



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

**BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

**NAME OF APPLICANT: M2 PRECIOUS AND BASE METALS (PTY) LTD**

**TEL NO: 079 493 8644**

**FAX NO: 086 664 2365**

**POSTAL ADDRESS: 209 LYNWOOD ROAD, BROOKLYN, PRETORIA**

**PHYSICAL ADDRESS: 209 LYNWOOD ROAD, BROOKLYN, PRETORIA**

**FILE REFERENCE NUMBER SAMRAD: NC30/5/1/1/2/12266PR**

## 1. IMPORTANT NOTICE

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

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

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

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

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

un-interpreted information and that it unambiguously represents the interpretation of the applicant.

## **2. Objective of the basic assessment process**

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

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

## PART A

### SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

#### 3. Contact Person and correspondence address

##### a) Details of

ITEM	DETAILS
<b>i) Details of the EAP</b>	
Name Of Practitioner	Divhani Mulaudzi
Tel no	076 1727188
Fax no:	086 620 5723
<b>ii) Expertise of EAP</b>	
Qualifications of the EAP	Bsc (Hons) Botany

(1) **Summary of the EAP's past experience.**

(In carrying out the Environmental Impact Assessment Procedure): See Attached CV

#### **Mr. Divhani Mulaudzi; Environmental Coordinator**

Divhani holds the Bachelor of Sciences (Botany, Zoology and Conservation Biology (BscBDC)) from University of Venda and also Bachelors' Honours Degree specializing in Botany/Ecology from the University of Limpopo Turfloop Campus. He is currently appointed by Geoprospect as an Environmental Manager.

Divhani has attended a biodiversity academy internship programme at university of Stellenbosch, and University of Cape Town in Rondebosch Cape Town, CIB-DST-NRF (Center for Invasion Biology, Department of Science and Technology and National Research Foundation), this has enhanced his (Environmental Health Safety, Natural & Ecological experience) and Environmental Management related experience. He has also worked as an Environmental Health and Safety (EHS) Consultant for 4 years 7 month.

Divhani has attended a successful wilderness courses at Lapalala Wilderness School, Lephalale in Waterberg District within the jurisdiction of the Lephalale Local Municipality, South Africa, where he successfully completed the following courses: Overview of the Waterberg Biosphere, Basic Archaeology and Geology, Vegetation Surveying and report production, Introduction to Reserve Management planning and Auditing (Water Placement management, Bush Encroachment management, Land Rehabilitation planning and practices, Erosion Control management and the Importance of Fires), Bat Ecology and Conservation.

He has also attended Safety, Health and Environmental courses to enhance his experiences:

1. Continuous Risk Assessment

## 2. Incident and Accident Investigations

### **Memberships and Affiliations**

Affiliated Member of South African Association of Botanists (SAAB).

South African Council for Professional Scientists (SACNASP) (Reg #: 1000122/13)

Affiliated member of Limpopo Wetland forum LWF

Please see Curriculum Vitae attached as an annexure.

(In carrying out the Environmental Impact Assessment Procedure)

Divhani has experience in the field of Environmental Assessment Practitioner. In 2012 Divhani was a specialist Environmental Consultant in Eskom Soc Limited Limpopo Operating Unit. Divhani also worked for many projects for the developments of powerlines, pipelines, and clinics and hospitals in the Limpopo and North West province. He worked to fulfil a Water Use Licence application for Greater Tubatse Municipality as Environmental Assessment Practitioner, Biodiversity and Impact Assessment for mining Project as Environmental Manager, Ecological Impact Assessment in De Hoop Dam. Environmental coordinator in Eskom Soc Mpumalanga operating unit. Early on his career, Divhani worked as a project leader in Rendeals for consulting for Water use licence applications, and Coal Mapping project.

### **b) Location of the overall Activity.**

<b>Farm Name:</b>	DRIEHOEKS PAN
<b>Application area (Ha)</b>	1978Ha
<b>Magisterial district:</b>	Postmansburg
<b>Distance and direction from nearest town</b>	17km North of Postmanburg Town
<b>21 digit Surveyor General Code for each farm portion</b>	C03100000000043500000, C03100000000043500000, C03100000000043500000, C03100000000043500003, C03100000000043500004, C03100000000043500007 C03100000000043500008
<b>Locality map</b>	Attach a locality map at a scale not smaller than 1:250000 and attach as <b>Appendix 2</b>

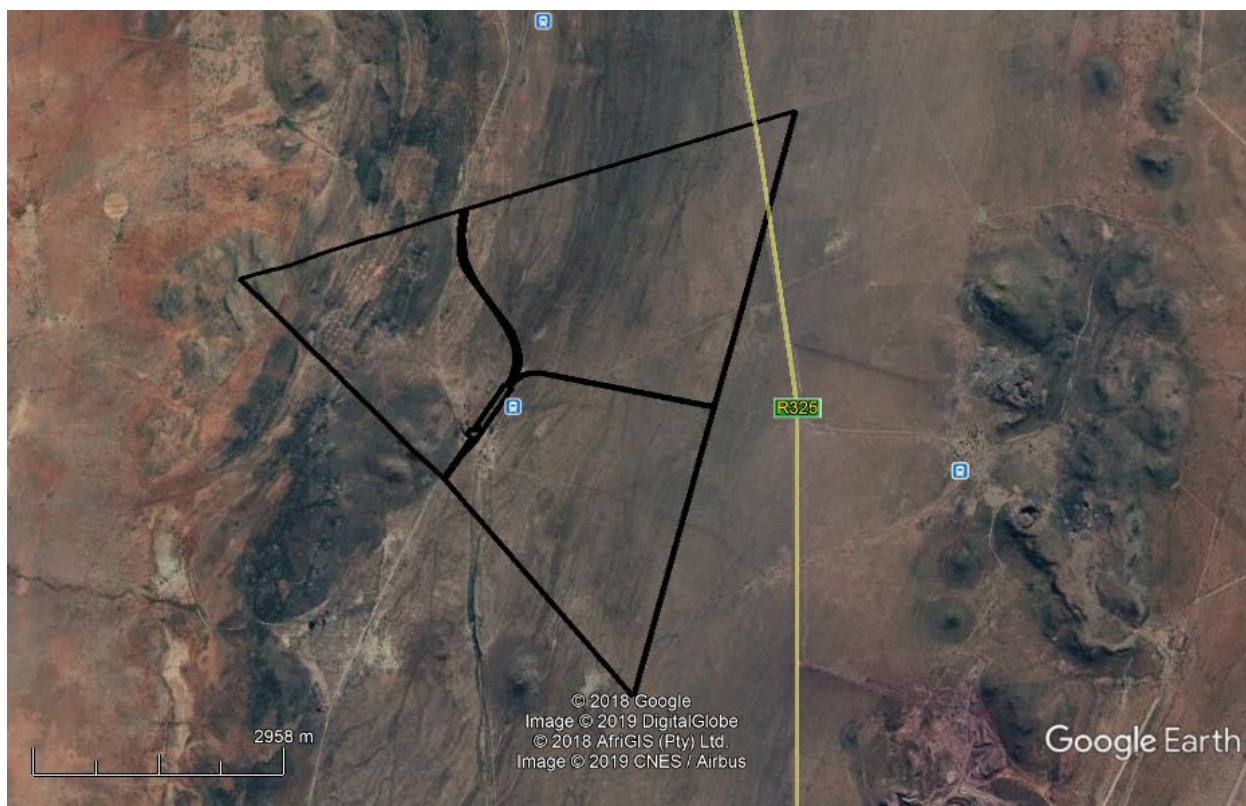
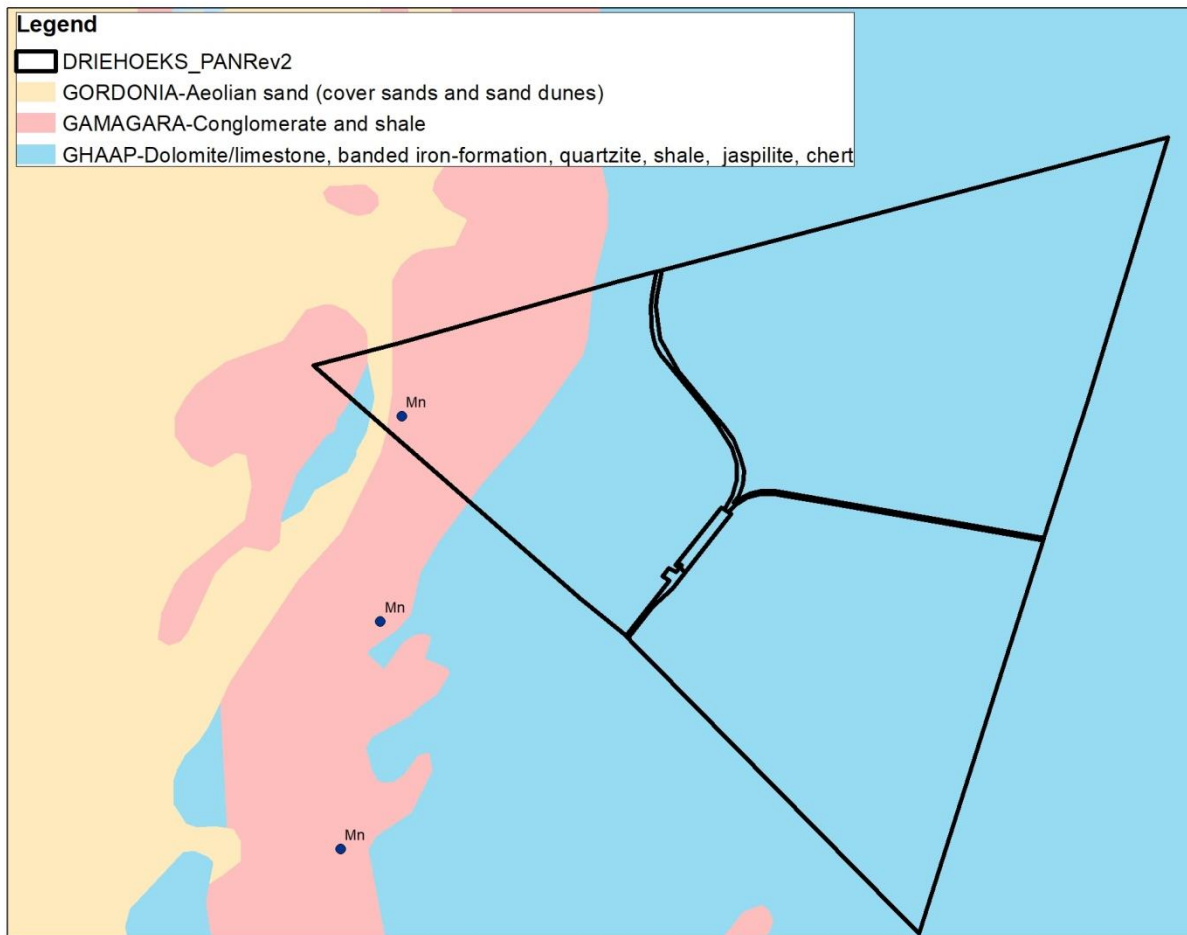


Figure 1: Map of the area

## Climate

The mean annual rainfall of South Africa is shown in the figure below. The climate of the Northern Cape is semi-arid with a late summer-autumn rainfall regime. Average rainfall of the area varies from 50 mm to 400 mm per year. Evaporation levels within this province exceed the annual rainfall. Climate conditions are extreme (i.e. very cold in winter and extremely hot in summer).

This shows the average rainfall and rainy days in Postmansburg for 2016, and Figure 3.4 shows the average rainfall and evaporation for Postmansburg in 2015. The lowest rainfall occurrence was in July (0.1 mm) and the highest rainfall occurrence was in January 2017 (59.8 mm). The area receives most of its rainfall during autumn (March to May), with a semi-arid to arid climate. The relevance of this information is that rainfall occurs whilst temperatures are still quite high and therefore the associated evaporation rates will be high. This implies that groundwater recharge will need to be assessed prior to construction

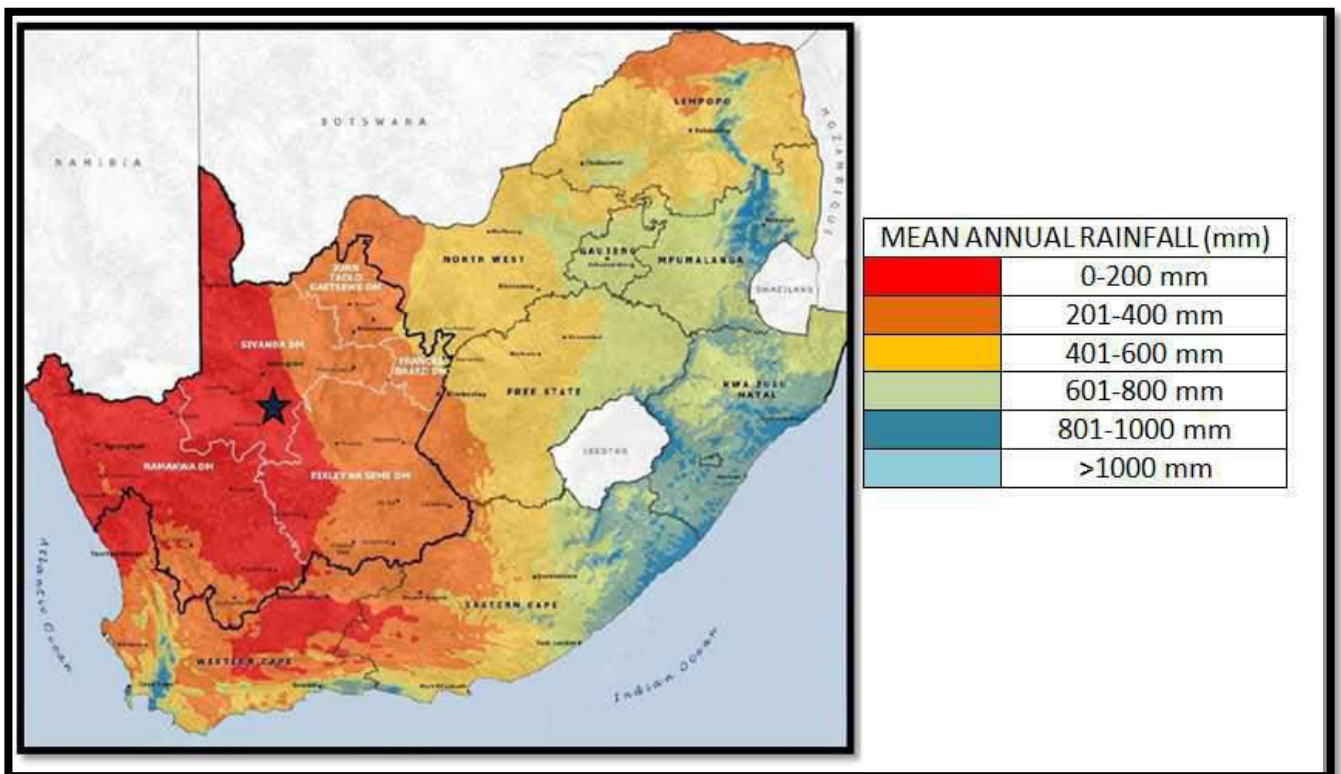


Figure 2: Indicating average annual rainfall

## Topography

The topography of the region is flat with gentle, open undulations (Holland, 2015).

The general area is flat with two notably mountains on the west. The topography ranges between 1388masl of the lowest point with 1442masl.

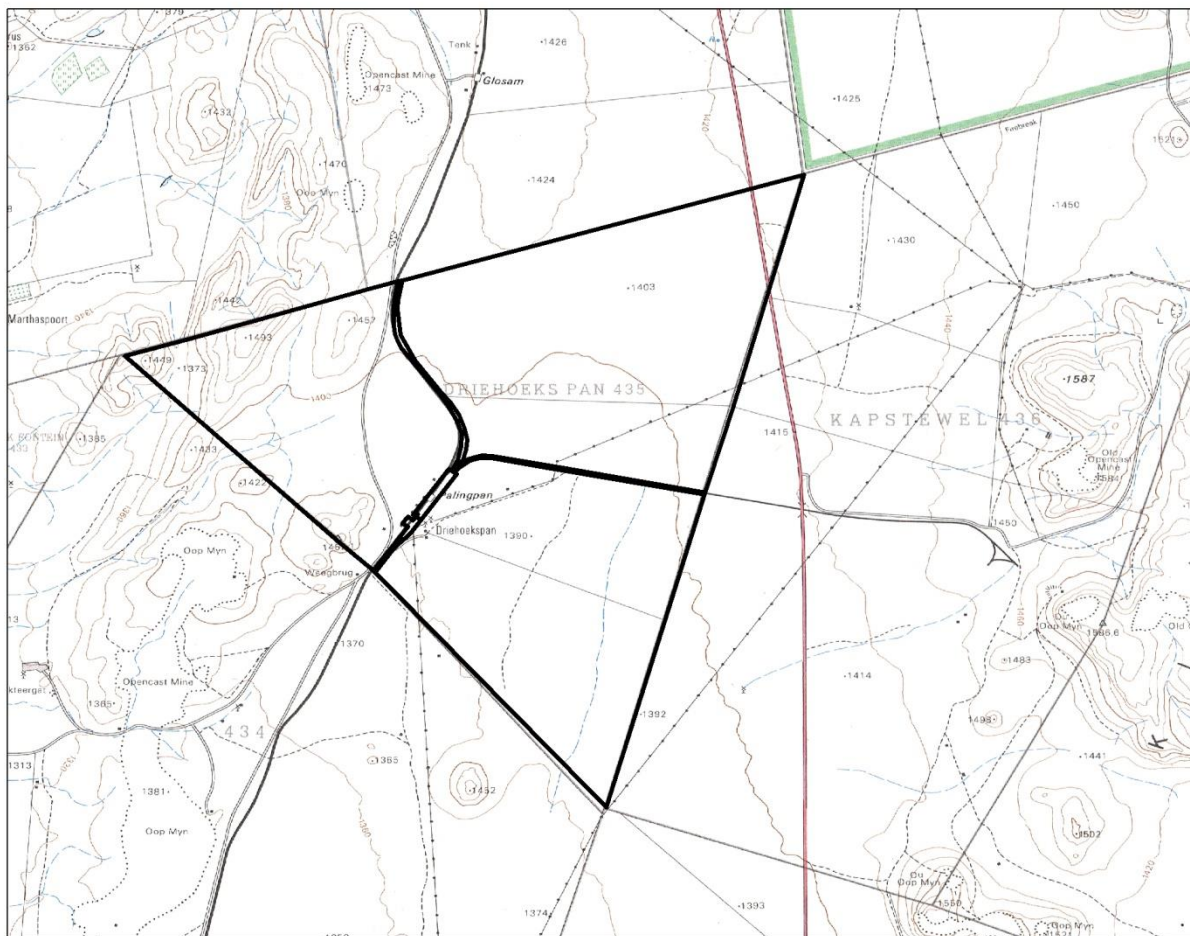


Figure 3: Topographical Map of the prospecting area

### **Soil Type**

The land type classification is a nationwide survey that groups areas of similar soil, terrain and climatic conditions into different land types. The proposed project is located across two very similar land types, Ag6 and Ag5. These land types comprise predominantly shallow, red, sands to loamy sands on underlying rock, hard-pan carbonate, or hard-pan dorbank. The soils fall into the arid Silicic, Calcic, and Lithic soil groups according to the classification of Fey (2010). A summary detailing soil data for the land type is provided in. The land has a low to moderate water erosion hazard, mainly due to the low slope, but it is susceptible to wind erosion because of the sandy texture of the soil (Lanz, 2015).

### **Agriculture Capability**

Land capability is the combination of soil suitability and climate factors. The area has a land capability classification, on the eight category scale, of Class 7 - non-arable, low potential



grazing land. The limitations to agriculture are aridity and lack of access to water plus the shallow soil depth and rockiness.

Because of these constraints, agricultural land use is restricted to low intensity grazing only. The natural grazing capacity is low, at mostly 31-40 hectares per animal unit. The current farmer uses an average stocking rate of 10 hectares per sheep (Lanz, 2017).

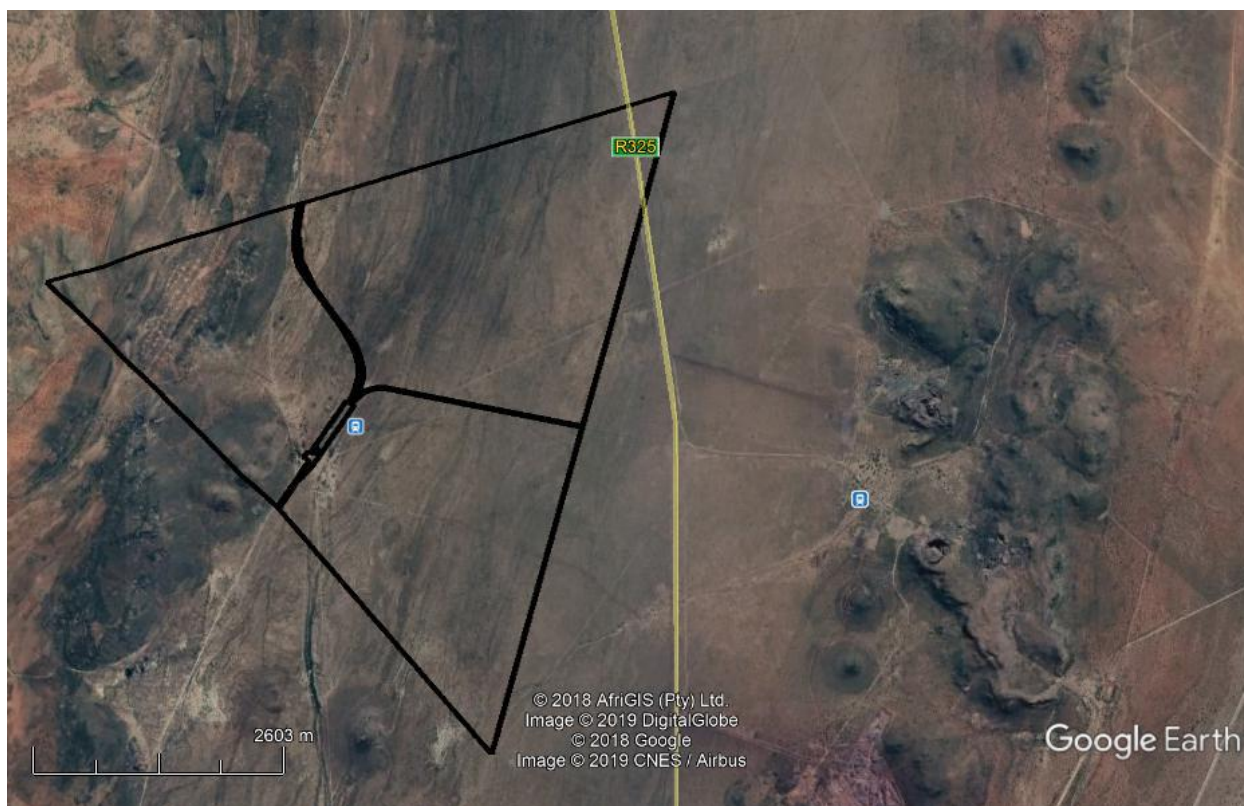


Figure: Land use map

### Hydrology and Surface Water

The Northern Cape is divided into the following four Water Management Areas:

- Lower Orange;
- Upper Orange;
- Olifants/Doorn; and
- Lower Vaal.

The proposed project lies within a xeric to semi xeric environment with rainfall confined to a short period during the summer/autumn months. The prevailing climate regime indicates that rainfall is generally sparse, and together with the sandy percolative soils that prevail across the region there is limited potential for extensive wetland and riparian features.

The National Freshwater Ecosystem Priority Areas (NFEPA) project earmarked several important catchments (sub-quaternaries) based either on the presence of important biota (e.g. rare or endemic fish species) or the degree or lack thereof with regard to riverine

degradation, i.e. the greater the catchment degradation the lower the priority to conserve the catchment. The important catchments areas are then classified as Freshwater Ecosystem Priority Areas (FEPAs). No FEPAs are located within the study area or immediately downstream of the study area (SDP, 2015).

The project area indicates the site in relation to drainage quaternaries within the region. The project area is seen to traverse three specific catchments, these being the D53B and D53C and to the north, the D73F. Primarily the subject site is drained to the north through a series of dendritic features that eventually feed directly in the Orange River at the Kakamas to Upington stretch of this system. A component of the site may also serve the Hartebees River (D53C) which also eventually drains into the Orange River.

### **General Vegetation**

The proposed site is located within the Nama-Karoo biome of South Africa and as noted previously, the site falls within the Bushmanland Arid Grassland (Nkb3) vegetation type (Mucina and Rutherford 2006). This vegetation unit is the second most extensive vegetation type in South Africa extending from around Aggeneys in the east to Prieska in the west. It is associated with freely draining alkaline soils common to this area. This veld type is an arid grassland form comprising of extensive plains dominated by sparse, intermittent pockets of *Aristida* spp and *Stipagrotis* spp (SDP, 2017).

Although a graminoid dominated region, the vegetation type is considered to contain a number of endemic species including *Larryleachia dinteri*, a small succulent, associated with rocky outcrops and the larger *Aloe dichotoma*, which is a listed protected species in terms of the Northern Cape Conservation Act.

### **Geology**

#### **Kalahari Group.**

The Kalahari Formation is approximately 80 metres thick and overlies the Dwyka Formation which forms the basal part of the Karoo Supergroup. The Dwyka Formation is approximately 200 metres thick and overlies the Hotazel Formation (Transvaal Supergroup), containing the manganese deposits. The Hotazel Formation is approximately 20 metres thick in the area of investigation and overlies the Ongeluk Formation (Transvaal Supergroup). Rocks of the Olifantshoek Supergroup outcrop approximately 30 km southwest of the mine forming a distinct topographic high. Rocks of the Asbestos Hill Subgroup (Transvaal Supergroup) outcropping approximately 20 km towards to the east.

Calcrete is commonly found as a discontinuous layer of very dense, nodular calcrete just below the thin topsoil; visible as discrete outcrops. Trenching and drilling has indicated that the calcrete layer

has a very hard nature, which extends into the weathered bedrock, to depths of more than 2m in places.

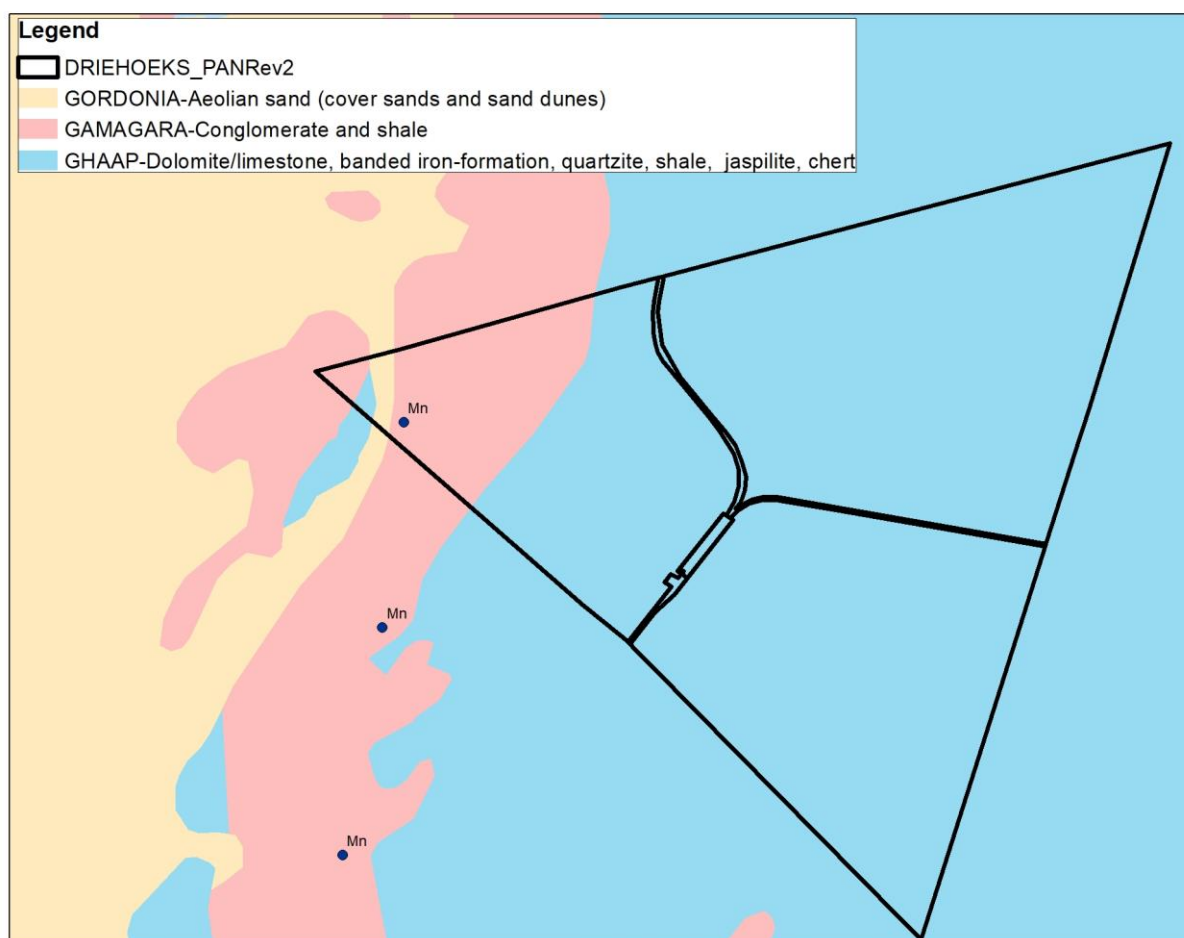


Figure: Geological Map of the area

**Ground water:** Ground water on the area 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 however is present as it is used for livestock. 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 not polluted. **M2 Precious and Base Metals** will do all in its powers and humanly possible to minimize and combat pollution during prospecting in the area. The prospecting operation will ensure that the dust suppression method is implemented and minimum speed is adhered to during the prospecting period.

**c) Locality map**

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

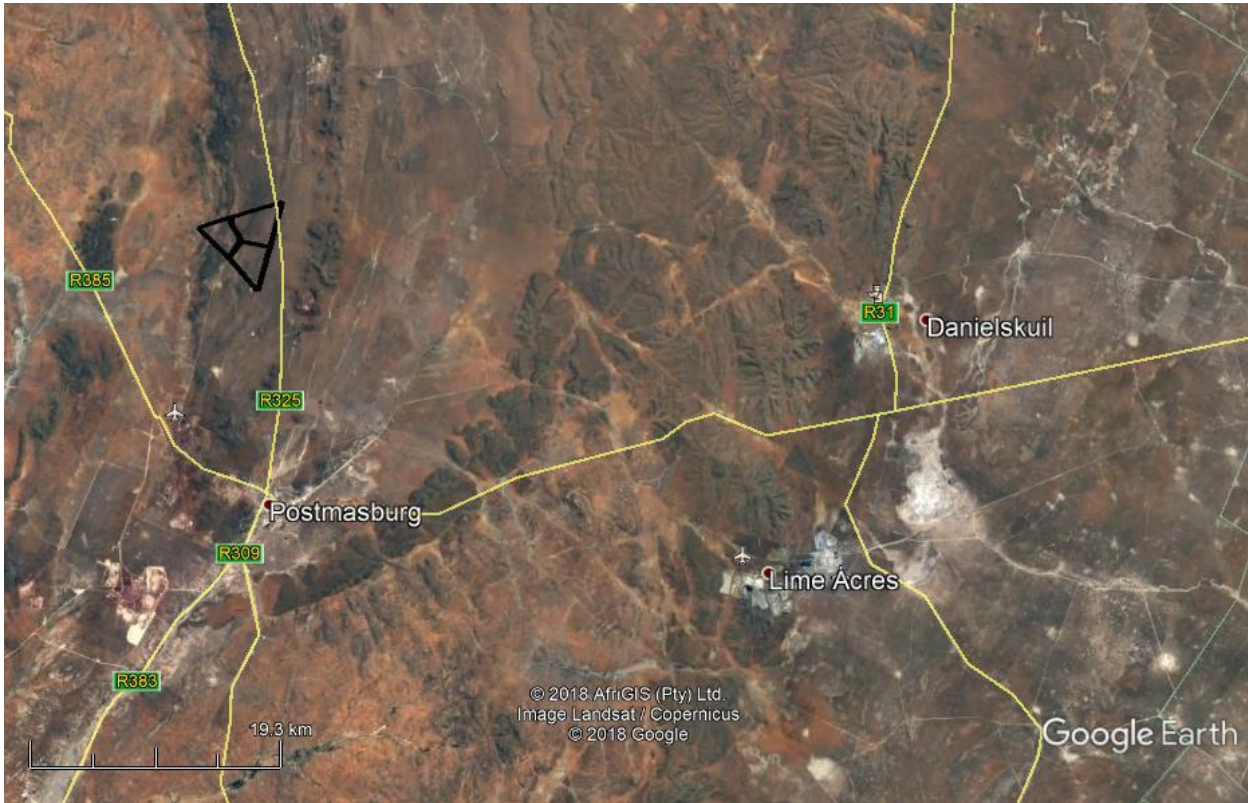


Figure: Map of the prospecting area in relations to near by towns (Google Earth)

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

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

**(i) Listed and specified activities**

NAME OF ACTIVITY  (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc	Aerial extent of the activity in Ha/m <sup>2</sup>	APPLICABLE LISTING NOTICE
Drilling	1978 Ha	Activity 20, Listing Notice 1 (GNR 327)
Desktop Studies	1978 Ha	
Mapping	1978 Ha	
Geophysics	1978 Ha	
Geochemistry	1978 Ha	
Accommodation & Ablution	200m <sup>2</sup>	
Equipment & Storage	500m <sup>2</sup>	

Site Office & Ablution	300m <sup>2</sup>	
------------------------	-------------------	--

**(ii) Description of the activities to be undertaken**

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

**Activities for the prospecting of M2 Precious and Base Metals will be done in phases or stages, namely 3 phases.**

**Phase 1 (Non-Invasive)**

**Desktop study &**

All available historical geological data (including assays and mineralogy) will be collected and assessed. This will also include the assessments of any information of existing mining operations in the area, boreholes as well as any relevant data from any institution that may have done work in and around that particular area. Remote sensing studies will be conducted as part of this phase to prepare for the implementation of subsequent phases.

**Preliminary field work**

This includes the establishment of survey grids for geological and structural mapping and geophysical surveys. Subsequent to these activities, proposed drill sites for the drilling program will be pegged. A preliminary report with updated maps will be produced at the end of this phase.

**Geophysics**

This is a method of using an instrument which can be either hand-held or mounted on an aircraft to search for ore underground. The procedure does not have an impact on the environment, meaning that is also non-invasive method. An airborne method uses an aircraft to survey the areas for any possible ore targets, while ground geophysics is used for the same studies but usually in areas where the area is not too large, while airborne is used for large areas.



Figure: Typical Airborne Geophysical plane



Figure: Typical Hand-held geophysical instrument (ground geophysics)

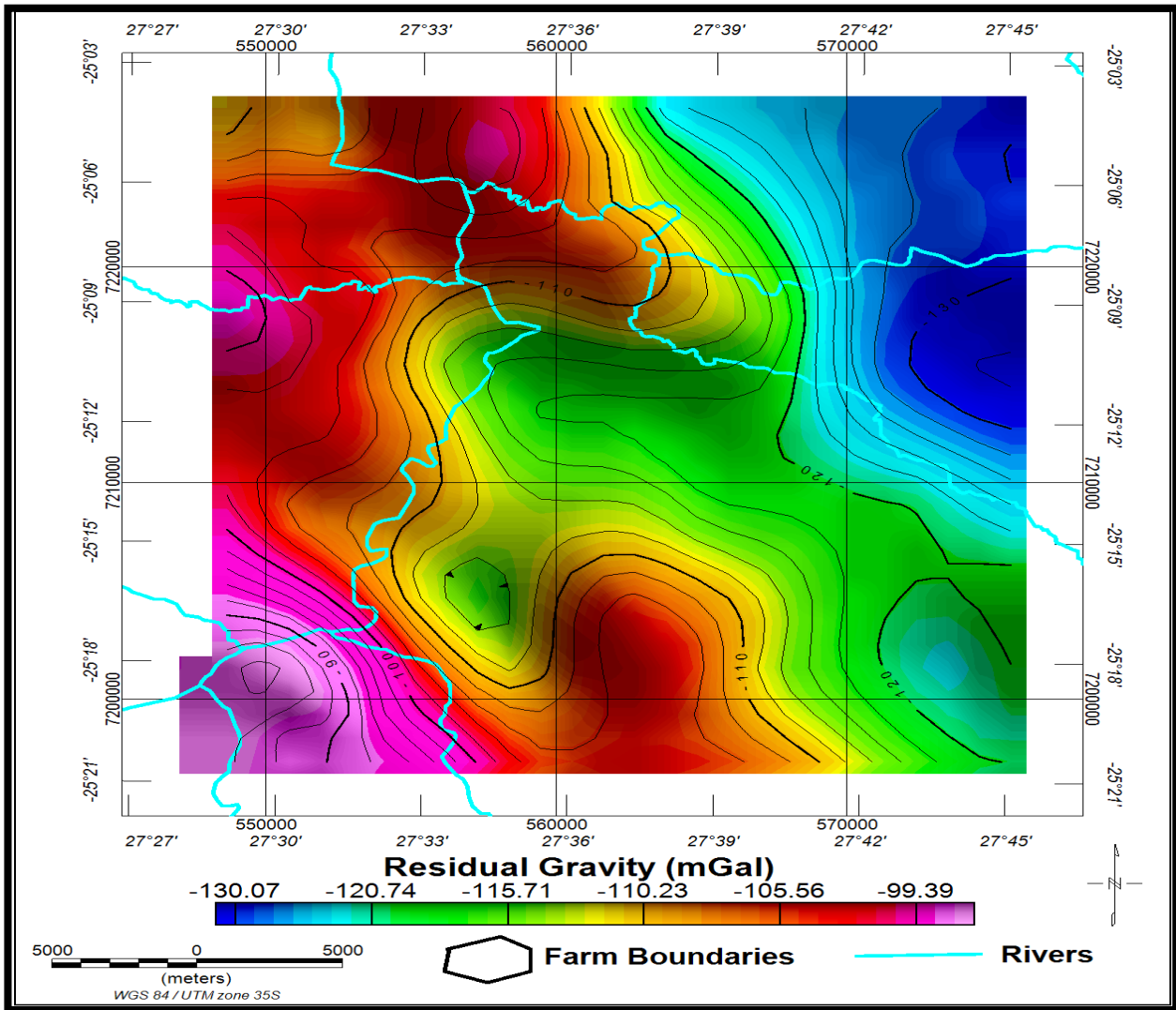


Figure: Typical geophysical results (Gravity Results)

## Phase 2

### Field Mapping

This is the verification of field lithology based on site based on the geological map and geophysical data. This includes ground mapping of geological features including rock outcrops, lithological contact zones, any geological structural features, surface depressions and vegetation types. This may include collection of data from outcrops for analysis, as the outcrop also indicate what can be found beneath the ground.



Figure: Typical Mapping on site

### **Site Establishment**

This is the mobilisation of all project equipment to site or near site for the prospecting to me efficiently done. This includes installation and setting up of accommodation, site office, drill rig delivery as well as ablution on site. This has very little impact on the environment. It should be mote that the little environment that has been disturbed if it will be will be rehabilitated. This will include the following:

### **Ablution**

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

### **Temporary Office Area**

A temporary site office shaded area will be erected at the drill site. This will be used for the day-to-day administration of the project.

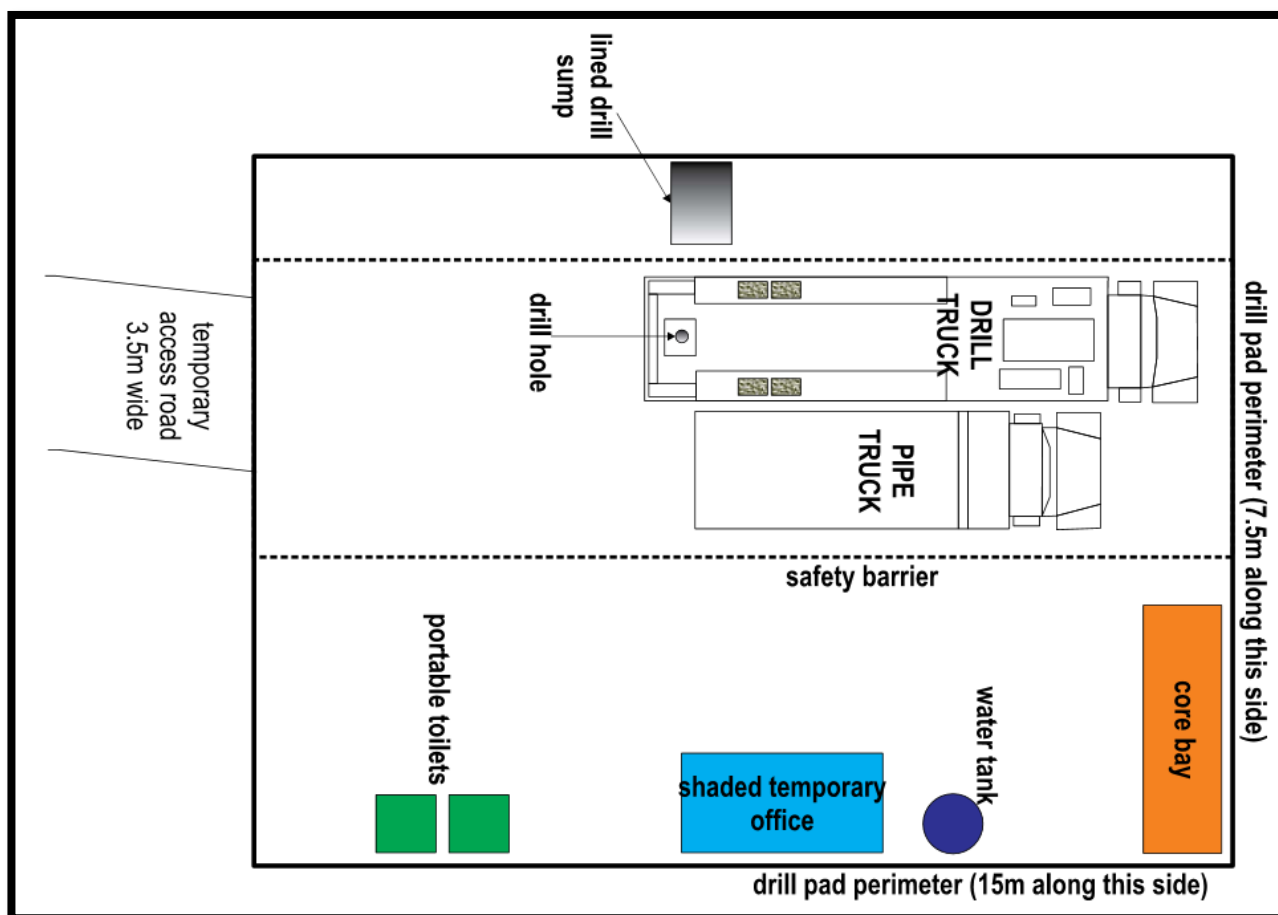
### **Drilling**

Core drilling program along the strike lengths of the reef will be conducted with the aim of establishing the lateral continuity of the mineralization, this will be in collaboration with



previous results from geophysical studies. This will assist us in locating areas which are to be drilled. This phase is dependent on the results from mapping as well as geophysics. Samples collected from the drill core will be submitted to a Sanas accredited laboratory for assaying and determination of the averages mineral contents.

A total of at least 12 holes are estimated to be drilled during this phase. It would be feasible to extend drilling during this phase to include as much of the strike lengths of the identified mineralization as possible because of the necessity and importance to conduct at least critical amount of drilling before deciding on where the best mineralised sections along the strike could be located. The drill bit size is that of NQ size which is 76.7mm in diameter and will drill to an average depth of 100m which will cover an area of 7.5m x 15m (112.5m<sup>2</sup>) at any given drilling time (total area of disturbed area per drilled borehole). The drilling sump is expected to be an average of 3m x 2m (6m<sup>2</sup>), this will be incorporated into the general surface rehabilitation.



**Figure:** Schematic diagram of drilling layout



Figure: Typical Drilling site

### **Infill Drilling**

Once the critical amount of drilling has been conducted, a decision will be made on selecting an area/block with the highest potential to delineate an open pit economic block containing ore at an economically recoverable grade.

Infill core holes will be drilled at closer spacing to allow the calculation of proven ore reserves. The spacing interval will depend on the geological character of the ore mineralization, the size and frequency of occurrence of structural disturbances affecting the continuity of the mineralization. We are estimating infill drillings of 4 boreholes.

The internationally accepted methodology and resource estimations and classification in accordance with the SAMREC Code. All borehole data (numbering, surveyed co-ordinates, geological formations and mineralized intersections and assay results) will be used for preliminary geological modelling, resource estimation and classification.

### Phase 3.

#### Closure and Rehabilitation

This is the rehabilitation and closure of borehole openings, re-vegetation, returning of soil stock piles and any related waste due to prospecting activities or related.

This is done in order to return the area to a suitable or even better condition than it was found before prospecting commenced.

#### e) Policy and Legislative Context

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b> (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Environmental Management Act, 1998	This BAR & EMP	An application of Environmental Authorisation was submitted and accepted. The DMR requested submission of a BAR & EMP
Mineral & Petroleum Resource Development Act, 2002	Application for prospecting in terms of Section 16	A PR application has been submitted to the DMR and accepted
Regulation 704 (GN704) (Government Gazette 20118, 4 June 1999) was drawn up to address these issues in relation to mining activities. Compliance to the requirements of GN704 is a legal requirement for all mining operations.	Management measures	No drilling activities will take place within 100m of a recognized water course or wetland  No new access tracks will be created which cross a water course. (only existing roads / tracks will be used).
National Environmental Management: Air Quality Act, Act 39 of 2004 (NEMAQA)NEM:AQA		Appropriate dust extractions / suppression equipment will be a condition imposed on the drill contractor for their drill rigs
BGIS (www.bgis.sanbi.org)		Used during desktop

		research to identify sensitive environments within the prospecting right area. Specifically focusing on the proposed location of the drill sites.
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants;		Used to set the standard for dust generation during drilling.

**f) Need and desirability of the proposed activities.**

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

M2 Precious and Base Metals (Pty) Ltd is a fairly new and emerging organizing within the mining sphere, it is 100% HDA organisation owned and with such a vision and mission to unlock and create wealth for the country and employment for the previously disadvantaged individual. For this project to happen, drilling and exploration must happen, this cannot happen if the EA has not been applied for and consultation has not taken place. All this are part and parcel of a PR process.

South Africa has is currently experiencing slow rate of development in the mining entrepreneur especially from the HAD side, it is the duty and role of the DMR to administer such laws and minerals but with special emphasis of HAD in order to bridge the gap in the industry. The granting of this PR may help the mining industry as well as transformation.

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

After due consideration and a brief background and desktop studies, it is common knowledge that the Kalahari host vast majority of Base Metals including associated minerals such as Cobalt, Iron Ore, Cobalt and Limestone. Also attached geological map to follow:

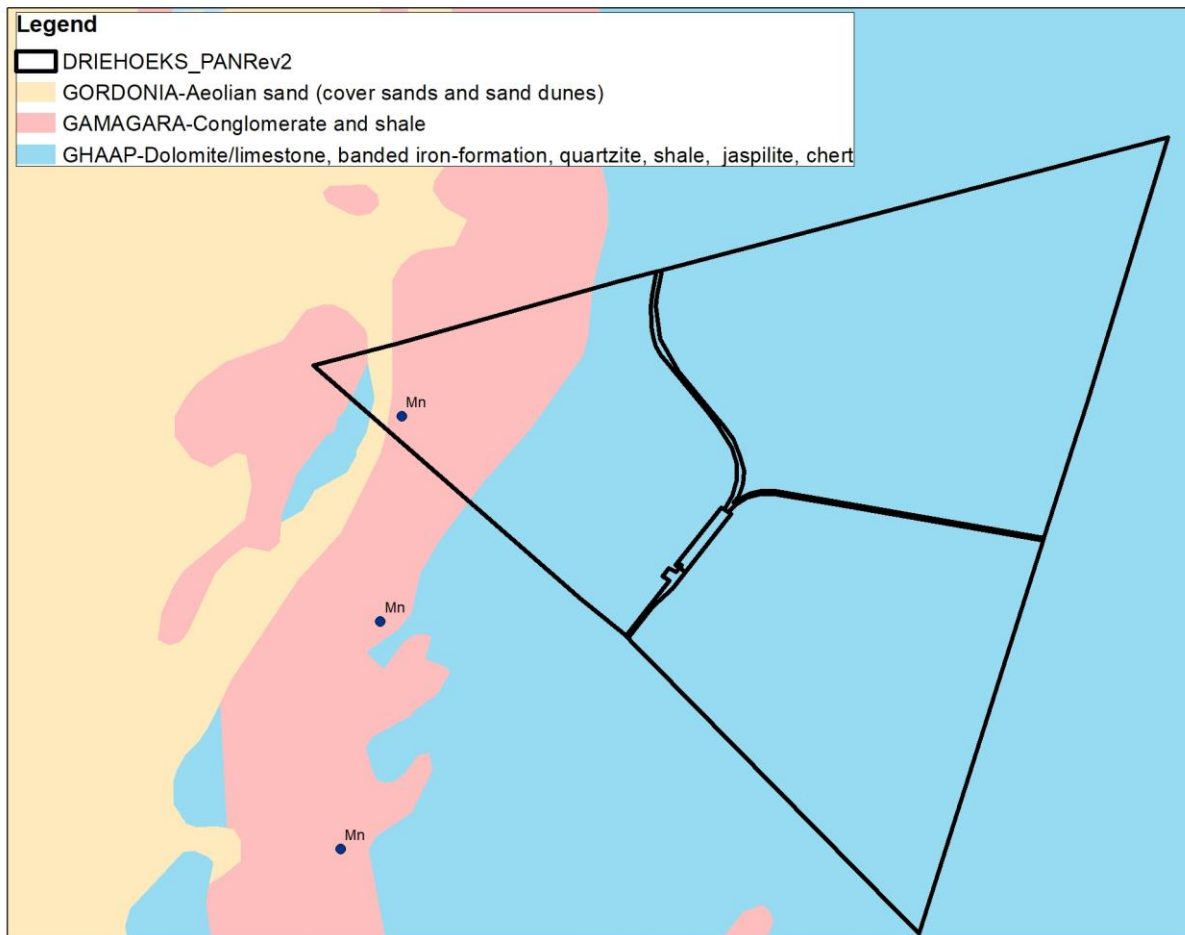


Figure: Geological Map

A use of the state of the art drilling machines as well as geophysical instrument will be utilised which will have a reduced noise level as well as a well serviced machine in order to minimise any hydrocarbons spillage on site to avoid pollution.

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

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

Before lodging any application, there are various ways to select the proposed location, one of the them the geology, the presence of any sensitive area such as a national park or game park and lastly.

**i) Details of the development footprint alternatives considered.**

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

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

The property which has been applied for and will be directly affected will DRIEHOEKS PAN 435

**(b) the type of activity to be undertaken;**

- Mapping
- Drilling
- Geophysics
- Geochemistry and
- Sampling

**(c) the design or layout of the activity;**



Figure: Layout Map of the area

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

Geophysical Instrument (both ground and airborne), Sampling tools, bags and tags, drilling machines, compass, GPS.

**(e) the operational aspects of the activity; and**

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 minimal 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.

Drilling will be subjected to fenced off areas as well as rehabilitation of the area will be done the minute a particular area is finished being drilled.

Samples will be taken and geophysics will be undertaken.

**(f) The option of not implementing the activity.**

The option of not implementing the project is dire as we anticipate alleviating the economic revenue growth as well as development of mines and more black entrepreneurs in the country. We cannot quantify and qualify the M2 Precious and Base Metals (Pty) Ltd without undertaking all activities stipulated in this report.

**ii) Details of the Public Participation Process Followed**

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

Letter have been sent out, site notices and newspaper advert to be placed as we have recently received an acceptance letter. A meeting date is yet to be confirmed and during the BAR revision, it will include also the consultation report including its appendix.

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

Interested and Affected Parties	Date Comments	Issues raised	EAPs response to issues as	Section and paragraph reference
---------------------------------	------------------	---------------	-------------------------------	------------------------------------

List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.	Received		mandated by the applicant	in this report where the issues and or response were incorporated.
<b><u>AFFECTED PARTIES</u></b>				
Landowner/s	X	TO BE POPULATED AFTER THE MEETING		
Lawful occupier/s of the land	X			
Landowners or lawful occupiers on adjacent properties				
Municipal councillor	X			
Municipality	X			
Communities	X			
Dept. Land Affairs				
Traditional Leaders				
Dept. Environmental Affairs				
Other Competent Authorities affected				
<b><u>OTHER AFFECTED PARTIES</u></b>				
<b><u>INTERESTED PARTIES</u></b>				

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

**(1) Baseline Environment**

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

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

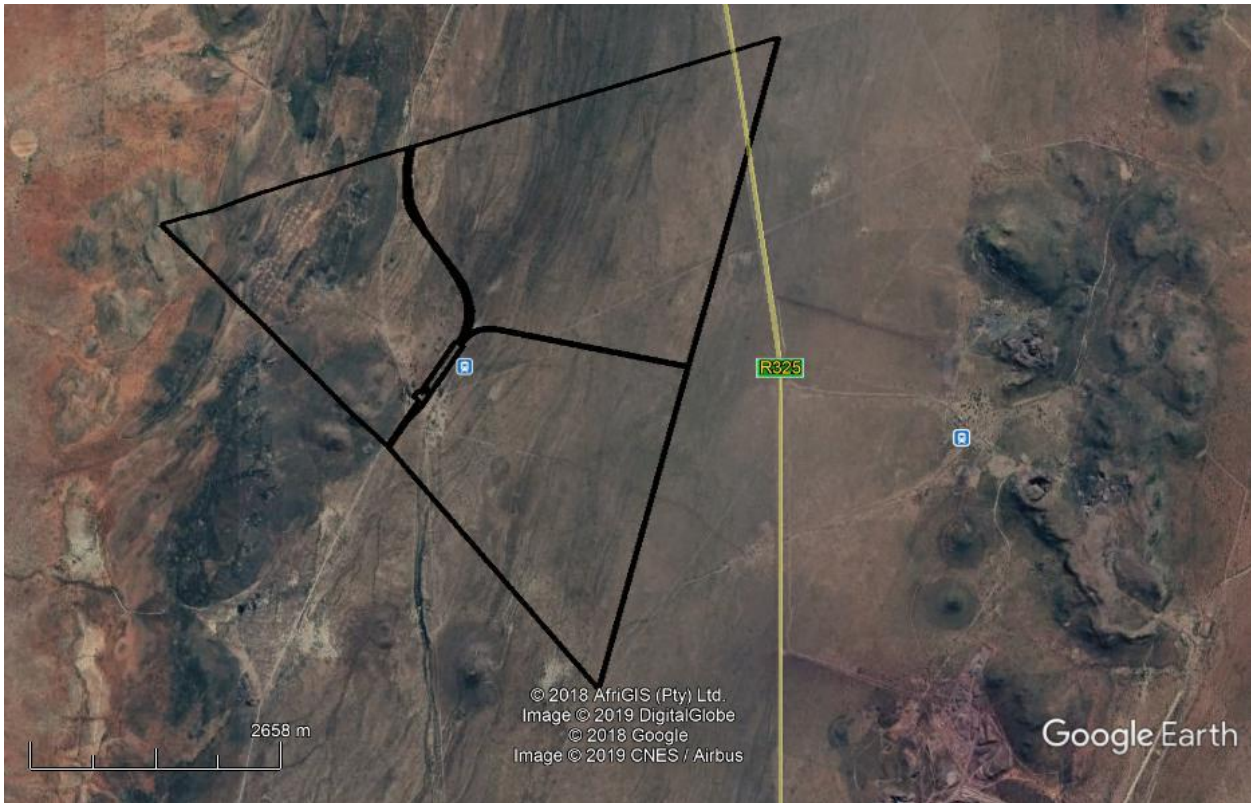
Geographical environment currently has land that is being used for residential, mining and vacant purposes, it is critical to leave the land in a state that it was found or even better. The land owner has agreed to move the livestock for the duration of the prospecting to one side of the property. There is nothing much that is taking place on the land which is currently happening on the side of the socio economic as well as cultural.

The prospecting company has started engaging the land owner in terms of proposing a land use agreements, contract as well as a way of compensation to the land owner.



**(b) Description of the current land uses.**

The area is currently being used for agriculture especially grazing of livestock and residential, however there is a railway line moving in an east to west direction. No any other activity was noted and or identified by the land owners.



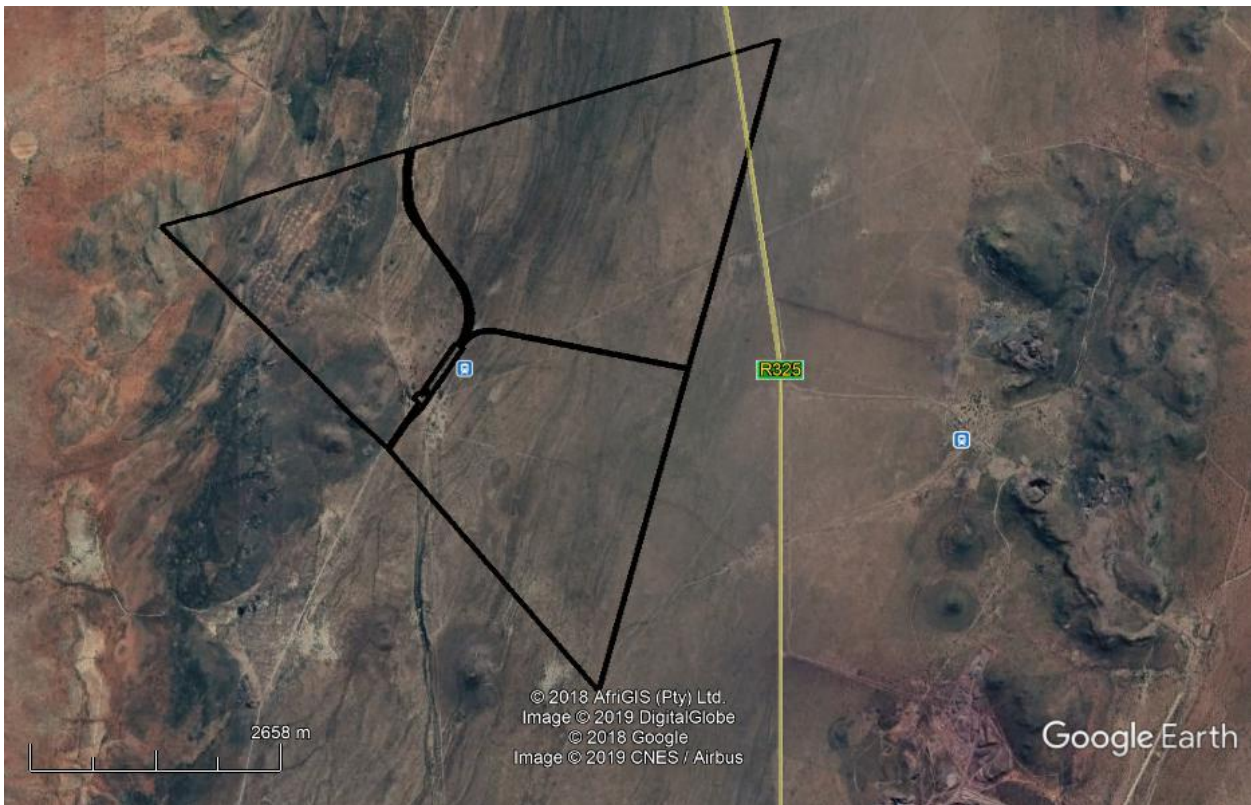
**(c) Description of specific environmental features and infrastructure on the site.**

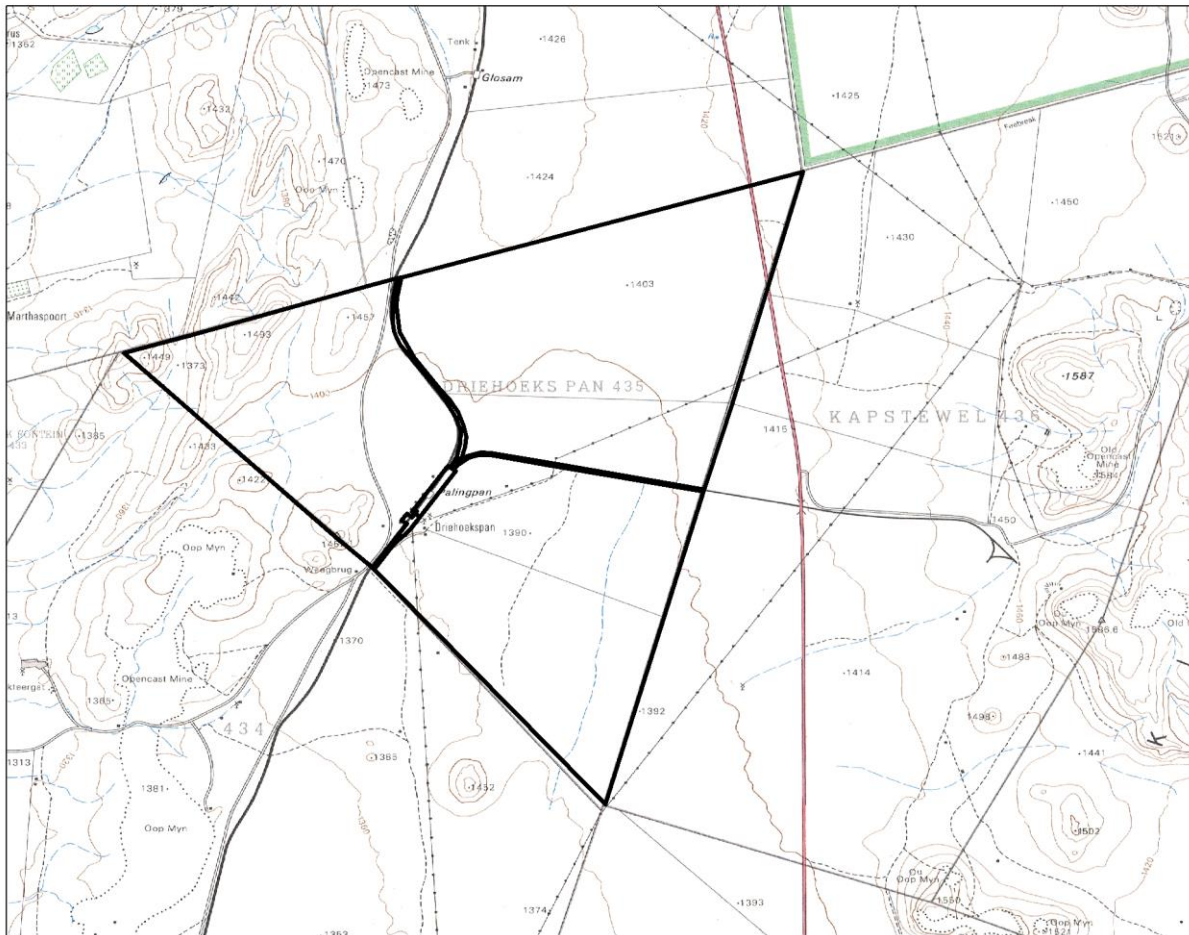
There are no major infrastructure on these farms except for dwelling houses. It should be noted that a minimum of 100m buffer zone will applied to the last house in order to do any prospecting work.



Figure: Showing roads (yellow) and rail (black)

**(d) Environmental and current land use map.**  
(Show all environmental, and current land use features)





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

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

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

Activity	Affected Environment	Nature of impact (Positive/Negative)	BEFORE MITIGATION					AFTER MITIGATION							
			Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Nature of impact (Positive/Negative)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)
Construction of Access Roads	Soil	N	2	2	2	6	4	24	N	2	2	2	6	4	24
	Natural Vegetation	N	2	2	3	7	4	28	N	2	2	2	6	4	24
	Surface Water	N	4	4	4	12	4	48	N	2	3	4	9	3	27
	Air Quality	N	2	2	2	6	4	24	N	2	2	2	6	4	24
Transportation	Soil	N	2	2	4	8	4	32	N	2	2	2	6	4	24

<b>of Equipment</b>	Air Quality	N	3	3	3	9	4	36	N	3	1	2	6	4	24
	Interested and Affected Parties	N	3	3	3	9	4	36	N	2	1	2	5	3	15
<b>Construction of associated infrastructure</b>	Topography	N	2	3	4	9	4	36	N	1	2	3	6	3	18
	Visual	N	3	3	4	10	4	40	N	3	3	4	10	4	40
	Soil	N	3	3	3	9	5	45	N	3	3	3	9	5	45
	Land Capability	N	2	3	3	8	5	40	N	3	3	3	9	5	45
	Natural Vegetation	N	3	3	3	9	5	45	N	3	3	3	9	5	45
	Animal Life	N	3	3	3	9	5	45	N	3	3	2	8	4	32
	Surface Water	N	4	3	4	11	5	55	N	4	2	3	9	4	36
	Groundwater	N	4	4	4	12	5	60	N	4	2	3	9	4	36
	Air Quality	N	3	3	4	10	5	50	N	3	3	3	9	5	45
	Noise	N	3	3	4	10	5	50	N	3	3	3	9	5	45
	Interested and Affected Parties	N	3	3	4	10	5	50	N	3	3	3	9	5	45
<b>Temporal Fence</b>	Visual	N	3	4	3	10	5	50	N	2	4	2	8	4	32
	Animal Life	N	2	3	3	8	4	32	p	2	3	3	8	4	32
<b>Removal and Storage of topsoil</b>	Soil	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Visual	N	3	4	3	10	5	50	N	2	4	2	8	4	32
	Topography	N	2	5	3	10	4	40	N	2	5	3	10	6	60
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Air Quality	N	2	3	4	9	5	45	N	1	2	2	5	3	15
	Natural Vegetation	N	2	6	4	12	3	36	N	1	2	3	6	3	18
Noise	N	3	2	3	8	6	48	N	2	2	2	6	3	18	
<b>Transport of equipment</b>	Soil	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Groundwater	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Air Quality	N	2	3	4	9	5	45	N	1	2	2	5	3	15
	Natural Vegetation	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Animal Life	N	2	4	6	12	4	48	N	1	3	2	6	3	18
<b>Construction of surface infrastructure</b>	Soil	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Groundwater	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Air Quality	N	2	3	4	9	5	45	N	1	2	2	5	3	15
	Natural Vegetation	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Animal Life	N	2	4	6	12	4	48	N	1	3	2	6	3	18
Noise	N	3	2	3	8	6	48	N	2	2	2	6	3	18	
<b>Waste generation, disposal and sewage handling</b>	Soil	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Groundwater	N	4	5	5	14	4	56	N	3	3	1	7	3	21
<b>Toilets</b>	Soil	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	5	60	N	1	2	3	6	3	18
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21

	Groundwater	N	4	5	5	14	4	56	N	3	3	1	7	3	21
Domestic waste	Soil	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Visual	N	2	4	4	10	4	40	N	1	2	3	6	3	18
	Land Capability	N	2	6	4	12	5	60	N	1	2	1	4	3	12
	Surface Water	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Groundwater	N	4	5	5	14	4	56	N	3	3	1	7	3	21
	Natural Vegetation	N	2	6	4	12	4	48	N	1	2	3	6	3	18
	Animal Life	N	2	4	6	12	3	36	N	1	3	2	6	3	18

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

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

The 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><b>Impacts will be of high significance if one of the following apply:</b></p> <p>The extent is national to international;  The duration is long term to permanent;  The severity will be high;  Probability is definite</p>
Moderate	<p><b>Impacts will be of moderate significance if one of the following apply:</b></p> <p>The extent is local to regional;  The duration is medium to long term;  The severity is major;  The probability is highly probable</p>
Low	<p><b>Impacts will be of low significance if one of the following apply:</b></p>

	The extent is local; The duration is temporary to permanent; The severity is low; The probability is probable
Very Low	<b>Impacts will be of very low significance if one of the following apply:</b> 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

This section provides a description of the methodology that was applied to assess the significance of environmental and heritage impacts. The significance rating process follows the established impact/risk assessment formula:

**Significance**= Consequence x Probability ,WHERE.

**Consequence**= Severity + Spatial Scale +Duration, AND

**Probability** = Likelihood of an impact occurring

The matrix first calculates the rating out of 75 and then converts this into a percentage out of 100. The percentage is the figure quoted in the matrix. The weight assigned to the various parameters for positive and negative impacts in the formula is presented in the Table below.

Rating	Severity		Spatial Scale	Duration	Probability
	Environmental	Social/Cultural Heritage			
7	Very significant impact on the environment. Irreparable damage to highly valued species, habitat or ecosystem. Persistent	Irreparable damage to highly valued items of great cultural significance or complete	International	Permanent to mitigation	Certain/ Definite

	severe damage.	breakdown of social order.			
6	Significant impact on highly valued species, habitat or ecosystem.	Irreparable damage to highly valued items of cultural significance or breakdown of social order.	National	Permanent mitigated	Almost certain/ High probability
5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate.	Very serious widespread social impacts. Irreparable damage to highly valued items.	Province/Region	Project life (The impact will cease after the operational life span of the project)	Likely

4	<p>Serious medium term environmental effects. Environmental damage can be reversed in less than a year.</p>	<p>On-going serious social issues. Significant damage to structures / items of cultural significance</p>	Municipal Area	Long term (6-15 years)	Probable
3	<p>Moderate, short- term effects but not affecting ecosystem function. Rehabilitation requires intervention of external specialists and can be done in less than a month.</p>	<p>On-going social issues. Damage to items of cultural significance.</p>	Local	Medium term (1-5 years)	Unlikely/ Low probability



2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants.	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Limited	Short term (Less than 1 year)	Rare/improbable
1	Limited damage to minimal area of low significance, (e.g. ad hoc spills within plant area). Will have no impact on the environment	Low-level repairable damage to commonplace structures	Very Limited	Immediate (Less than 1 month)	Highly Unlikely/None

Significance		Consequence (severity + scale + duration)								
		1	3	5	7	9	11	15	18	21
Probability/Likelihood	1	1	3	5	7	9	11	15	18	21
	2	2	6	10	14	18	22	30	36	42
	3	3	9	15	21	27	33	45	54	63
	4	4	12	20	28	36	44	60	72	84
	5	5	15	25	35	45	55	75	90	105
	6	6	18	30	42	54	66	90	108	126
	7	7	21	35	49	63	77	105	126	147

Significance		
High	108-147	
Medium-High	73-107	
Medium-Low	36-72	
Low	0-35	

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

**Activity 1: Construction of phase**

**Impacted environment:** Topography, visual, soil, land capability, surface water, groundwater, air quality, natural vegetation, animal life, and noise.

**Description:** This activity will involve equipment to be brought onto the site as well as the establishment of structures associated with drilling prior to the actual drilling. The significance of the impacts of the construction, operating and decommissioning of the plant on the environment is likely to be low. There is a potential for most of the environment to be impacted over a limited spatial extent. Mitigation measures need to be applied in order to reduce or prevent the physical impacts on the affected environment

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Natural Vegetation	N	2	5	4	11	5	55	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low

**Activity 2: Storage of hydrocarbons, chemicals, fuel**

**Impacted environment:** Soil, land capability, surface water, groundwater, natural vegetation.

**Description:** This activity involves the storage of hydrocarbons, chemicals and fuel in the project area. There is a potential for leakages from the storage sites to occur if no adequate measures are put in place. The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. A plastic container will be put under hydrocarbons tank in order to cap any spillage in the soil. Furthermore please note that a maximum of 450L of hydrocarbon/Petrol/Diesel will be stored on site at any given time. This is to minimise any risk or spillage.



Figure: Typical tank with plastic tray to collect spillage

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	5	3	10	5	50	Medium-Low
C,O,D	Land Capability	N	2	5	3	10	5	50	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Natural Vegetation	N	2	5	3	10	5	50	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low

### Activity 3: *Temporal fence*

**Impacted environment:** Visual, animal life

Description: This involves the placement of a fence within the farm. The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. The impact that the fence will have on animal life is potentially positive as animals such as livestock will be restricted from grazing in the project area, thus preventing injury and possible overgrazing. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Visual	N	2	4	3	9	5	45	Medium-Low
C,O,D	Animal Life	P	2	3	3	8	4	32	Medium-Low

### Activity 4: Removal and *storage of topsoil (Topsoil stockpile)*

**Impacted environment:** Soil, land capability, visual, topography, surface water, air quality, natural vegetation, animal life and noise.

**Description:** This activity will cause surface disturbance. The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent with visual and noise occurring locally. Surface water and archaeology/ cultural

heritage are most likely to occur on a municipal scale. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment.

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance Rating (Pre-Mitigation)
C,D	Soil	N	2	5	4	11	5	55	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,D	Visual	N	3	4	3	10	5	50	Medium-Low
C,O,D	Topography	N	2	5	3	10	6	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Air Quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural Vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural Heritage/Archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

### Activity 5: Transport of equipment

**Impacted environment:** Soil, land capability, surface water, groundwater, air quality, natural vegetation, animal life, archaeology/ cultural heritage and noise.

**Description:** The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent with noise potentially occurring over a local extent. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment.

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Air Quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural Vegetation	N	2	5	4	11	5	55	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural Heritage/Archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

## Activity 6: Ablutions

**Impacted environment:** Soil, land capability, surface water and groundwater

**Description:** The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for surface and groundwater which is most likely to occur over a limited extent. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment.

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground Water	N	4	5	5	14	4	56	Medium-Low

## Activity 7: Domestic waste

**Impacted environment:** Soil, visual, land capability, surface water, groundwater, natural vegetation and animal life.

**Description:** The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for surface and groundwater which is most likely to occur on a limited spatial extent. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment.

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Visual	N	2	4	4	10	5	50	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Groundwater	N	4	5	5	14	4	56	Medium-Low

C,O,D	Natural Vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low

## Activity 8: Access Roads

**Impacted environment:** Soil, land capability, surface water, air quality, natural vegetation, animal life, wetlands, archaeology/ cultural heritage and noise.

**Description:** The significance of the impacts of the activity on the effected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for noise which probably occur on a local scale and surface and groundwater as well as archaeology/ cultural heritage which will occur on a municipal extent. Mitigation measures need to be applied in order to reduce or prevent the physical impacts from on the affected environment.

Phase Impact Occurs (C,O,D)	Affected Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	significance Rating (Pre-Mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land Capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground Water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Air Quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural Vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal Life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural Heritage/Archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

## Mining

The establishment of a mining activity within the region will permanently alter the geology of the region as more resources are being mined and there could be potential for the resources to be mined further. The project is still in the prospecting phase thus, the impact on the geology is insignificant as the activities are site specific and involve drilling.

## **Soils, land capability and land use**

Prospecting activities involve the drilling, but may affect land available for grazing and will increase the potential for soil erosion as soil erosion in the project area is minimal. The fencing of the project area will exclude animals from grazing, thus improving vegetation growth in the area. Soil pollution from domestic waste and use of hydrocarbons spillages may occur. Thus, the activities will result in a potential increase in soil contamination. Soils that have been stripped can never be replaced in their original state due to the alteration of physical, chemical and biological soil properties during removal and stockpiling. Stockpiling influences soil properties negatively while the duration of the soil stockpiling in addition, causes soil deterioration, especially soil biological quality. The cumulative impact on regional land capability and land use is low due to the land use being predominately for agriculture which is dominated by grazing and used for housing. Thus, the activities will result in a low significance cumulative impact only being limited to the site and its immediate surroundings.

## **Surface water**



There is no seasonal rivers running through here.



## Groundwater

Possible contribution of groundwater contamination includes spillages hydrocarbons sourced from trucks and machinery, ablutions and domestic waste. The total cumulative impacts are low as this will be limited to the site.

## Air quality

In future, increased mining activities in the region will contribute to impacts on the ambient air quality levels. Vehicle movement could cause an increase in dust levels thus, will increase the existing dust levels in the area. The cumulative impact of agricultural activities on regional air quality is not considered as significant, since these impacts occur only at specific times of the year and during the day. Increasing mining activities in the region will be of medium-high significance. Thus, the total cumulative impacts are expected to be medium- low.

## **Noise**

Cumulative impacts are expected to be significant due to drilling machines and generators. The surrounding farmers will also contribute to noise levels in the area with regards to agricultural activities. Trucks and constructing machinery could also contribute to the noise levels. Operations of the prospecting is expected to be between 07h00 and 17h30, this is done in order to contribute to reduced levels of operation to only office hours. Thus, the total cumulative impacts are expected to be low-medium.

## **Flora**

The natural flora of the surrounding areas has is rarely disturbed due to lack of mining activities but livestock grazing increases such risks, and this reduces the significance of the cumulative effects of the prospecting activities. Regionally, agriculture are present. The destruction of vegetation will only occur during the construction phase in a potentially disturbed area. The cumulative impacts will be more severe if endemic and Red Data plants occur in the area, but mitigation measures, such as the protection and removal of Red Data plants and the rehabilitation and re-introduction of animals currently present after closure should reduce significance of the negative cumulative impact.

## **Fauna**

Regionally, agriculture, mining and industry are present. Towns and communities have developed; the cumulative impact on the fauna will be even less significant. The cumulative impacts will be more severe if endemic and Red Data animals occur in the area, but mitigation measures, such as the protection and removal of Red Data animals and the rehabilitation and re-introduction of animals currently present after closure should reduce significance of the negative cumulative impact.

## Visual aspects

The drilling will have a slight impact on the visual aspects. There are however, extensive existing impacts on the visual aspects of the area due to the presence of, roads, and other human infrastructure related to human activities. The cumulative impacts can be summarised in the table below:

Impacted Environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)
Geology	N	1	3	1	5	2	10
Soils, Land capability and land use	N	3	4	3	10	5	50
Surface water	N	3	3	2	8	4	32
Groundwater	N	3	3	2	8	4	32
Air quality	N	2	3	2	7	4	28
Noise	N	2	2	2	6	4	24
Flora	N	1	3	2	6	4	24
Fauna	N	1	3	2	6	4	24
Site of Archaeological and Cultural Interest	N	2	3	2	7	4	28
Visual Impacts	N	1	3	2	6	4	24

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

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

Potential impacts that were identified during the Basic Assessment process are discussed under environmental component headings in this section. As indicated, the project would not result in adverse surface disturbances as the planned prospecting activities would be managed and also rehabilitation will occur, as such, a 100m buffer zone must be adhered to all rivers and water features.

## Advantages

Since the area concerns was selected based on desktop studies and literature review, we have found that the areas geology is that which is of the Kalahari which hosts, Copper,

Cobalt, Limestone and many Base Metals this area is best suitable for the prospecting of the applied minerals and the fact that it was available was an added advantage.

There are no known disadvantages of the selected site in terms of the mineral to be prospected for as well as the location and environmental issues/concerns, however, the selection of any site besides the selected site is the fact that the mineral to be prospected might not be available in the alternative site or the availability of the land to be prospected by this organisation.

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

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

Avoid using the over congested rail way line and use alternative transport

Avoid ground water pollution

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

Other areas were considered but unfortunately they were already application on the same place for the same commodity by other entities. This left M2 Precious and Base Metals with the current area for application. Other areas on the south and east do not possess the same geology and subsequently, the current applied land is the best under the circumstances.

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

As indicated, various phases will be use and each phase is dependent on the other. Location for boreholes has been pre-determined from the geology, the final borehole location will be based on geophysical data

Based on the size and site of the area, the worst case scenario has been assumed, where by accommodation and office will be accommodated on site as well as drilling.

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

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	<b>Impacts will be of high significance if one of the following apply:</b> The extent is national to international; The duration is long term to permanent; The severity will be high; Probability is definite
Moderate	<b>Impacts will be of moderate significance if one of the following apply:</b> The extent is local to regional; The duration is medium to long term; The severity is major; The probability is highly probable
Low	<b>Impacts will be of low significance if one of the following apply:</b> The extent is local; The duration is temporary to permanent; The severity is low; The probability is probable
Very Low	<b>Impacts will be of very low significance if one of the following apply:</b> 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

This section provides a description of the methodology that was applied to assess the significance of environmental and heritage impacts. The significance rating process follows the established impact/risk assessment formula:

**Significance**= Consequence x Probability ,WHERE.

**Consequence**= Severity + Spatial Scale +Duration, AND

**Probability** = Likelihood of an impact occurring

The matrix first calculates the rating out of 75 and then converts this into a percentage out of 100. The percentage is the figure quoted in the matrix. The weight assigned to the various parameters for positive and negative impacts in the formula is presented in the Table below.

Rating	Severity		Spatial Scale	Duration	Probability
	Environmental	Social/Cultural Heritage			
7	Very significant impact on the environment. Irreparable damage to highly valued species, habitat or ecosystem. Persistent severe damage.	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order.	International	Permanent to mitigation	Certain/ Definite
6	Significant impact on highly valued species, habitat or ecosystem.	Irreparable damage to highly valued items of cultural significance or	National	Permanent mitigated	Almost certain/ High probability

		breakdown of social order.			
5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate.	Very serious widespread social impacts. Irreparable damage to highly valued items.	Province/Region	Project life (The impact will cease after the operational life span of the project)	Likely
4	Serious medium term environmental effects. Environmental damage can be reversed in less than a year.	On-going serious social issues. Significant damage to structures / items of cultural significance	Municipal Area	Long term (6-15 years)	Probable

3	Moderate, short- term effects but not affecting ecosystem function. Rehabilitation requires intervention of external specialists and can be done in less than a month.	On-going social issues. Damage to items of cultural significance.	Local	Medium term (1-5 years)	Unlikely/ Low probability
2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants.	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Limited	Short term (Less than 1 year)	Rare/ improbable
1	Limited damage to minimal area of low significance, (e.g. ad hoc spills within plant area). Will have no impact on the environment	Low-level repairable damage to commonplace structures	Very Limited	Immediate (Less than 1 month)	Highly Unlikely/ None



**j) Assessment of each identified potentially significant impact and risk**

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

<b>Potential Environmental Impacts &amp; Sources</b>	<b>Measures to prevent, mitigate, minimise or manage the impacts</b>
<p><b>Impact:</b> Air pollution (dust, gaseous emissions)</p> <p><b>Source :</b> Establishment of camp site, movement of vehicles and drill rigs,</p>	<ul style="list-style-type: none"> <li>➤ Dust suppression measures will be implemented and the area will be sprayed with water.</li> <li>➤ A low speed limit will be imposed to reduce generation of dust.</li> <li>➤ 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.</li> <li>➤ Burning of waste will not be allowed on site.</li> </ul>
<p><b>Impact:</b> Water pollution (surface water, groundwater and wetlands)</p> <p><b>Source:</b> Spillages from machines on site</p>	<ul style="list-style-type: none"> <li>❖ 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"> <li>➤ Control and manage storm water</li> <li>➤ Prevent soil erosion and keep the water channel clean</li> <li>➤ Monitor the ground water</li> </ul> </li> </ul>
<p><b>Impact:</b> Land degradation, land-use and capability</p> <p><b>Source:</b> Poor waste management</p>	<ul style="list-style-type: none"> <li>➤ Completed boreholes will be rehabilitated and re-vegetated.</li> <li>➤ Areas which do not form part of drilling site will not be disturbed</li> <li>➤ Prospecting will be conducted in an environmental sustainable manner.</li> <li>➤ One of the prospecting objectives is to turn the area into other land use/s after closure.</li> <li>➤ Waste material will be properly managed</li> </ul>
<p><b>Impact:</b> Ecological degradation</p> <p><b>Source:</b> Uncontrolled vehicle movement and poor rehabilitation</p>	<ul style="list-style-type: none"> <li>➤ All of the biodiversity which will be disturbed will be restored after closure.</li> <li>➤ Indigenous species will be used to re-vegetate the area.</li> <li>➤ No animals will be killed and collection of firewood will not be allowed.</li> <li>➤ Movement of vehicles will be restricted to designated area only</li> </ul>
<p><b>Impact:</b> Land pollution</p>	<ul style="list-style-type: none"> <li>➤ 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.</li> </ul>

<p><b>Source:</b> Lack of proper waste management</p>	<ul style="list-style-type: none"> <li>➤ Any spillages which may occur will be investigated and immediate action will be taken. In the event of significant spills (&gt;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.</li> <li>➤ Scraps will be kept in designated areas prior delivery to the scrap yard.</li> <li>➤ All machinery will serviced off site and also inspected for any leaks.</li> </ul>
<p><b>Impact:</b> Aesthetic Pollution <b>Source:</b> Machinery</p>	<ul style="list-style-type: none"> <li>➤ The visual impact will be of temporary nature.</li> <li>➤ The surrounding trees and dense vegetation will also serves as the screen to the prospecting area.</li> </ul>
<p><b>Impact:</b> Noise  <b>Source:</b> Vehicle movements and Drill rigs</p>	<ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ Employees will be supplied with ear plugs. All prospecting vehicles are equipped with silencers and maintained in a road worthy condition.</li> <li>➤ 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.</li> </ul>

Activity	Description	Affected Environment	Potential Impact
<b>PROSPECTING PHASE</b>			
Upgrading of Access	Access roads that	Soil	Increased erosion of soils due to the removal of vegetation.

Roads	already exist will be upgraded.	Natural Vegetation	Destruction and removal of natural vegetation during site clearance.
		Surface Water	Potential siltation of surface run-off due to soil erosion.
		Air Quality	Increased potential for dust emission due to wind erosion.
Transportation of Equipment	The drilling operation will involve transportation of equipment to the project area.	Soil	Soil compaction due to the repetitive movement on gravel roads.
		Interested and Affected Parties	Potential damage to roads caused by movement of heavy vehicles and continual use of vehicles moving to and from the site.
		Air Quality	Increased dust emissions due to entrainment of dust particles by the movement and operation of construction equipment.
Construction of surface infrastructure.	This will involve vegetation clearing and topsoil removal to construct a site offices, a change house, toilet etc.	Soil	Permanent compaction of soil in areas of infrastructure construction
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural Vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.
		Surface Water	Altered surface flow dynamics around surface infrastructure; Potential contamination of surface water due to spillage of fluids.
		Groundwater	Potential groundwater contamination due to infiltration of fluid contaminated water.
		Air Quality	Dust from construction vehicles on gravel and secondary roads.
Soil Removal and Stockpile	It is assumed that the topsoil thickness averages 0.5 m over	Topography	Alteration of the local topography and disturbance of natural drainage lines.
		Visual	The creation of stockpiles alters the visual quality of the landscape.
		Soil	Damage to the natural soil structure due to soil handling, removal and mixing of soil types and

	the disturbed area. Approximately 93 000 m <sup>3</sup> of topsoil will be removed.		horizons; removal of vegetation causes a change in the water runoff characteristics of the site and increased probability of soil erosion. This leads to the loss of topsoil and an increase of siltation in the streams and rivers with the runoff carrying sediment; and Leaching of soil nutrients during long-term stockpiling.
		Land Capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural Vegetation	Damage to natural vegetation due to deposition of dust emitted during the tipping and stockpiling, restricting photosynthesis.
		Animal Life	Potential direct impacts on threatened fauna species; Habitat disturbance and destruction; Potential disruption on birds nesting, foraging or roosting in project area.
		Surface Water	Altered surface flow dynamics due to alterations in the onsite topography; and increase of siltation in the streams and rivers with the runoff carrying sediment
		Air Quality	Increased potential for dust emissions due to wind erosion during the tipping of soil into trucks and onto stockpiles, as well as exposure of stockpiles to wind erosion; and Potential increase of dust generation.
		Noise	Potential increase of noise of hauling trucks to topsoil stockpile site.
Placement of a fence	A temporary perimeter fence will be constructed around	Animal life	Potential limitation of movement for domestic animals to grazing areas. This is a positive impact as it will prevent movement of domestic animals into demarcated areas, thus preventing injury.
		Interested and Affected	The temporary fence could prevent access to communal agricultural fields and livelihood. Also, the fence will provide a safety factor, preventing access to areas where safety risks may occur.

	the exploration site which will be limited to the demarcated area to protect the workings and prevent people and domestic animals from harm	Parties	
Storage of Fuel	Diesel fuel usage for the drilling activity will be determined and the storage capacity not be triggered by the NEMA list of activities.	Soil	Potential soil contamination.
		Land Capability	Potential decreased land capability due to contaminated soil.
		Natural Vegetation	Potential damage due natural vegetation and loss due to spillages of hydrocarbons, chemicals.
		Animal Life	Potential injury or loss of animals due to spillages of hydrocarbons, chemicals.
		Surface Water	Potential contamination of surface water due to the spillage of hydrocarbons, chemicals or contaminated run- off sourced from contaminated soil.
		Groundwater	Potential groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.
Water settling pond	Water used at the processing plant will be channelled to the settling pond that will be constructed.	Natural Vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.
		Animal Life	Disruption of animal habitats such as nests and breeding grounds (potential modification, fragmentation, and reduction of habitat).

		Surface Water	Potential contamination of surface water due to spillage of equipment fluids.
		Groundwater	Potential groundwater contamination due to infiltration of equipment fluid contaminated water.
		Air Quality	Dust from construction vehicles on gravel and secondary roads.
		Noise	Potential elevated noise levels in the surrounding environment.
Use of Hydrocarbons, Chemicals	The use of hydrocarbons, chemicals will take place and these will be stored on site in designated storage areas.	Soil	Potential soil contamination.
		Land Capability	Potential decreased land capability due to contaminated soil.
		Natural Vegetation	Potential damage due natural vegetation and loss due to spillages of hydrocarbons, chemicals.
		Animal Life	Potential injury or loss of animals due to spillages of hydrocarbons, chemicals.
		Surface Water	Potential contamination of surface water due to the spillage of hydrocarbons, chemicals or contaminated run- off sourced from contaminated soil.
		Groundwater	Potential groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.
Access Roads	Existing Access Roads will be used to access the site and to transport equipment onto and off the site. If need be, they will be	Soil	Upgrading of existing roads to processing plant will cause a potential to result in soil erosion, soil loss.
		Land Capability	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads
		Natural Vegetation	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads; Site clearing and removal of topsoil could lead to soil erosion and soil loss.

	upgraded	Surface Water	Altered surface flow dynamics due to removal of topsoil and topographical alterations and increased surface runoff from cleared areas; Potential surface water runoff over haul roads will result in erosion and consequent siltation of surface water resources; Potential contamination of surface water runoff from hauls roads due to the spillage of hydrocarbons from vehicles travelling on haul roads.
		Air Quality	Potential dust pollution caused by construction vehicles
		Noise	Potential elevated noise levels due to continuous vehicular movement on haul roads.
		Interested and Affected Parties	Potential damage to roads could impact safety of people and animals.

**DECOMMISSIONING AND CLOSURE**

Rehabilitation	All areas disturbed will be rehabilitated to its original state with the waste rock and topsoil stockpiles. Roads should be ripped	Soil and Vegetation	Positive impact as topsoil will be replaced to enhance vegetation growth.
		Animal Life	Positive impact as vegetation will re-establish itself and the natural Fauna will gradually return to the rehabilitated sites.

	or ploughed and fertilised if necessary to promote re-growth of vegetation.		
--	-----------------------------------------------------------------------------	--	--

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



**k) Summary of specialist reports.**

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

<b>LIST OF STUDIES UNDERTAKEN</b>	<b>RECOMMENDATIONS OF SPECIALIST REPORTS</b>	<b>SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)</b>	<b>REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.</b>
None	None	None	None

None

## I) Environmental impact statement

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

The area applied for is disturbed due to agricultural and residential activities only.

### (ii) Final Site Map

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



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

#### Negative

There are no concerns in terms of community health as all possible traces of waste and or ore during prospecting will be disposed in specialised manner. There is possible pollution of the following items:

Noise-*State of the art drilling machine will be used to minimise noise. Drilling will be conducted during office hours to minimise noise to near-by farm houses.*

Invasion of privacy-*Land access agreements will be signed before any prospecting can be done. This limits unnecessary invasions and also takes into consideration for all work to be done on site.*

## Positive

**Employment opportunities-** Depending on available local skills, preference will be given to locals and outsource skills not available within local community.

**Community health-** Not much of health of the community will be affected, only if shortage of skills locally can have an impact as outsourced skills can lead to transfer of diseases.

Like any great development of mine around the world, employment will be created but it will not be guaranteed until we know the economic value and hence the need to prospect.

### Tax

Tax will be paid by the developing company as there will be revenue due to the mining activity.

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

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

The objective of the EMPr will be the following:

- To provide enough information for the prospecting activities in order to prevent and avoid unnecessary social and environmental impact.
- To provide prospecting plan, guidance and guideline in order to conduct prospecting with little to no impact on the environment.
- Reduce impacts through implementing realistic operational management measures such as imposing restrictions on the time of day when drill can take place.

Through implementing the above objectives the desired outcomes are;

Implement a drilling programme that does not impact on any sensitive environmental feature

Implement a drilling programme with the consent of the landowner

Ensure that all temporary impacts are minimized

Once complete there should be no evidence that the drilling activities took place.

Minimize noise through the operation during office hours to give the nearby residence peace and silent.

Pollution of water and soil can be managed through containment in order to avoid pollution.

Ecological degradation can be managed through the implementation of pollution prevention measures, minimizing land clearing, restricting working hours.

Identifying of impacts plays a huge role in both planning, execution and rehabilitation process, however during the planning phase, identifying of such impacts is vital in order to implement and mitigate during the construction of the site office as well as accommodation of drilling team as well as during the drilling and rehabilitation or closure of the project post drilling.

**Soils**-*Impact management objective: Soil degradation through prospecting activities to be managed to ensure that effective rehabilitation measures are in place.*

**Dust**- *Impact of dust during the construction or setting up of both offices, camp and drilling is most likely to occur however, cost effective measures such as spraying of working areas is important in the reducing of dust.*

**Vegetation** -*Impact Management Objective: To ensure that the required removal of flora is limited to the footprint area and mitigated against as far as possible.*

**Animal life**- *Impact Management Objective: To ensure that the required removal of fauna is limited to the footprint area and mitigated against as far as possible*

**Visual Impacts**-*Impact Management Objective: To ensure that the visual impact caused by the proposed activity is limited and mitigated against as far as expediently as possible.*

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

M2 Precious and Base Metals must apply the following buffer zones to the final positioning of the drill sites;

- 100m buffer from any water resource
- 100m buffer from any infrastructure
- 100m buffer from any identified heritage resource (if any found)
- 100m from any residential area

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

(Which relate to the assessment and mitigation measures proposed)

Though all efforts have been made in order to compile the Basic Assessment Report & EMP with all features included on site, very little to no assumptions were made.

However, consultation with the land owner has happened and also revealed that some of the farms which were locked and being unable to be accessed due to security reasons generally have the same geology and environmental features which were observed on the accessible farms. The assumptions on the gaps of knowledge is within reason and accurate.

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

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

The Environmental Assessment Practitioner has reasonable reasons to believe that that activity should be authorised.

Not authorising the activity will be detrimental to M2 Precious and Base Metals, economy of the country as well as the development of the country, as we are aware of the current housing backlog especially in the low to medium income earners. The project can assist in elevating the current slow development and housing building should the project prove to be viable.

**ii) Conditions that must be included in the authorisation**

M2 Precious and Base Metals must apply the following buffer zones to the final positioning of the drill sites;

- 100m buffer from any water resource
- 100m buffer from any infrastructure
- 100m buffer from any identified heritage resource
- 100m from residential area

**q) Period for which the Environmental Authorisation is required.**

The prospecting activity has been ear marked for a period of 5 years, this is with the assumptions that all activities will be done including rehabilitation. Therefore it is vital to also authorise the environmental authorisation for the same duration.

**r) Undertaking**

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

The Environmental Assessment Practitioner has signed the undertaking at the bottom/end of this report.

**s) Financial Provision**

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

**i) Explain how the aforesaid amount was derived.**

R34 638

This amount was derived from the DMR quantum Calculation which was established in 2005 by the DMR.

This was derived from 3 factors, namely **rehabilitation of access roads, General surface rehabilitation** (including capping of boreholes)

**ii) Confirm that this amount can be provided for from operating expenditure.**

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

**M2 Precious and Base Metals** will be supporting this application financially

**t) Specific Information required by the competent Authority**

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

**(1) Impact on the socio-economic conditions of any directly affected**

**person.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an **Appendix** .

A full consultation process has taken place, see attached consultation report.

**(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.**

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

None,

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

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

The proposed drilling activities requested as part of this authorization is the only current viable manner in which a mineral resource can be identified and used to generate a SAMREC and/or JORC compliant resource which is a minimum requirement to determine whether it is viable to invest in a future mine.

## PART B

# ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

### 1) Draft environmental management programme.

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

#### **Mr. Divhani Mulaudzi; Environmental Coordinator**

Divhani holds the Bachelor of Sciences (Botany, Zoology and Conservation Biology (BscBDC)) from University of Venda and also Bachelors' Honours Degree specializing in Botany/Ecology from the University of Limpopo Turfloop Campus. He is currently appointed by Geoprospect as an Environmental Manager.

Divhani has attended a biodiversity academy internship programme at university of Stellenbosch, and University of Cape Town in Rondebosch Cape Town, CIB-DST-NRF (Center for Invasion Biology, Department of Science and Technology and National Research Foundation), this has enhanced his (Environmental Health Safety, Natural & Ecological experience) and Environmental Management related experience. He has also worked as an Environmental Health and Safety (EHS) Consultant for 4 years 7 month.

Divhani has attended a successful wilderness courses at Lapalala Wilderness School, Lephalale in Waterberg District within the jurisdiction of the Lephalale Local Municipality, South Africa, where he successfully completed the following courses: Overview of the Waterberg Biosphere, Basic Archaeology and Geology, Vegetation Surveying and report production, Introduction to Reserve Management planning and Auditing (Water Placement management, Bush Encroachment management, Land Rehabilitation planning and practices, Erosion Control management and the Importance of Fires), Bat Ecology and Conservation.

He has also attended Safety, Health and Environmental courses to enhance his experiences:

1. Continuous Risk Assessment
2. Incident and Accident Investigations

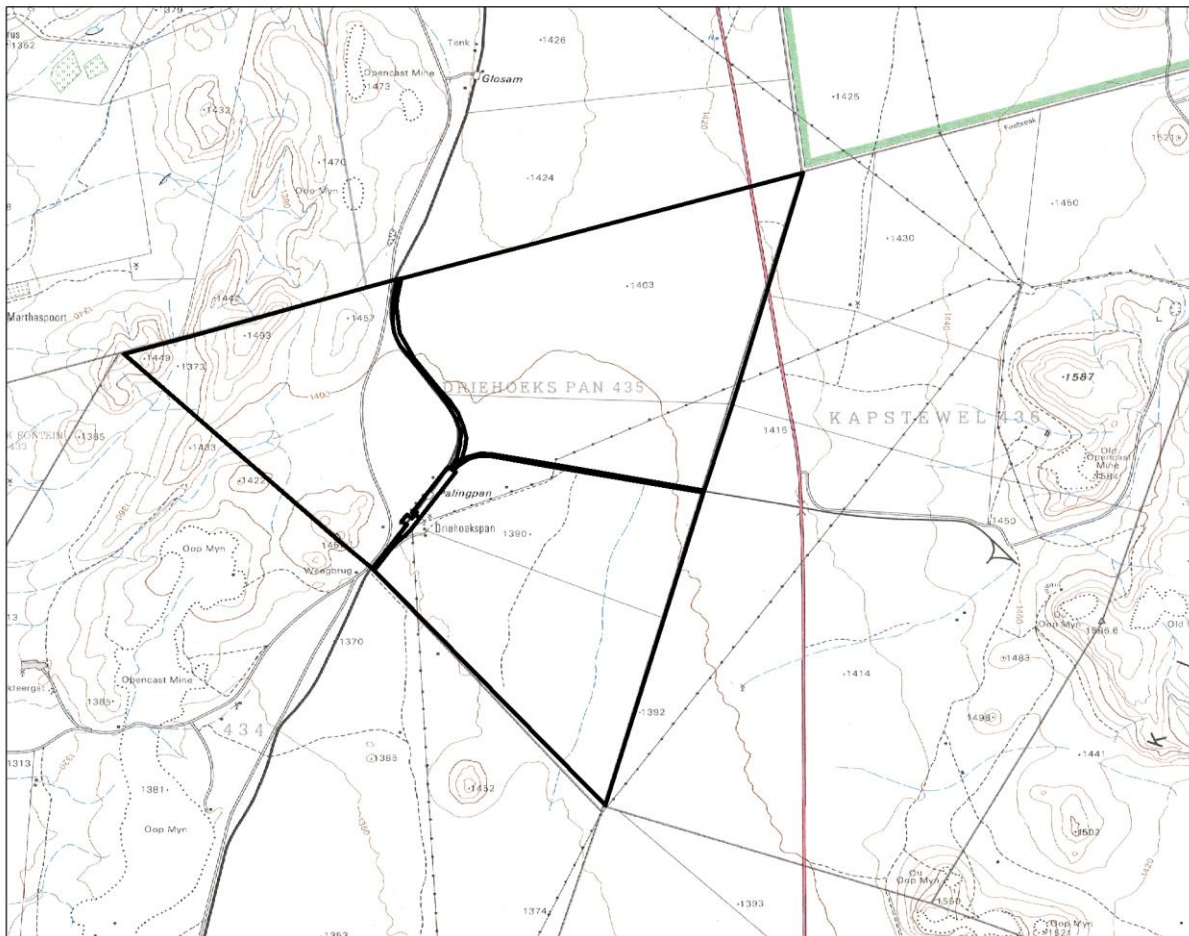
- b) **Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

Drilling, Mapping, and Geophysics



**c) Composite Map**

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



**d) Description of Impact management objectives including management statements**

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

No.	Activity	Closure Objectives
1	Desktop Studies	No Closure Objectives as there is no invasive of the environment
2	Geophysics	No Closure Objectives as there is no invasive of the environment
3	Mapping	No Closure Objectives as there is no invasive of the environment
4	Site Establishment	The closure objectives will be to leave the site the way it was found before

		prospecting took place or even better
5	Drilling	The closure objectives will be to leave the site the way it was found before prospecting took place or even better
6	Closure and Rehabilitation	The closure objectives will be to leave the site the way it was found before prospecting took place or even better

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

1000L of water per day on maximum production day of drilling

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

No-Water Use Licence has not been applied for, this is due to the fact that no water extraction & diversion will be done from any water source. All water which will be used will be brought on site by a water tank for the sole purpose of this project. The brought it water will be bought from a licenced water supplier who sells potable water or treated industrial water for which a water sale agreement will be provided before work commences and is submitted to the DMR



Figure: Indicating a mobile water cart

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).</p>	<p>(volumes, tonnages and hectares or m<sup>2</sup>)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-</p> <p>..</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
Desktop Studies	Phase 1	1978 Ha	N/A	N/A	Before Drilling
Geophysics		1978 Ha	N/A	N/A	Before Drilling
Mapping		1978 Ha	N/A	N/A	Before Drilling
Accommodation & Ablution	Phase 2	200m <sup>2</sup>	Spray water to reduce dust, Use chemical toilets, stock pile top soil during excavations, and have a designated area for domestic waste, have a buffer zone for rivers, road, dams and railway line	N/A	Before Drilling
Equipment Storage		500m <sup>2</sup>	Spray water to reduce dust, Use	N/A	Before Drilling

			chemical toilets, stock pile top soil during excavations, service equipment off site, put plastic containers for leaking hydrocarbons., have a buffer zone for rivers, road, dams and railway line		
Office & Ablution		300m <sup>2</sup>	Spray water to reduce dust, Use chemical toilets, stock pile top soil during excavations, and have a designated area for domestic waste, have a buffer zone for rivers, road, dams and railway line	N/A	Before Drilling
Drilling (The whole area will be drilled but subjected to phase 1 results)		1978 Ha (112m <sup>2</sup> a drilling site)	Spray water to reduce dust, Use chemical toilets, stock pile top soil during excavations, and have a designated area for domestic waste, contain spilling waste, have a buffer zone for rivers, road, dams and railway line	SAMREC/JORC	
Rehabilitation & Closure	Phase 3	1978 Ha	N/A	N/A	After Drilling

### e) Impact Management Outcomes

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

<b>ACTIVITY</b> (whether listed or not listed).  (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).	<b>POTENTIAL IMPACT</b>  (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	<b>ASPECTS AFFECTED</b>	<b>PHASE</b> In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	<b>MITIGATION TYPE</b>  (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)  E.g. <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation..</li> </ul>	<b>STANDARD TO BE ACHIEVED</b>  (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Desktop Studies	None	None	Planning/Phase 1	None	None
Geophysics	None	None	Pre operational	None	None
Mapping	None	None	Pre operational	None	None
Accommodation & Ablution establishment	Minimal impact on:- Dust, Noise, Surface Disturbances, Air pollution, environmental degradation,	Environment	Phase 2/Operational	Reduce: Noise, dust, air pollution, land degradation	Reduce and minimise pollution
Equipment Storage	Minimal	Environment	Phase 2/Operational	Reduce: Noise, dust, air pollution, land degradation,	Reduce and minimise pollution

establishment	impact on:- Dust, Noise, Surface Reduce and minimise pollution Disturbances, Air pollution, environmental degradation,			hydrocarbon spillage	
Office & Ablution establishment	Minimal impact on:- Dust, Noise, Surface Disturbances, Air pollution, environmental degradation,	Environment	Phase 2/Operational	Reduce: Noise, dust, air pollution, land degradation	Reduce and minimise pollution
Drilling (The whole area will be drilled but subjected to phase 1 results)	Impact on:- Dust, Noise, Surface Disturbances, Air pollution,	Environment as well as both surface and ground water	Operational	Minimize: Noise, dust, air pollution, land degradation, hydrocarbon spillage, ground water pollution, surface water pollution	Reduce and minimise pollution

	environmental degradation, ground water pollution (dependant on the water table vs drill hole depth), hydrocarbons spillage				
Rehabilitation & Closure	None	Environment	Closure		None

### f) Impact Management Actions

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

<p><b>ACTIVITY</b> whether listed or not listed.</p> <p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p><b>POTENTIAL IMPACT</b></p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p><b>MITIGATION TYPE</b></p> <p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> </ul> <p>Remedy through rehabilitation..</p>	<p><b>TIME PERIOD FOR IMPLEMENTATION</b></p> <p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity</p> <p>or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p><b>COMPLIANCE WITH STANDARDS</b></p> <p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
Desktop Studies	None	None	Planning/Phase 1	N/A
Geophysics	None	None	Pre operational	Aviation Authority
Mapping	None	None	Pre operational	N/A
Accommodation & Ablution establishment	Minimal impact on:- Dust, Noise, Surface Disturbances, Air pollution,	Environment	Phase 2/Operational	DWA, DMR, DEA



	environmental degradation,			
Equipment Storage establishment	Minimal impact on:- Dust, Noise, Surface Reduce and minimise pollution Disturbances, Air pollution, environmental degradation,	Environment	Phase 2/Operational	DWA, DMR, DEA
Office & Ablution establishment	Minimal impact on:- Dust, Noise, Surface Disturbances, Air pollution, environmental degradation,	Environment	Phase 2/Operational	DWA, DMR, DEA
Drilling (The whole area will be drilled but subjected to phase 1 results)	Impact on:-Dust, Noise, Surface Disturbances, Air pollution, environmental degradation, ground	Environment as well as both surface and ground water	Operational	SAMREC/JORC, DWA, DMR, DEA

	water pollution (dependant on the water table vs drill hole depth), hydrocarbons spillage			
Rehabilitation & Closure	None	Environment	Closure	DWA, DMR, DEA

**i) Financial Provision**  
**(1) Determination of the amount of Financial Provision.**

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

No.	Activity	Closure Objectives
1	Desktop Studies	No Closure Objectives as there is no invasive of the environment
2	Geophysics	No Closure Objectives as there is no invasive of the environment
3	Mapping	No Closure Objectives as there is no invasive of the environment
4	Site Establishment	The closure objectives will be to leave the site the way it was found before prospecting took place or even better
5	Drilling	The closure objectives will be to leave the site the way it was found before prospecting took place or even better
6	Closure and Rehabilitation	The closure objectives will be to leave the site the way it was found before prospecting took place or even better

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

Though consultation by the DMR is prescribed to a maximum of 30 days, **M2 Precious and Base Metals** has started consultation with the land owners while a proper PP meeting will be held on a date yet to be confirmed..

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

All areas which will experience invasive activity will rehabilitated.

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

The prospecting activities will be only limited to the land concerned and not to the neighbouring farms unless otherwise the drilling will take next to the farm boundary. This is also being in line with the environmental rehabilitation plan. The area of drilling, site establishment and clearing will be the areas which will be affected the most.

It is critical to note that the areas to be drilled will be determined by the geophysics.

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

R34 638

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

Yes, this amount will be available as stated before. A letter from M2 Precious and Base Metals has been attached to justify such.

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

- g) Monitoring of Impact Management Actions
- h) Monitoring and reporting frequency
- i) Responsible persons
- j) Time period for implementing impact management actions
- k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Desktop Studies	N/A	N/A	N/A	N/A
Geophysics	N/A	N/A	N/A	N/A
Mapping	N/A	N/A	N/A	N/A
Site Establishment & Drilling	Visual impact	All areas exposed must be monitored for erosion	Project Manager	Weekly and after heavy winds and rain
	Dust Generated	All areas exposed must be monitored for erosion	Project Manager	Weekly and after heavy winds and rain
	Noise	All areas where machinery will be operating	Operators and Project Manager	Daily
	Water & Environmental Pollution	All areas of operations	Operators and Project Manager	Daily
Post Closure and Rehabilitation	Rehabilitated areas	All rehabilitated areas	Environmentalist	Weekly, monthly as well as after heavy rain fall

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

The environmental audit report will be submitted annually.

**m) Environmental Awareness Plan**

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

Inductions as well as workshops before any project commence in order to familiarize the workers of what is allowed and what is permissible.

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

There are quite a number of ways in order to deal with avoidance and minimization of pollution, these include Environmental awareness, Training, Dust suppression, Buffer zone, Avoid hunting, avoid veld fires.

**Environmental Awareness & Training,**

Training of drilling teams and any other person who will be based on site or coming to site for the prospecting project need to be briefed and inducted in order to note what to do and not to do on site, especially with regard to health, safety and environmental aspect of things.

**Dust suppression,**

During the construction, preparation as well as drilling process, application on the roads, drill holes and areas which are excavated needs to be applied water. This is done in order to reduce the amount of dust emitted to the atmosphere. It is critical to note that the right amount of water need to be applied in order to get the desired results as little amount may not have any impact while too much water may also leave undesirable results.

**Buffer zone,**

The avoidance of roads, railway lines, water ways, ponds, rivers as well as wet lands are vital in order to minimize the risk associated. A minimum allowable buffer zone of 100m from such a feature, this prevents pollution and destroying such a feature.

**Avoid hunting,**

Hunting of any animals on site will be strictly prohibited on this project

**Avoid veld fires**

Veld fires will NOT be permitted, this is due to the fact that they have a tendency of getting out of control and eventually destroying vegetation, livestock and property.

**n) Specific information required by the Competent Authority**  
(Among others, confirm that the financial provision will be reviewed annually).

Financials will be reviewed annually, this will be done in order to adjust and compensate where the organisation sees fit to do such.

**2) UNDERTAKING**

The EAP herewith confirms

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



---

Signature of the environmental assessment practitioner:

Geoprospect Investment Holdings (Pty) Ltd

---

Name of company:

18/February/2019

---

Date:

**-END-**