health and environmental topics.
- The table below will also form part of the training sessions.

ASPECT	COMMITMENT AND TRAINING ASSESSMENT
1. Pollution control and Waste Management	Avoidance of waste generation at source, minimisation, re-use or recycling
	Proper waste disposal
2. Air Quality Management and control	Use of machinery such that pollution is kept to a minimum, if possible spray water to suppress dust.
3. Fire Prevention	Proper disposal of iron and other flammable stockpile.
	Fire response mechanisms.
4. Noise Management and control	Keeping noise levels to a minimum
5. Blasting, vibration and shock management and control	Time, duration and date of blasting, suitable weather conditions.
6. Water management and pollution control	Proper handling of waste, especially hazardous waste.
7. Disposal of Waste material	Proper disposal of waste, especially hazardous waste.
8. Soil pollution and erosion control	Proper handling of greases, hydraulic fluids etc, minimising spillage into soil, re-vegetation.
9. Sanitation of surface	Use of sanitation facilities and proper hygienic and aesthetic standards.
10. Granite off cuts and related waste	Recycling, crushing and disposal of granite off-cuts.
	Rehabilitation of land.

11. Management of residue stockpiles and deposits	Characterise stockpile to identify any potentially significant health or safety hazard
	Identify other suitable sites for disposal.
	The design and construction of residue stockpile according to specifications.
	The monitoring of residue stockpiles and deposits continuously to ensure ongoing pollution control, integrity of rehabilitation, health and safety.
	The decommissioning, closure and post closure management of residue deposits as addressed in the closure plan.

8 SECTION 39 (4) (a) (iii) of the Act: Capacity to rehabilitate and manage negative impacts on the environment.

8.1 The annual amount required to manage and rehabilitate the environment.

(Provide a detailed explanation as to how the amount was derived)

See attached quantum

8.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

It has been stated in the prospecting work programme that an amount of **R33 000** will be set aside for rehabilitation purposes.

The applicant will provide **R156 763** for rehabilitation purposes to ensure that any unanticipated environmental impacts are catered for.

9 REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.	
Full Names and Surname	Edgar Netshiozwi
Identity Number	8501075444082

-END-

APPENDIX A

CALCULATION OF THE QUANTUM

Applicant:

MUKOPE GROUP (PTY) LTD

Location:

NORTHERN CAPE

Date:

20/02/2014

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3					
2 (A)	Demolition of steel buildings and structures	m2					
2(B)	Demolition of reinforced concrete buildings and structures	m2					
3	Rehabilitation of access roads	m2	300.00	29.88	1	1	8964
4 (A)	Demolition and rehabilitation of electrified railway lines	m					
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m					
5	Demolition of housing and/or administration facilities	m2					
6	Opencast rehabilitation including final voids and ramps	ha					
7	Sealing of shafts adits and inclines	m3					
8 (A)	Rehabilitation of overburden and spoils	ha					
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha					
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha					
9	Rehabilitation of subsided areas	ha					
10	General surface rehabilitation	ha	0.6	92429.64	1	1	55457.784
11	River diversions	ha					
12	Fencing	m	64	100.41	1	1	6426.24
13	Water management	ha					
14	2 to 3 years of maintenance and aftercare	ha	0.6	1443.5	1	1	866.1
15 (A)	Specialist study	Sum	1	41000	1	1	41000
15 (B)	Specialist study	Sum				1	0
Sub Total 1							112714.124

1	Preliminary and General	13525.69488	weighting factor 2		13525.69488
			1		
2	Contingencies	11271.4124			11271.4124
Subtotal 2					137511.23
VAT (14%)					19251.57
Grand Total					156763