mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS INTERMS 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 INTERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT: LETHABO SUPERMARKET CC

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FAX NO: 086 602 1376

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FILE REFERENCE NUMBER SAMRAD: NW30/5/1/1/3/2/12049PR

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 (Act107of 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 section16 (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 section17(1)(c) the competent Authority must check whether the application has taken in to 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 further more an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

2. Objective of the basic assessment process

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

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

  i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

  ii. the degree to which these impacts—

    a) can be reversed;

    b) may cause irreplaceable loss of resources; and

    c) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

  i. identify and motivate a preferred site, activity and technology alternative;

  ii. identify suitable measures to manage, avoid or mitigate identified impacts; and

  iii. Identify residual risks that need to be managed and monitored.

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PARTA: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 DETAILS OF EAP

Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of the Practitioner: Grace Lerotholi

Tel No.: 011 3126042

Fax No.: 0866519469

E-mail address: greenvcc@gmail.com

ii) Expertise of the EAP.

(1) **The qualifications of the EAP**

(with evidence). MSc Environmental Biotechnology Registered with SACNASP

Summary of the EAP's past experience.

Ms. G Lerotholi obtained her BSc Degree (Physics and Geography) from the National University of Lesotho, and completed her honours degree in (Environmental Water Management) at Rhodes University. Ms G Lerotholi, also completed her Master's degree in (Environmental Biotechnology) from Rhodes University, South Africa. Ms G Lerotholi is an Environmental Consultant specialising in Environmental Impact Assessments (EIA) for mining, electricity supply (generation, transmission and distribution), road infrastructure, residential developments as well as water management projects. Her experience also includes more than 5 years of environmental consulting in the field of Impact Assessment and Authorisation Applications, with a focus on legislative requirements and sector area management. Ms. G Lerotholi, is registered with the South African Council of Natural Scientist Profession (SACNASP). Please refer to ***Appendix 1*** for the Curriculum Vitae of Ms. G. Lerotholi.

2 LOCATION OF ACTIVITY

b) Location of the overall Activity.

Farm Name:	Davidskuil 167 JP
Application area(Ha)	3345.791 Ha
Magisterial district:	Moses Kotane Magisterial District

Distance and direction from nearest town	The proposed prospecting right area is located approximately 27 km North -East of Sun City and South-East of Mabeskraal Village with Phalane Village in the South.
21 Digit Surveyor General Code for each farm portion	B0JP00000000016700000

c) Locality map

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

Davidskuil 167 JP is located 57km northwest of Rustenburg. The farm is located approximately 7km west of the Pilanesberg National Park and 26km north-west of the Sun City Resort. The village of Makoshong located on the West side and part of Phalane village on the Southern site both inside the proposed property and Mabeskraal in the north west of the edge of the property.

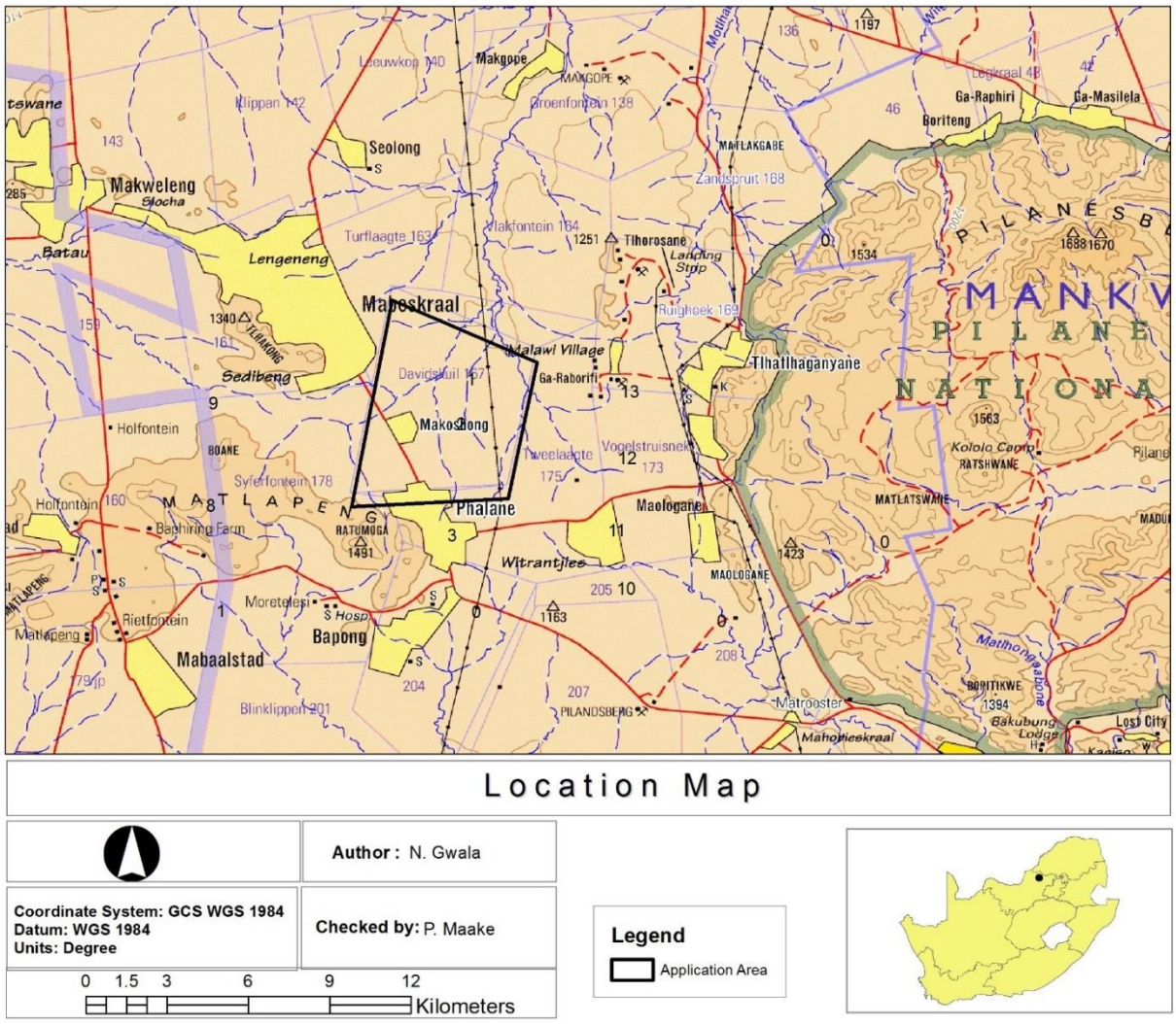

Figure 1: Location Map

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 1:10000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed onsite

The prospecting plan consists of the total minimum number of fifteen (15) boreholes which will be drilled at a depth of 100 m at a spacing of 350m-1000m. No infrastructure will be constructed. The existing roads will be used where possible. A plan is provided below to indicate approximate location of activities on the site. A buffer of 100 meters will be kept between boreholes and existing houses.

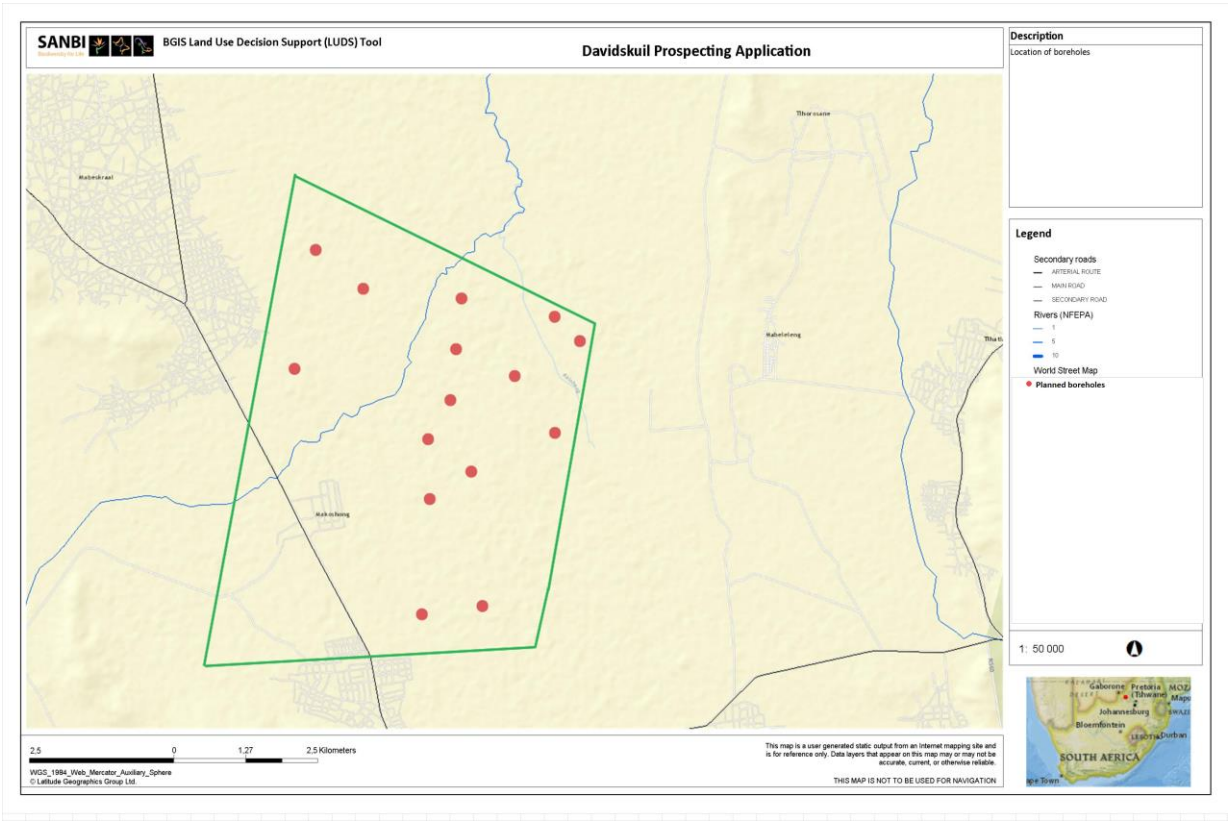

Figure 2: **Borehole location Layout plan for the prospecting project area**

3 DESCRIPTION OF ACTIVITY

(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** **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.)	**Aerial extent of the Activity Ha or m²**	**LISTED** **ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING** **NOTICE (GNR 983,** **GNR 984 or GNR 985)**
Invasive prospecting for Chrome (Cr) within the Middle Group and Lower Group chromitite seams), by means of percussion and diamond drilling of 15 boreholes. The holes will be drilled to an average depth 100m.	3345.791 ha (Disturbed area - 0.01 ha per hole)	X	GNR 983 Listing Notice 1 Activity 20
Vegetation clearance for drilling programme that includes the drill site	0.15 ha	X	GNR 985 Listing Notice 3 Activity 12(a)(ii)

(ii) Description of the activities to be undertaken

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

The applicant is applying for a prospecting right for the commodity of Copper, Nickel, PSM, and Chrome. The application involves prospecting without bulk sampling. Prospecting will be done in a phased (as per below) and cost effective approach of determining the minerals distribution and to demarcate the deposit. At the end of each phase, a decision will be taken to proceed or to abandon the project.

Desktop study

- In order to direct the exploration programme in an efficient manner, there will be a phase of acquisition and subsequent review of information and data obtained during previous exploration on the property (and in the general area).
- Compilation of all available geological, remote sensing, and exploration data.
- Based on this a preliminary geological model and resource estimate will be developed and an economic costing study undertaken to determine the likely mineral concentration required in making the project feasible (and directing further work).
- This may also include photo geological and satellite interpretations. Data will be sourced from the Council for Geosciences, Universities and other libraries and previous explorers may be approached with a view to obtaining their results.
- It is believed that considerable time should be spent on this activity to prevent costly duplication of data when the programme enters the sampling and drilling phases.

Drilling

- Diamond core drilling will be conducted in order to delineate and quantify the chrome resource. The total minimum number of fifteen (15) boreholes will be drilled at a depth of 100 m at a spacing of 350m-1000m.
- An independent and experienced drilling contractor will be used to complete the drilling in accordance with industry best practice and in compliance with the Mine Health and Safety Act.
- It is envisaged that skid or truck mounted rigs will be used to drill the vertical holes. Plastic lining to prevent oil spillage is used under the rig as well as within any water sumps that are required. The area is cordoned off and, if required, firebreaks are established.
- Borehole sites are GPS located and pegged with a steel dropper. The site is inspected and photographed prior to any disturbance.
- A drill pad is then cleared, keeping disturbance to the native vegetation to an absolute minimum. Any topsoil removed is stored separately for later reuse.
- After the drilling operation is complete, each borehole collar is surveyed by an independent surveyor using a high-accuracy differential GPS. Thereafter the site is rehabilitated and photographed according to the procedures as stipulated in the Environmental Management Plan and closely monitored to ensure that standards are not compromised. The drill site is only considered rehabilitated when the project geologist has signed the standard drill pad rehabilitation checklist.

Logging and Sampling

- Cores are placed in core trays and removed to a central core storage facility for further processing.
- The cores are oriented according to low-points of bedding, with the low-points aligned along the top of the core and drill depths are verified.
- A qualified and experienced Senior geologist will log and sample all drill holes in accordance to best practice procedures and methodologies, including quality control and assurance. The logging will record core losses, structures, lithology types and thicknesses; and weathering.
- The core is removed, split and logged in detail, highlighting rock types, intra- chrome seam partings (type, thickness), etc.
- Each sample is given a unique sample number, labelled outside and inside the bag. Sampling is done at lengths to yield a sufficient sample weight for the required analytical procedure.

Analyses and other Metallurgical Test work

- Normal industry practice in terms of base metal XRF analyses, metallurgical test work and mineralogical investigation will be done on all samples.
- The analyses will be done by an accredited laboratory for XRF and Fire assay.
- The analyses and metallurgical test work will be undertaken using core samples.

Experience in other sites have indicated that including the turning circle of vehicle, the area disturbed rarely exceeds 100m^2 or 0.01 ha per hole.

For the drilling of the envisaged 15 holes the areas to be affected will be approximately 0.15 ha.

The equipment to be used is as follows:

- Drill Equipment
- Temporary Fencing
- Wooden pegs
- Safety Cones

- Field vehicles
- Spades
- First aid kit
- Sample bags
- PPE (dust mask; gloves; goggles reflector vest)

No staff will be living on the proposed site. There will be portable toilets located on site to provide sanitary facilities to the employees. The described prospecting activities will trigger one listed activity under the National Environmental Management Act, Act 107 of 1998.

4 LEGAL FRAMEWORK

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (e.g. In terms of the National Water Act & Water Use License has / has not been applied for)
Legislation		
Constitution of South Africa, specifically everyone has a right; a. to an environment that is not harmful to their health or wellbeing; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: i. prevent pollution and ecological degradation; ii. promote conservation; and iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	Prospecting activities	The prospecting activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimized and mitigated in order to protect the environmental right of South Africans.
Minerals and Petroleum Development Resources Act, Act 28 of 200 (MPRDA) section 16 (as amended)	Prospecting activities	The conditions and requirements attached to the granting of the prospecting right will apply to the prospecting activities.
National Environmental Management Act, No 107 of 1998 (as amended) (NEMA) Listing Activity 20 of Listing Notice 1 in terms of Regulation 983 of 2014		The appropriate environmental authorisation will be obtained before proceeding with any prospecting activities. Measures will be implemented to prevent any pollution occurring during the drilling activities. The disturbed area shall be rehabilitated in such a way that is stable, non-polluting, non-eroded, free from alien invasive species and suitable for agreed post closure land use.
National Water Act, Act 36 of 1998 (NWA):	N/A	**No water use license is required for this application**. Any water required for drilling activities will be obtained from a legal source within the area or brought in via mobile water tanker.
		Appropriate dust extractions / suppression equipment will be a condition imposed on the drill contractor for their drill rigs.
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA)NEM: WA (as amended)	Management measures environmental awareness	The generation of potential waste will be minimised through ensuring employees of the drilling contractor are subjected to the

	plan	appropriate environmental awareness campaign before commencement of drilling. All waste generated during the drilling activities will be disposed of in a responsible legal manner. Proof of legal disposal will be maintained on site.
National Heritage Resources Act, 25 of 1999 (“NHRA”)	Management measures	Phase 1 Heritage Impact Assessment shall be conducted prior to drilling to ensure that significant impacts on heritage artefacts, heritage site and graves. No drilling activities will take place with 50m of any identified heritage resource such as a grave.
Standards, Guidance and Spatial Tools		
BGIS (www.bgis.sanbi.org)	Baseline environmental description	Used during desktop research to identify sensitive environments within the prospecting rights area.
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, Annoyance and to Speech Communication	Management / monitoring measures	Used to set the standard allowable for noise generation and control during drilling.
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants	Management / monitoring measures	Used to set the standard for dust generation and control during drilling.

5 NEED AND DESIRABILITY

f) Need and desirability of the proposed activities.

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

The chromitite resources in South Africa are situated within the Bushveld Complex (“BC”), which is an enormous saucer-like ultramafic/mafic intrusion extending for about 400km east to west and roughly the same distance north and south.

The ultramafic/mafic rocks of the B Care collectively known as the Rustenburg Layered Suite (“RLS”) and have been subdivided, from base to top, into five zones, known as the Marginal, Lower, Critical, Main and Upper Zones. The general sequence and composition of the different zones is shown in Figure 3. The continuity of the Critical Zone is intermediate between that of the Lower Zone and Main Upper Zones. The Critical Zone is the host to the chromium and Platinum Group Metals (“PGM”) mineralisation within the B Cinour area of interest. The Critical Zone spans the areas shown in Figure 3.

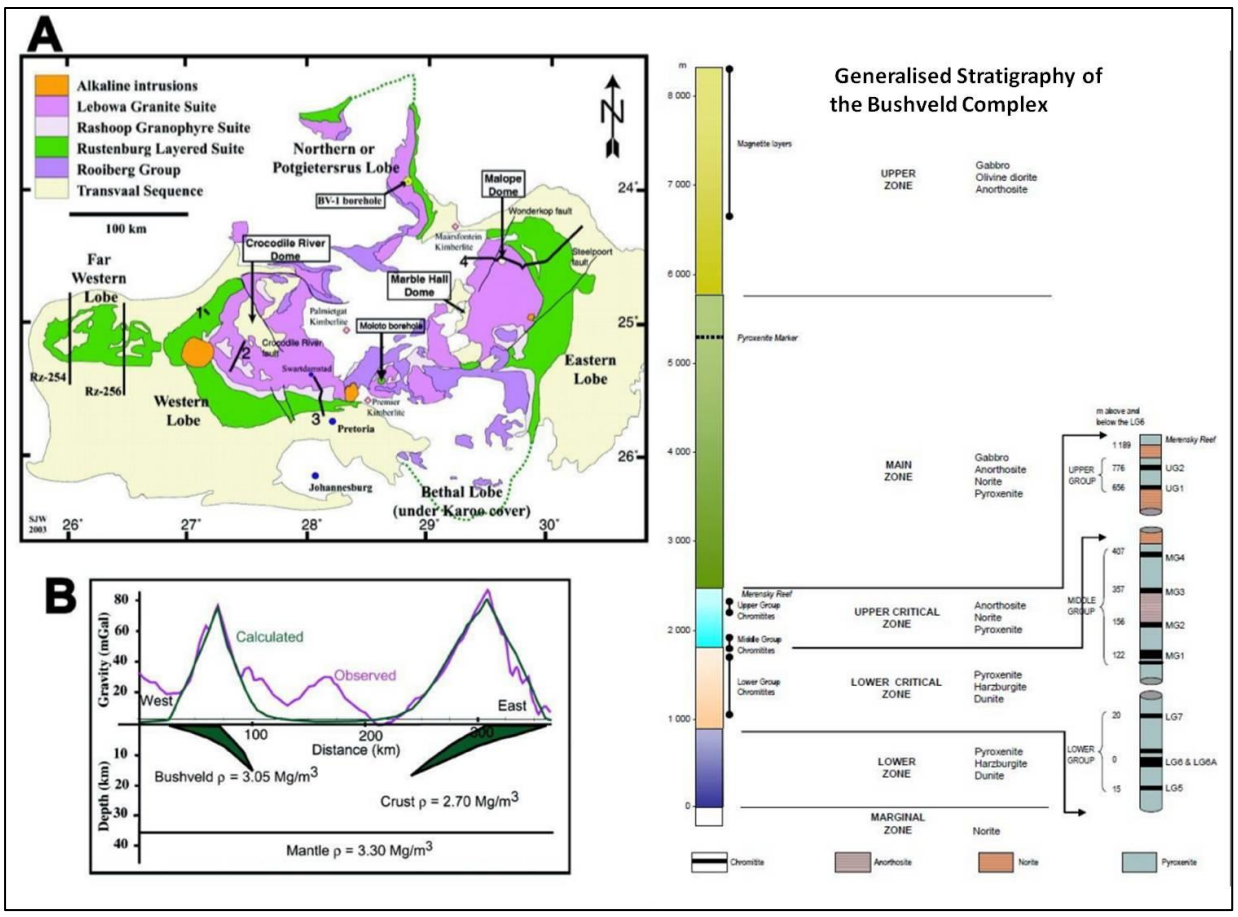

Figure 3: General Geology & Stratigraphy of the Bushveld Complex

Davidskul 167JP falls within the Critical Zone as seen in Figure 3. Desktop studies and high level geological mapping indicate the occurrence of the chromitite seams of the lower groups (“LGs”) and middle groups(“MGs”). The igneous layering within the Critical Zone is remarkably uniform over much of the BC, with individual layers traceable for tens to hundred so kilometres. It may be subdivided into lower and upper sections and is made up of cyclic units consisting of chromitite, pyroxenite, norite and anorthosite. Cycles in the Lower Critical Zone are entirely ultramafic in character. Cycles in the Upper Critical Zone comprise ultramafic lithologies and alsonorite-anorthosite.

Chromitite layers occur throughout the Critical Zone, usually, but not always, at the base of crystallisation cycles. The chromitite seams have been classified into lower, middle and upper groups, with the Lower Group occurring in the Lower Critical Zone and the Upper Group in the Upper Critical Zone. The Middle Group chromitite seams straddle the boundary between lower and upper divisions of the Critical Zone.

The chromitite seams are named according to their location within the layered succession, with numbers commencing from the bottom up, with the lower most group being named LG1, followed by LG 2, LG3, etc. in the Lower Group (consisting of 7 layers), progressing to MG0, MG1, MG2, etc.in the Middle Group (consisting 4layers), and then two layers in the Upper Group, UG1 and UG2. The thickness of the sechromitite layers ranges from several millimetres to several metres and named chromitite layers may comprise multiple, composite layers of chromitite separated by interlaminated silicate rocks. The thickest chromitite layers, specifically the LG6 and MG1, are mined for their chromite content.

The target area of this application is underlain by rocks of the Critical Zone of the BC, consisting of chromitite inter layered with pyroxenite, norite, an orthositicnorite, and mottled anorthosite.

Chromite is important because it is the only economic ore of chromium, an essential element for a wide variety of metal, chemical and manufactured products. Many other minerals contain chromium, but none of the mare found in deposits that can be economically mined to produce chromium (www.Geology.com).

Chromium is a metal used to induce hardness, toughness and chemical resistance in steel. The alloy produced is known as "stainless steel." When alloyed with iron and nickel, it produces an alloy known as "nichrome" which is resistant to high temperatures and used to make heating units, ovens and other appliances. Thin coatings of chromium alloys are used as plating on auto parts, appliances and other products. These are given the name "chrome plated. "It is also used to makes upper alloys that can perform well in the hot, corrosive, and high-stress environment of jet engines (www.Geology.com).

6 ALTERNATIVES

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

Location Alternatives: This property provides the ideal geological formation for the presence of chromite minerals. It is situated between known chromite occurrences and has the existing infrastructure in the area which can support its development. Properties in the east have already applied for. These properties are not a reasonable alternative. Moving further east, it is the Pilanesberg National Park which is not considered a reasonable location alternative.

Technological Alternatives: Initially more than 12 drilled holes were considered as an option, however by using geophysics at an earlier stage of the project the number of holes can be moderated and reduced.

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

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

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as **Appendix 2** 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;

(b) the type of activity to be undertaken;

(c) the design or layout of the activity;

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

(e) the operational aspects of the activity; and

(f) the option of not implementing the activity.

6.1 PROPERTY

This property provides the ideal geological formation for the presence of chromitite minerals. Davidskuil 167JP falls within the Critical Zone as seen in Figure 5.

6.2 TYPE OF ACTIVITY

A total of 15 holes are proposed for the site. It will be possible to drill 40m per day. The drilling team will not stay onsite and depending on the geological formation it will take approximately 1 - 3 days to drill one borehole.

All holes will be drilled by means of a diamond drill rig. The total minimum number of fifteen (15) boreholes will be drilled at a depth of 100 m at a spacing of 350m-1000m. It is envisaged that skid or truck mounted rigs will be used to drill the vertical holes. Plastic lining will be used to prevent oil spillage under the rig as well as within any water sumps that are required. The area will be cordoned off and, if required, firebreaks will be established.

The drilled holes will be co-ordinated by GPS and logged onto a modelling system and these will be pegged with a steel dropper. The site will be inspected and photographed prior to any disturbance.

After the drilling operation is complete, each borehole collar will be surveyed by an independent surveyor using a high-accuracy differential GPS. Thereafter the site will be rehabilitated and photographed according to the procedures as stipulated in the Environmental Management Plan and closely monitored to ensure that standards are not compromised. The drill site will only be considered rehabilitated when the project geologist has signed the standard drill pad rehabilitation checklist.

6.3 DESIGN & LAYOUT

This is an application for prospecting of chromitite mineral. No infrastructure will be developed on site. Activities will be limited to the drilling of 15 boreholes to be determined by the geological formations found during prospecting. The major design alternative is to operate with one drill rig. It does make the process slightly longer but the speed of rehabilitation can be closely controlled and supervision can be better focussed. No changes to the layout is considered but with the geophysical survey information the holes can be orientated to match the shape of the orebody.

6.4 TECHNOLOGY

The biggest technology intervention is the use of geophysical surveys which makes the requirement for less holes apparent. Geophysical surveys also provide an added advantage of being done quickly and so execution can commence early. The safety factor of utilising geophysical surveys is also apparent as there is less time to keep people exposed to moving machinery.

6.5 NO -GO OPTION

The existing residential, grazing and probably illegal residential activities will continue. If prospecting is not approved the presence of chromitite minerals will not be assessed. The feasibility for mining at the proposed site will not be established. The ore which is important to the on-going industrialisation of the South African economy may not be identified, recovered, processed and deployed to grow the economy.

7 PUBLIC PARTICIPATION PROCESS

ii) Details of the Public Participation Process Followed (please see the attached PPP appendices attached to this report)

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 the moron the use of their land.

The Public Participation Process mainly comprises the engagement with Interested and Affected Parties (I&APs) and is of utmost importance in any assessment process. The PPP, interalia, involves the following:

a. Inform, raise awareness and increase understanding of environmental issues or any other issues that might be affected by the mining process.
b. Establish lines of communication between stakeholders, I&APs and the project team.
c. Provide opportunity to all parties for the exchange of information and expression of views and concerns.
d. Obtain contributions of stakeholders and I&AP and ensure that all views, issues, concerns and queries are documented.
e. Identify the significant issues associated with the proposed project.

7.1 IDENTIFICATION OF I&APS

The landowners and the neighbours were identified using Windeed, this system allows Green Vision Consulting CC to identify last registered postal address of the farm owners and where available their contact numbers as well. This is the contact information used for the notification.

Other I&APs, that were notified is the, local municipality Moses Kotane Local Municipality well as the State Departments and/or Organs of State which have jurisdiction in the area they are:

- Bojanala District Municipality
- Moses Kotane Local Municipality
- Ward Councillors for Ward 24, 26
- Department of Water and Sanitation
- Department of Environmental Affairs
- Department of Land Affairs
- ESKOM
- SAHRA

7.2 NOTIFICATION OF I&AP

I&APs were notified using various methods, each of these are described below:

- Initial Project Notification
- Project Meeting
- Notification of Reports

Initial Project Notification

Notification Letters via mail

All identified Interested and Affected Parties were supplied with a notification letter, informing them about the application that has been submitted by Lethabo Supermarket, which is accompanied by a Background Information Document (BID). The notification letter also had a registration form and a questionnaire attached to it to get the input from the I&AP as well as gather crucial information. These letters were sent via registered mail with the South African Post Office or sent by email.

Newspaper Advert

A newspaper notice was placed in a newspaper that circulates in the local municipality, for this project it was the Rustenburg Herald published on the 10th February 2017 as well as one national newspaper, The Citizen that was published on the 9th February 2017. This notice serves to notify all those who have an interest in the project and also for those whose contact details could not be obtained. The newspaper notice contained the details of the project as well as details of where additional information can be found.

Site Notices

A2 site notices were also put up in the area. Two A2 notices and four A3 notices were put up on and around the property. The table and figure below indicate where the A2 notices were fixed.

7.3 PROJECT MEETING

A meeting will be held on the 12th April 2017. Registered I&APs, stakeholders and landowners will be notified through a newspaper notice that was placed in the Rustenburg Herald.

The purpose of the meeting will be to present this project to the I&APs, take in their comments and to provide them with information on the project.

At the project meeting the I&APs will also advised on how to access all the documents relating to the project.

7.4 NOTIFICATION OF REPORTS

Draft BAR

The draft BAR will be sent to DMR for comments and will be put at Moses Kotane Offices in Mogwase, Mabeskraal library as well as Batlhlalerwa Tribal Council Offices for the public access. Registered I&APs will be sent a notification to their email addresses to inform them that the draft BAR is available at the library and the electronic copy on request for comments.

iii) Summary of issues raised by I&APs

(Still to be completed)

Interested and Affected Parties **List the names of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**	**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated**

8 DESCRIPTION OF THE ENVIRONMENT

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).

8.1 GEOGRAPHICAL CHARACTER

The regional geology of the area influences the geographical character of the area.

Regional Geology

The proposed prospecting area is situated on the Bushveld Igneous Complex (BIC) – a massive layered, igneous intrusion the largest known layered intrusion that extends a distance of 500km from the border of Botswana in the west to Burgersfort in the east. The BIC has a thickness of between 7 – 9 km of magmatic rock exposed in five lobes or limbs. The economically important basal mafic to ultramafic suite, known as the Rustenburg Layered Suite (RLS). It is divided into five zones.

Inferred Project Geology

The proposed prospecting area consists of the Lower and Upper Critical Zone that have a general north-south strike and a gentle eastward dip. The Middle Group (MG) chromitite package comprising the MG 4A, 3 and 1; and the Lower Group package comprising the LG1– 7 could be present on the property.

The geographical character of the area is therefore the buried ore-body covered with sediments derived from the surrounding igneous rocks of the area. In this area it has resulted in a very gently sloping property with minor undulations. No river traverses the property. The soil profile therefore fluctuates from very thin to the areas where it is thick because of undulations in the bedrock.

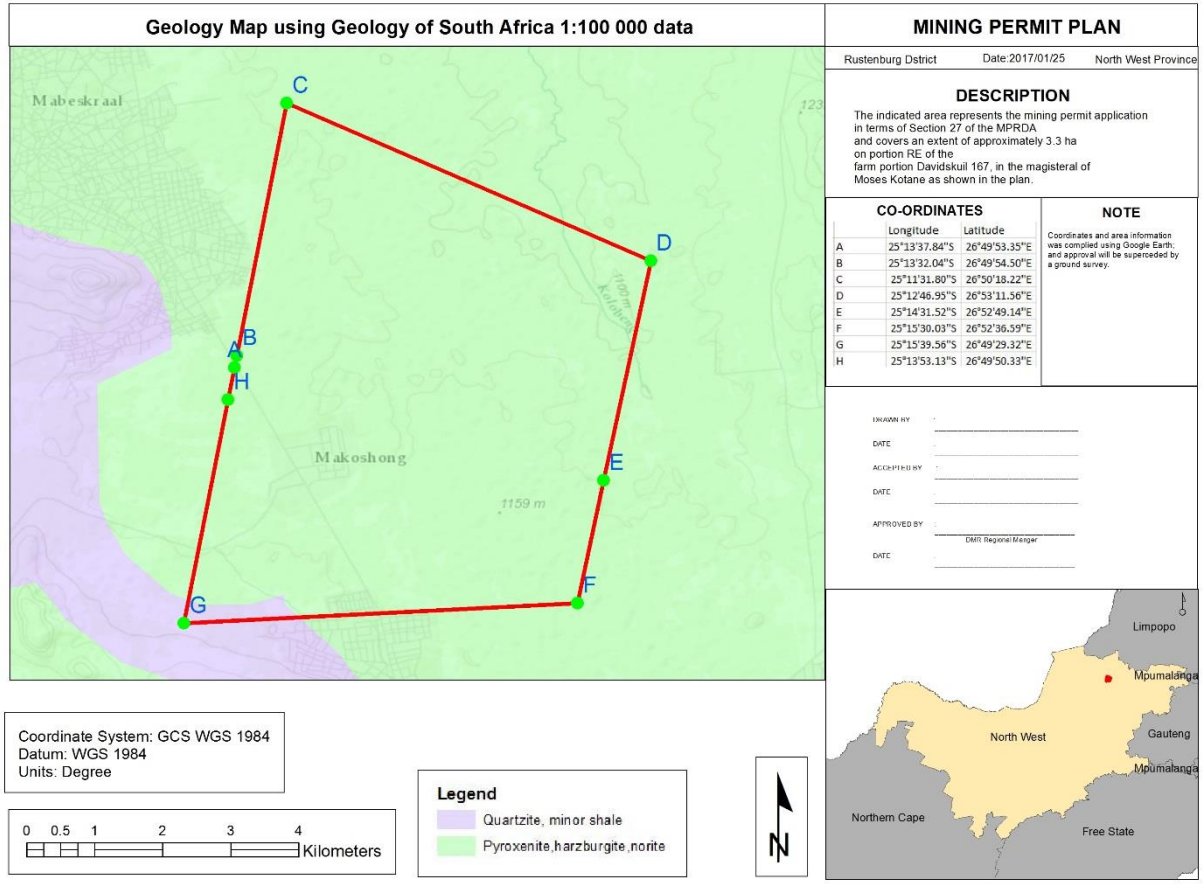

Figure 4: Geology Map

8.2 TOPOGRAPHY

Altitude ranges between approximately 1109–1167metres above ground level. The site slopes towards the north.

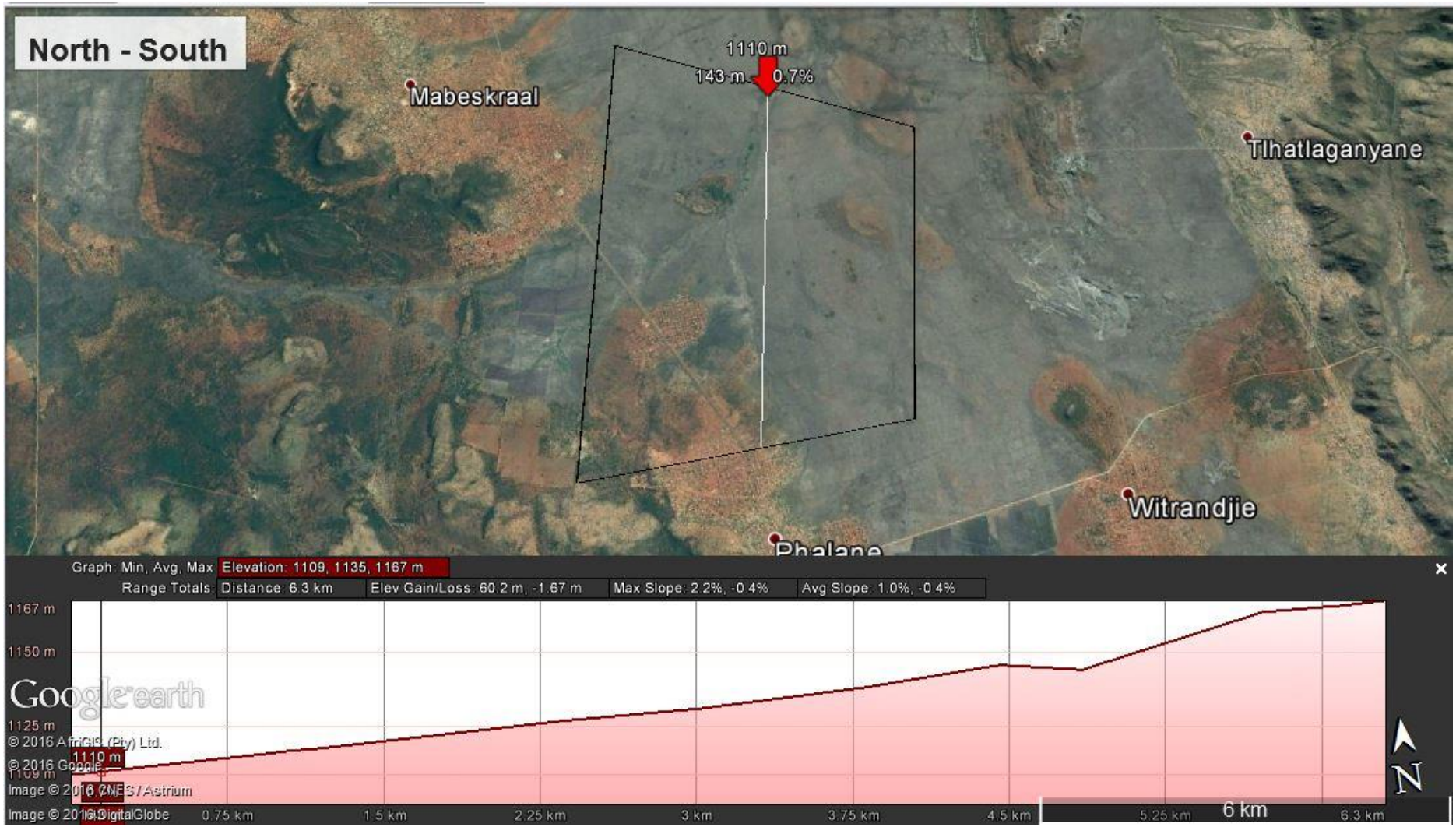

Figure 5: Elevation Profile

8.3 CLIMATE

This section describes the typical weather at the Pilanesberg International Airport (Pilanesberg, South Africa) weather station over the course of an average year. It is based on the historical records from 2009 to 2012. Pilanesberg has a warm temperate climate with dry winters and hot summers.

Temperature

Over the course of a year, the temperature typically varies from 2°C to 32°C and is rarely below 0°C or above 34°C. Figure 6 presents the daily average low (blue) and high (red) temperature with percentile bands (inner band from 25th to 75th percentile, outer band from 10th to 90th percentile).

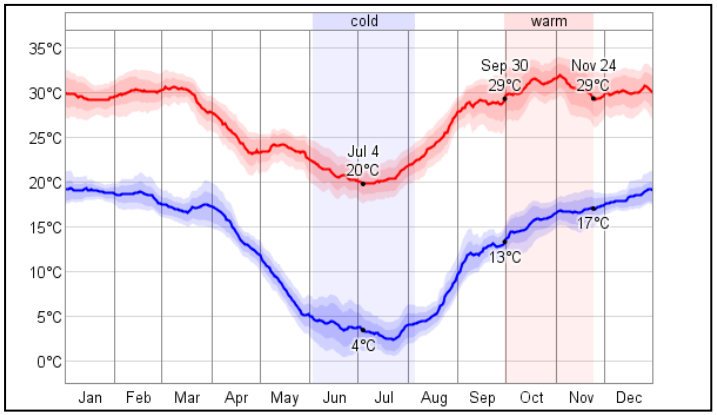

Figure 6: Average low and high temperature (Pilanesberg Airport)

The *warm season* lasts on average from September 30 to November 24 with an average daily high temperature above 30°C.The hottest day of the year is November 3, with an average high of 32°C and low of 17°C.On average the *cold season* lasts from June 3 to August 5 with an average daily high temperature below 22°C.The coldest day of the year is July 23, with an average low of 2°C and high of 20°C.

Sun

The length of the day varies significantly over the course of the year. The shortest day is June 20 with10:33 hours of daylight; the longest day is December 21with13:43hours of daylight.

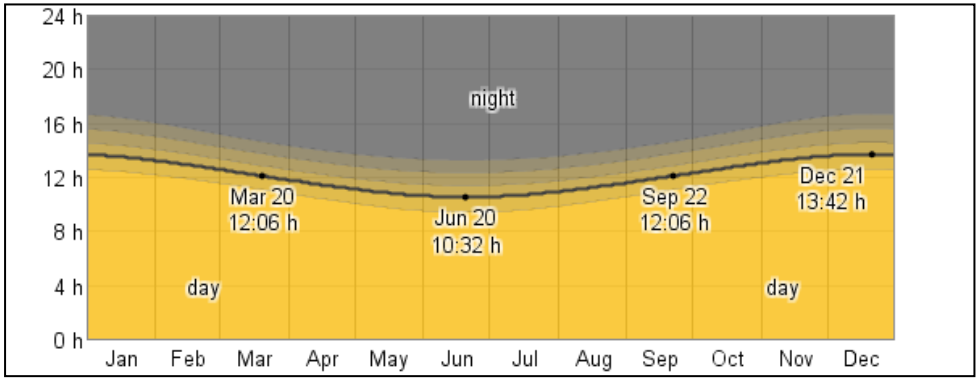

Figure 7: Daily Hours of Daylight and Twilight

The *earliest sunrise* is at 5:12am on November 30 and the latest sunset is at 7:07pm on January15. The latest sunrise is at 6:58am on July4 and the earliest sunset is at 5:28pm on June7.

Precipitation

The probability that precipitation will be observed at this location varies throughout the year. Precipitation is most likely around November 21, occurring in 10% of days. Precipitation is least likely around August 25, occurring in 1% of days.

Over the entire year, the most common forms of precipitation are light rain and moderate rain.

Light rain is the most severe precipitation observed during 62 % of those days with precipitation. It is most likely around April 13, when it is observed during 5% of all days.

Moderate rain is the most severe precipitation observed during 30% of those days with precipitation. It is most likely around November 14, when it is observed during 3% of all days.

During the warm season, which lasts from September 30 to November 24, there is a 6% average chance that precipitation will be observed at some point during a given day. When precipitation does occur it is most often in the form of light rain (56%of days with precipitation have at worst light rain), moderate rain (31%), and drizzle (12%).

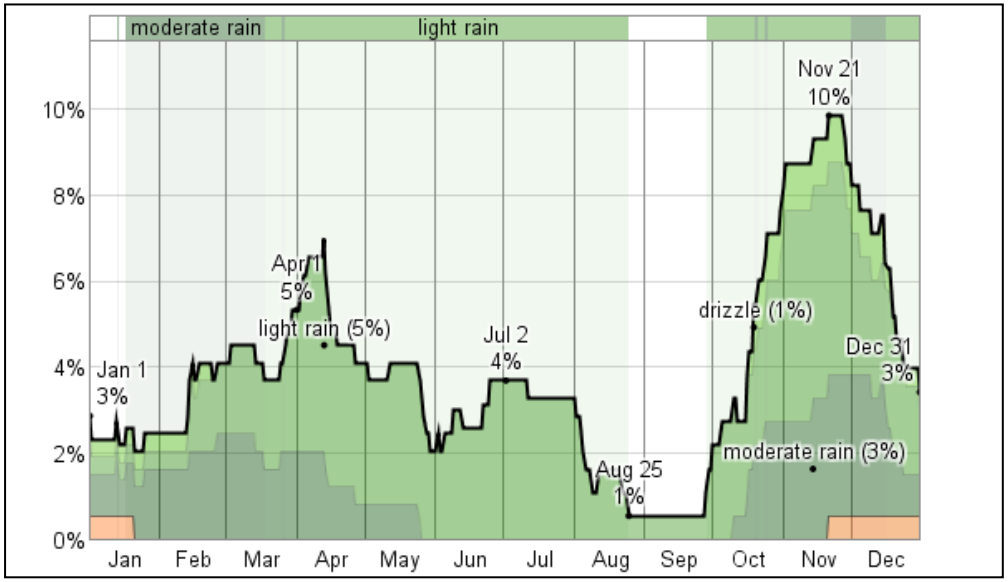

Figure 8: Probability of Precipitation at Some Point in the Day

During the *cold season*, which lasts from June 3 to August 5, there is a 3% average chance that precipitation will be observed at some point during a given day. When precipitation does occur, it is most often in the form of light rain (100% of days with precipitation have at worst light rain).

Humidity

The relative humidity typically ranges from 16%(dry) to 90% (very humid) over the course of the year, rarely dropping below11% (very dry) and reaching as high as 99% (very humid).

The air is *driest* around August 30, at which time the relative humidity drops below 18% (dry) three days out of four; it is *most humid* around May 3, exceeding 86% (very humid) three days out of four.

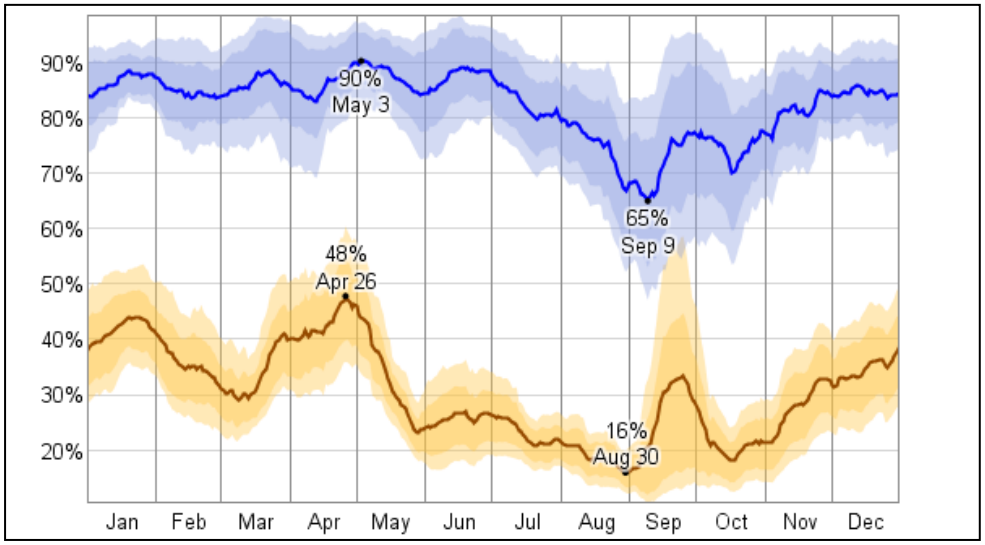

Figure 9: Relative humidity

The average daily high (blue) and low (brown) relative humidity with percentile bands (inner bands from 25th to 75th percentile, outer band sfrom10th to 90th percentile).

Wind

Over the course of the year typical wind speeds vary from 0m/s to 5m/s (calm to moderate breeze), rarely exceeding 7m/s (moderate breeze).

The *highest* average wind speed of 2m/s (light breeze) occurs around November 5, at which time the average daily maximum wind speed is 5m/s (gentle breeze).

The *lowest* average wind speed of 1m/s (light air) occurs around May14, at which time the average daily maximum wind speed is 3m/s (light breeze).

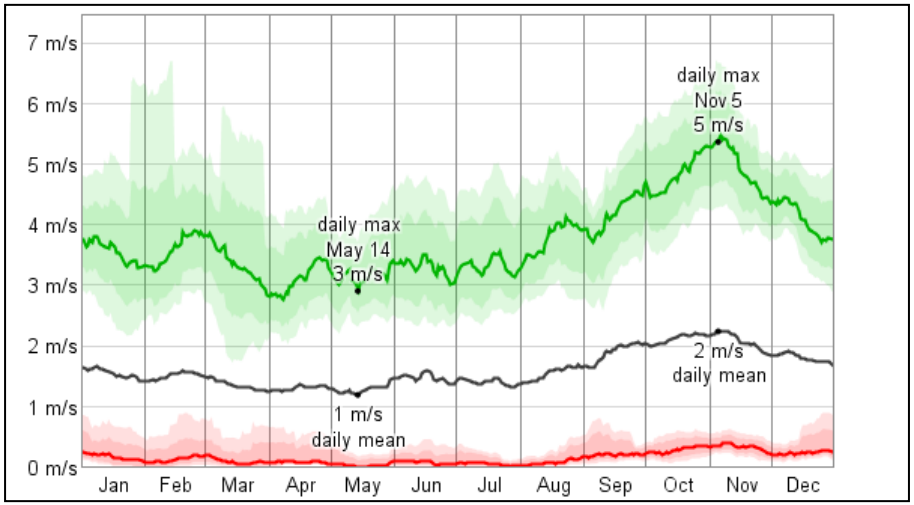

Figure 10: Wind speed

The average daily minimum (red), maximum (green) and average (black) wind speed with percentile bands (inner band from 25th to 75th percentile, outer band from10th to 90th percentile).

The wind is most often out of the *north* (19% of the time) *south* (12%of the time), and *north west* (10% of the time).

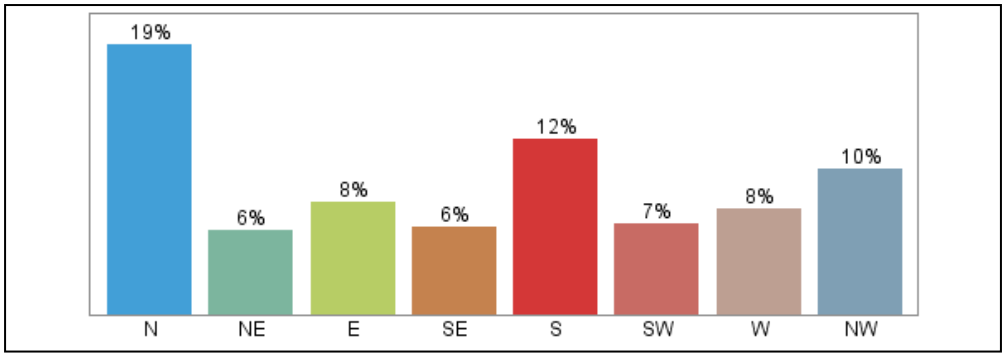

Figure 11: Wind directions over entire year

8.4 AIR QUALITY

The Minister of Environment Affairs recently declared the Waterberg Priority Area for Air Quality Management (Government Notice 495 of 2012). The priority area included the following local municipalities in the Limpopo and North West Provinces:

- Thabazimbi(Limpopo)
- Modimolle (Limpopo)
- Mogalakwena(Limpopo)
- Bela-Bela(Limpopo)
- Mookgopong (Limpopo)
- Lephalale(Limpopo)
- Moses Kotane (North West)
- Rustenburg (North West)

Large Platinum mines are located in the District, predominantly in the Rustenburg area. Air quality monitoring is well established in Rustenburg. There a number of air quality monitoring stations in the area. Three stations are operated by Impala Platinum, four by Eskom (for Amplats) and one mobile caravan is operated by Lonmin. The stations are currently monitoring SO_2, NO_x and particulate emissions.

An emissions inventory for Bojanala Platinum District Municipality (BPDM) was compiled as part of the Air Quality Management Plan for the District. The main sources of air pollution were identified as:

- Industrial operations,
- Mining activities,
- Agricultural activities,
- Biomass burning (veld fires),
- Domestic fuel burning (particularly, coal),
- Vehicle tailpipe emissions,
- Waste treatment and disposal (landfills and incineration),
- Vehicle entrainment of dust from paved and unpaved roads,
- Other fugitive dust sources such as wind erosion of exposed areas.

Pollutants that are of particular concern for BPDM are SO_2, NO_2 and PM_{10}. Major sources of air pollution in the immediate vicinity of the projects include emissions from various mining operations (Ruighoek and Benhaus Chrome Mines),vehicle tail pipe emissions(due to the vehicle activity along routes within the area),domestic fuel burning (related to neighbouring communities/settlements),biomass burning (veldfires in agricultural areas within the region), and various miscellaneous fugitive dust sources such as agricultural activities, wind erosion of open areas, and vehicle entrainment of dust along unpaved roads.

8.5 GROUNDWATER

The application area is underlain by the gabbroic rocks of the Rustenburg Layered Suite belonging to the Bushveld Igneous Complex. On a regional scale the lithological units, structural geology and surface water features play a role in the location and flow of groundwater resources. Some of these features in the regional area include: the intrusion of dykes into the fractured and faulted zones, which also act as flow impediments; topographical low lying areas that are weathered and fractured and form an important aquifer zone for community water supply; the fractured bedrock aquifer that underlies the weathered zone; and the perennial river aquifer.

Two main aquifers have been identified in this area at depths ranging from 8.14m to 33.4m: a secondary fractured aquifer and weathered rock aquifer with average yields of 0.5l/s. The thickness of the saturated zone ranges from 0 – 20m. Porosity ranges from 1% to 25% and transmissivity is in the order of 30m^2/day to 150m^2/day. The Mean Annual Precipitation (MAP) is 645mm and the regional recharge rate is estimated at 4.5% of the MAP per annum.

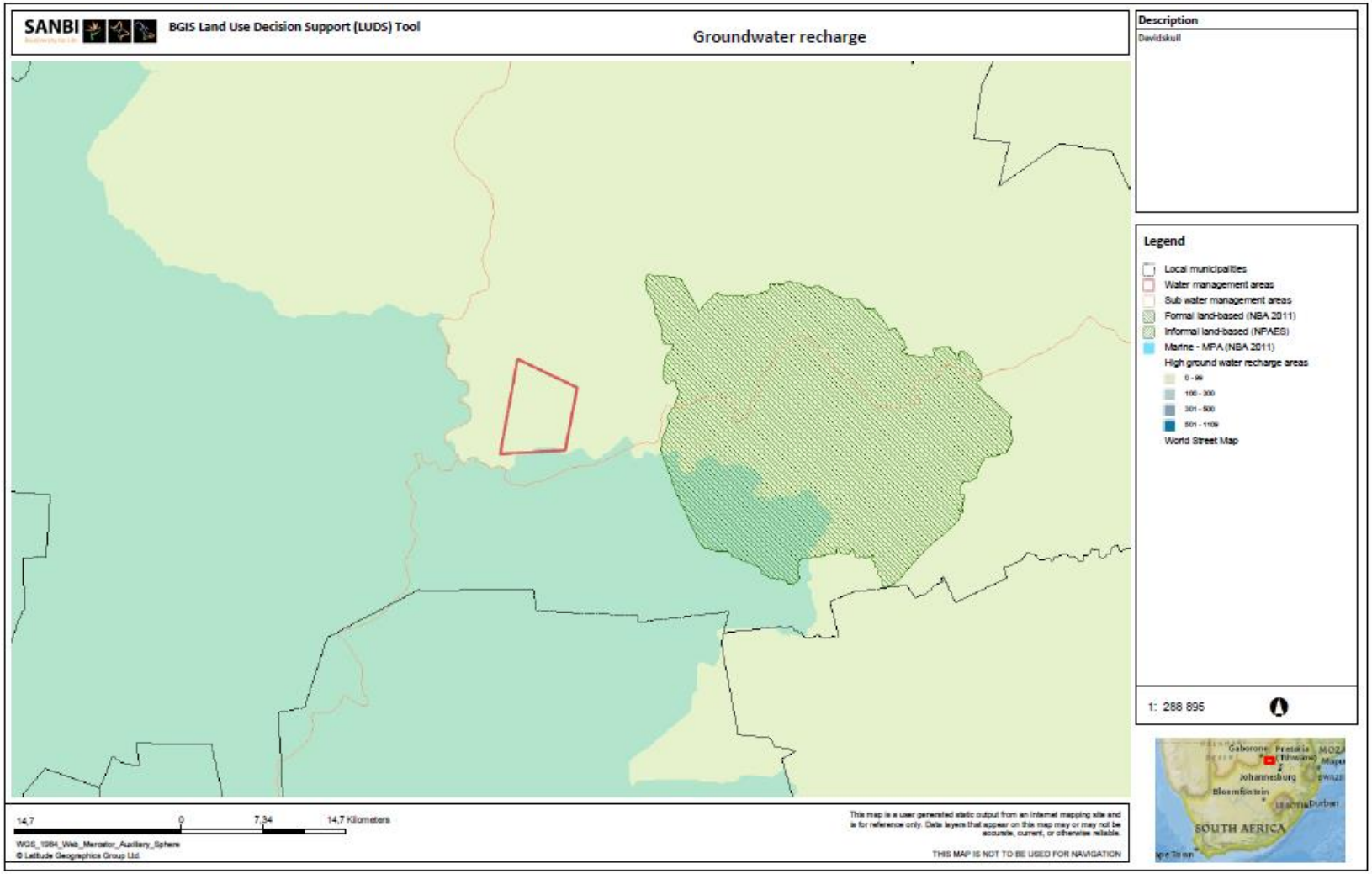

Figure 12: Groundwater recharge

8.6 SURFACE WATER (RIVERS)

The proposed prospecting area falls within Crocodile (West) and Marico Water Management Areas (WMA) and falls within the Lower Crocodile sub-WMA. The Crocodile (West) Marico WMA stretches across three provinces: Gauteng, Northwest and Limpopo and comprises the Crocodile and Groot Marico Rivers. There is Kolobeng River that runs on the proposed property from West to North and falls under Class B which is largely natural.

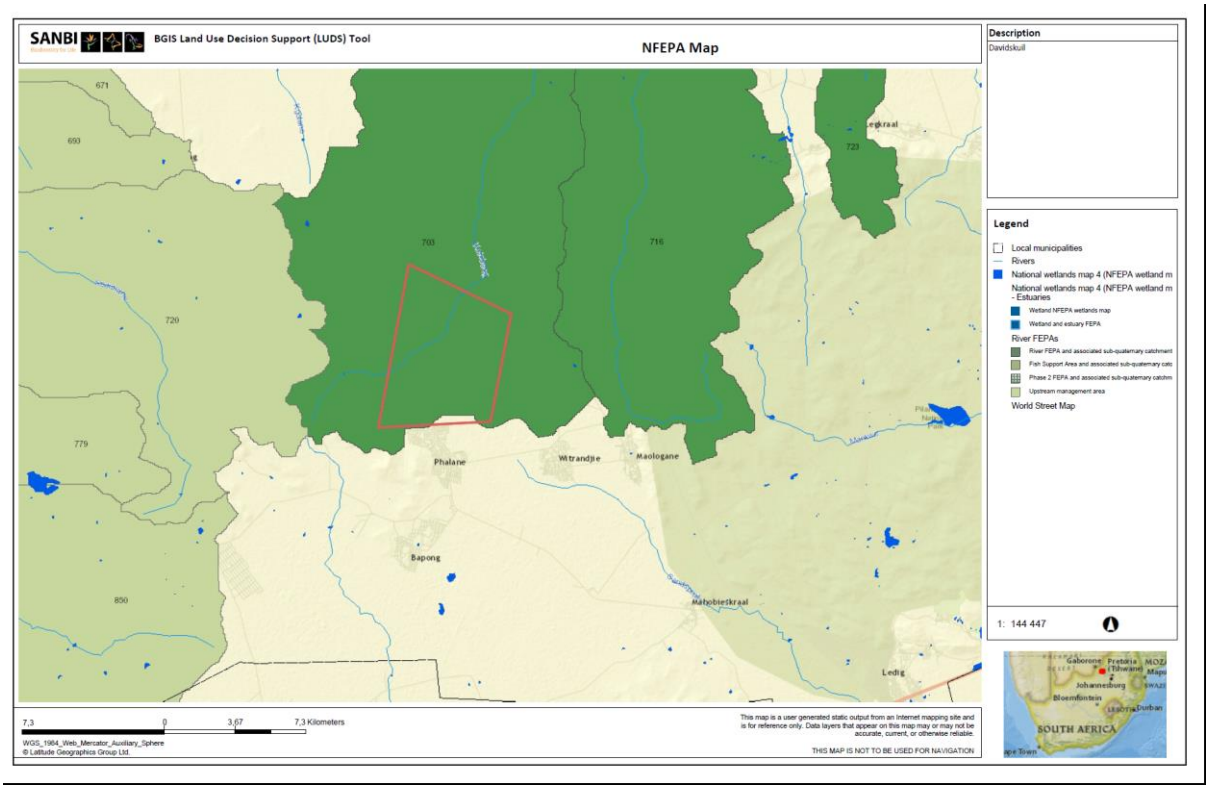

Figure 13: NFEPA Map

8.7 SOILS

The site consists of only one soil Class: Swelling Clay soils. This soil consists of strongly structured cracking soils, mainly dark coloured, dominated by swelling clays (vertic soils). They may occur associated with one or more of melanic and red structured soil. The soils have a high swell: shrink potential with a high natural fertility.

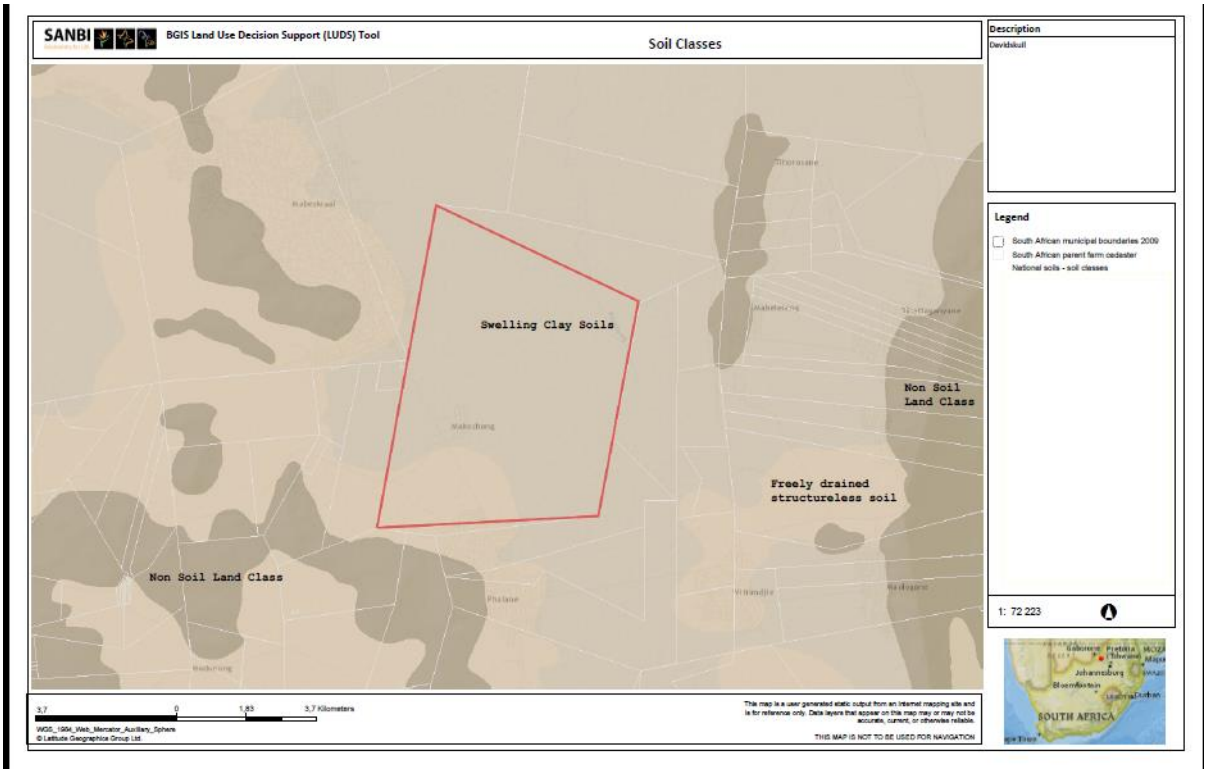

Figure 14: Soil Class Map

8.8 VEGETATION (FLORA)

The proposed site falls within the Savannah Biome.

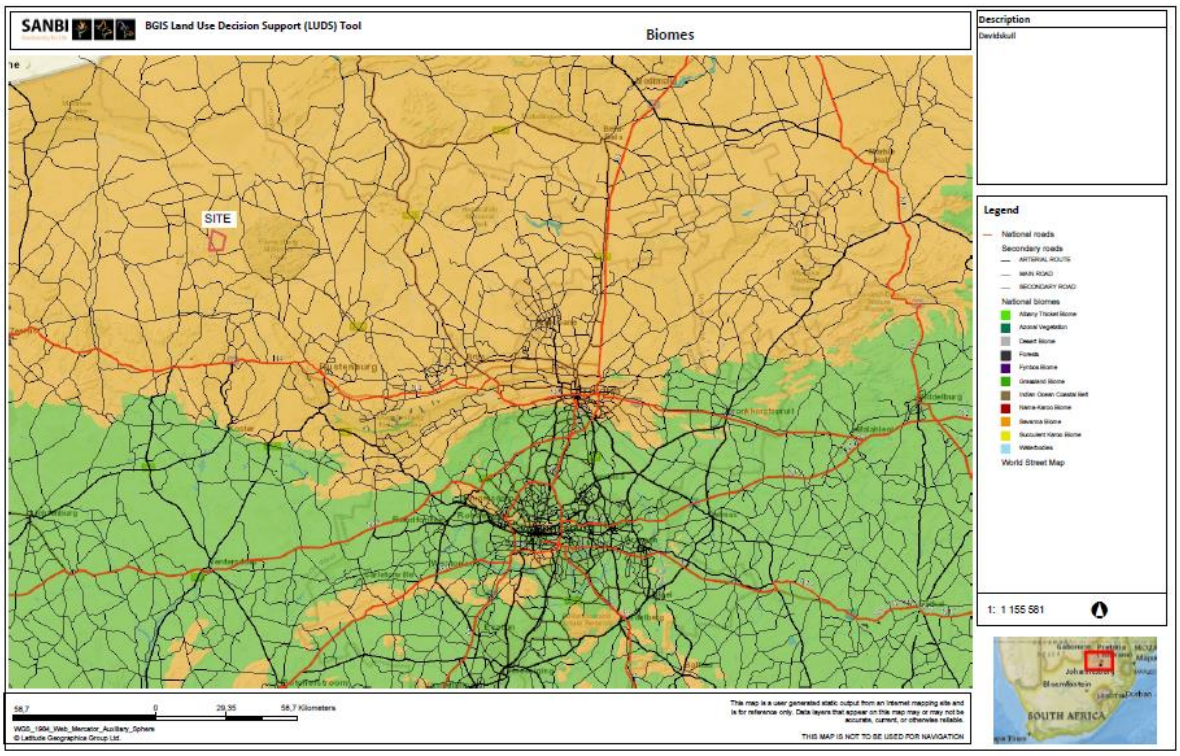

Figure 15: Biome Map

The site consists of Zeerust Thornveld (SVcb 3). Less than 4% of this vegetation type is statutorily conserved between four reserves including the Pienaar and Marico Bushveld Nature Reserves. Some 16% of the Zeerust Thornveld vegetation has been transformed mainly by cultivation, with some urban or built-up areas. The Vegetation is classified as Least Threatened with a conservation target of 19% (Mucina and Rutherford, 2006).

Zeerust Thronveld consists of deciduous, open to dense short thorny woodland, dominated by *Acacia* species with herbaceous layer of mainly grasses on deep, high base–status and some clay soils on plains and lowlands, also between rocky ridges of Dwarsberg-Swartruggens Mountain Bushveld (SVcb 4).

Key indicator species of this vegetation type include:

- **Tall Trees**: *Acacia burkei* (d), *A. erioloba* (d).
- **Small Trees**: *Acacia mellifera* subsp. *detinens* (d), *A. nilotica* (d), *A. tortilis* subsp. *heteracantha* (d), *Rhus lancea* (d), *Acacia fleckii, Peltophorum africanum, Terminalia sericea.*

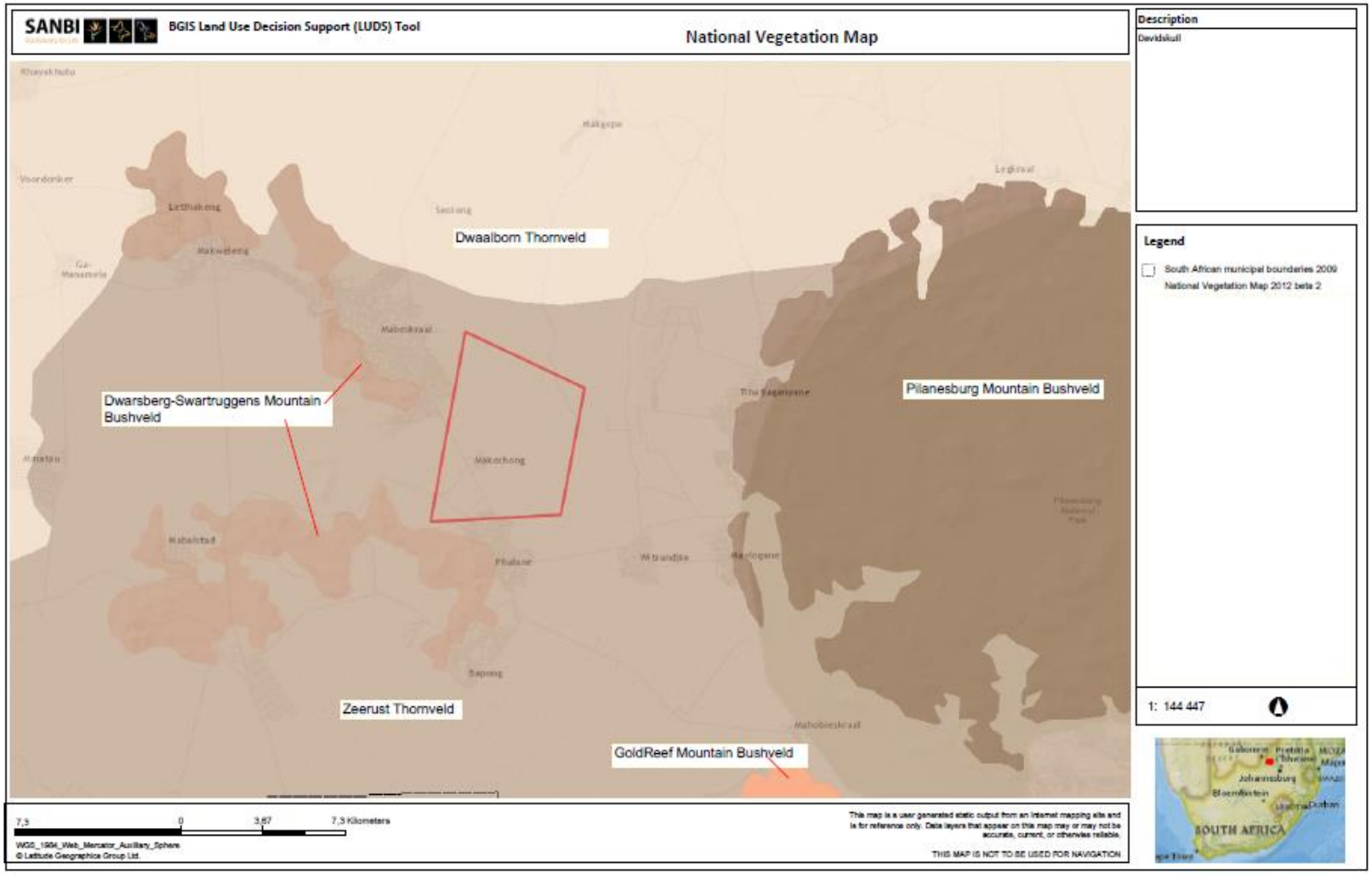

Figure 16: Vegetation Map

- **Tall Shrubs**: *Diospyros lycioides* subsp. *lycioides, Grewia flava, Mystroxylon aethiopicum* subsp. *burkeanum.*
- **Low Shrubs**: *Agathisanthemum bojeri, Chaetacanthus costatus, Clerodendrum ternatum, Indigofera filipes,Rhus grandidens, Sida chrysantha Stylosanthes fruticosa.* Graminoids: *Eragrostis lehmanniana* (d), *Panicum maximum* (d), *Aristida congesta, Cymbopogon pospischilii.*
- **Herbs**: *Blepharis integrifolia, Chamaecrista absus, C. mimosoides, Cleome maculata, Dicoma anomala, Kyphocarpa angustifolia, Limeum viscosum, Lophiocarpus tenuissimus.*

The online plant checklist on the website of The Plants of Southern Africa provides taxonomic information drawn from the PRECIS database for plant species occurring in southern Africa.

The site provided plant species for the 2526BB and 2526BD quarter degree squares. Only one species was identified as being of conservation concern (declining)

- *Drimia altissima* (L.f.) Ker Gawl. - (HYACINTHACEAE) - Listed as Declining

Figure 17: *Drimia altissima* *(*Source http://redlist.sanbi.org/imgs/photos)

The species is considered to be declining because medium-large volumes of bulbs are evident in the medicinal markets, but the species appears to be widespread in southern Africa. It has experienced some decline in the past, but the extent and time frame are unknown, declines are not suspected to have exceeded 10% of the population (SANBI - http://redlist.sanbi.org/).

Searches of the following online databases on the Virtual museum website returned no records for the 2526BB and 2526BD quarter degree squares:

- Atlas of South African Mushrooms
- Atlas of African Orchids

The Virtual Tree Herbarium returned 23 records of tree species, but identification for all of these are still pending.

8.9 ANIMAL LIFE (FAUNA)

Fauna expected to occur on site include assemblages within terrestrial and riverine ecosystems, including mammals, birds, reptiles, amphibians and invertebrates.

A search of the online Virtual Museum of African Mammals provided the following results for mammal species spotted in the 2526BB and 2526BD quaternary degree squares

It should be noted that a portion of the Pilanesberg Nature Reserve also fall within the 2526BB and 2526BD quarter degree squares and the records could represent species identified on this reserve.

Table 1: Mammals spotted in 2526BB and 2526BD

Scientific name	Common Name	Family	Possibility to occur on proposed prospecting site
Panthera leo	Lion	Felida	Not expected due to agricultural activities on site
Hyaena brunnea	Brown Hyena	Hyaenidae	Not expected due to agricultural activities on site
Equus quagga	Plains Zebra	Equidae	Not expected due to agricultural activities on site
Giraffa camelopardalis giraffa	The South African Giraffe	Giraffidae	Not expected
Aepyceros melampus	Impala	Bovidae	Not expected
Felis silvestris	Wildcat	Felidae	Possible visitor

Scientific name	Common Name	Family	Possibility to occur on proposed prospecting site
Phacochoerus africanus	Common Wart-hog	Suidae	Possible
Chlorocebus pygerythrus pygerythrus	Vervet Monkey	Cercopithecidae	Possible
Herpestes sanguineus	Slender Mongoose	Herpestidae	Possible
Genetta maculata	Common Large-spotted Genet / Rusty-spotted Genet	Viveridae	Possible visitor
Canis mesomelas	Black-backed Jackal	Canidae	Possible visitor

Searches of the following online databases on the Virtual museum website returned no records for the 2526BB and 2526BD quarter degree squares:

- Atlas of the Neuroptera and Megaloptera
- Odanata Atlas of Southern Africa
- Atlas of African Spiders
- Atlas of African Scorpions
- Frog Atlas of Southern Africa

The Reptile Atlas of Southern Africa returned one record for the 2526BB quarter degree square:

- *Kinixys lobatsiana* - Lobatse Hinged Tortoise (Testudinidae)

A few Lepidoptera species were identified and submitted to the Atlas of Lepidoptera:

- For the 2526BB QDS - *Tuxentius melaena melaena* - Black pie - Swart-bontetjie (LYCAENIDAE)&*Metisella willemi*- Netted sylph - Net-walsertjie (HESPERIIDAE)
- For the 2526BD QDS - *Colotis annae annae* Scarlet tip Skarlakenpuntjie (PIERIDAE)

Additional information on the occurrences of animal species on the proposed site will be added as new information is gathered and received from land owners.

Birds

A search of the online Photos of Weaver Nests database indicated that weaver nests for the following weavers were spotted in the 2526BB quarter degree square.

- *Ploceus velatus* - Southern Masked Weaver

The Bird Picture Archive returned the following records for the 2526BB quarter degree sqaure:

- *Ploceus velatus*- Southern Masked-Weaver - Swartkeelgeelvink (Ploceidae)
- *Corvus albus* Pied Crow Witborskraai (Corvidae)
- *Corythaixoides concolor* Grey Go-away-bird Kwêvoel (Musophagidae)

A total of 340 bird species were recorded for the pentads (2510_2650 & 2515_2650) as part of the Bird Atlas 2 project.

Of the birds recorded only eight are of conservation concern:

- *Polemaetus bellicosus* - Martial Eagle - Endangered
- *Aquila verreauxii* - Verreaux's Eagle - Vulnerable
- *Pterocles gutturalis* - Yellow-throated Sandgrouse - Near Threatened
- *Gyps coprotheres* - Cape Vulture - Endangered
- *Torgos tracheliotus* - Lappet-faced Vulture - Endangered
- *Gyps africanus* - White-backed Vulture - Endangered
- *Anthropoides paradiseus* - Blue Crane - Near Threatened
- *Sagittarius serpentarius* - Secretary bird - Vulnerable

As mentioned the proposed site is located approximately 7km from Pilanesburg Nature Reserve. Of the above-mentioned bird species two are confirmed to be breeding in the reserve (the Martial Eagle and Secretary Bird), one is listed as possible breeding (Verreaux's Eagle) and all the vultures have been spotted in the reserve as well. Only two of the eight species have not been spotted in the reserve, the Yellow-throated Sandgrouse and the Blue Crane.

The Yellow-throated Sandgrouse inhabits short open grassland, fallow fields and recently burnt veld, especially on black clay soils, usually near water. This species has an extremely large range and it is not expected the species will be found on the site due to the absence of natural wetlands and surface water areas. They are usually found in pairs or small groups on short grass plains feeding on seeds but gathers in flocks to fly to water holes mid-morning. These birds usually nests in the dry season in a small scrape or hollow in the ground.

The Blue Crane is endemic to southern Africa with most of its range falling in South Africa. It is found in natural vegetation in the Karoo and grassland biomes, but it also feeds in crop fields. The nest is a thinly lined scrape on dry ground or pad of vegetative material on marshy ground. One or two eggs are laid October to February. Due to the absence of marshy grounds it is not expected that the blue crane will be breeding on the proposed prospecting site.

The site is not located in an Important Bird Area.

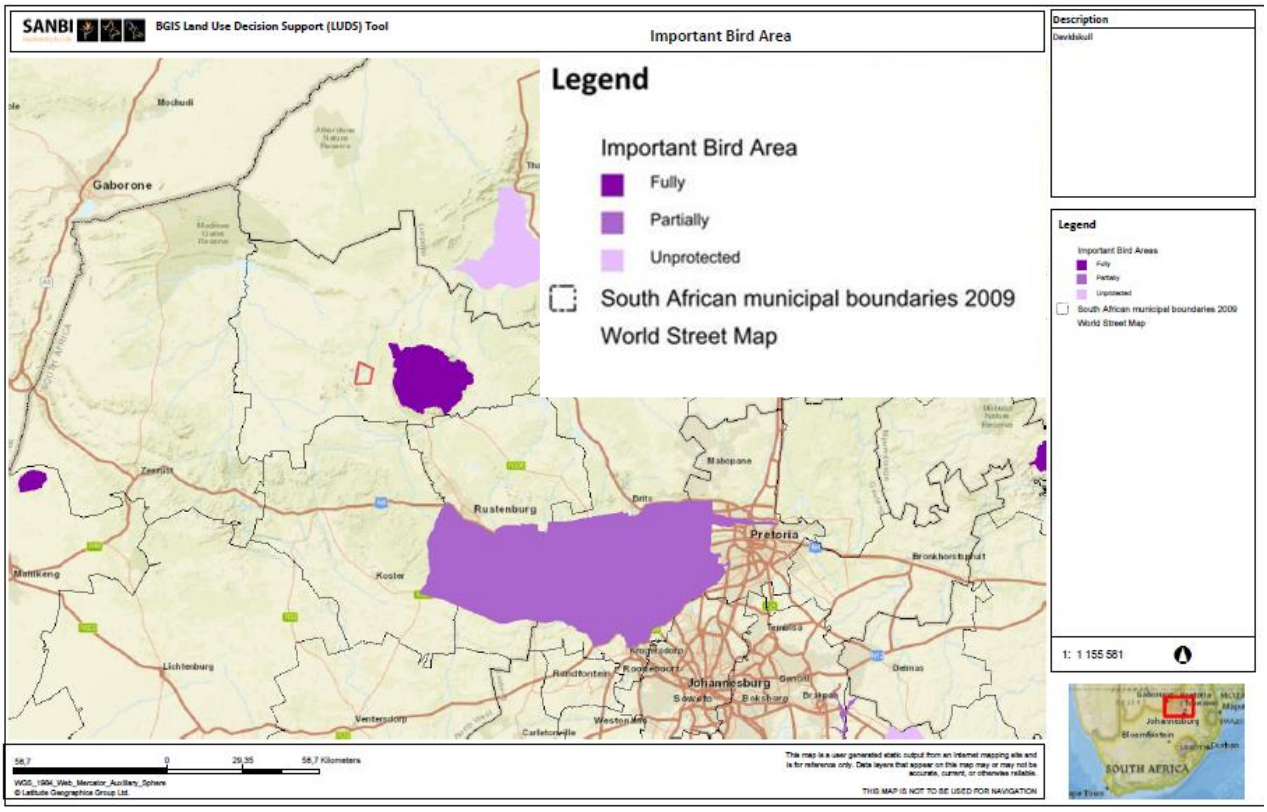

Figure 18: Important Bird Area Map

8.10 BIODIVERSITY

The purpose of North-West Province Biodiversity Conservation Assessment project was to finalize the biodiversity conservation assessment (version 1) for the North-West Province which will be used to inform the development of the Provincial Biodiversity Sector plans and bioregional plans. This will also be used to inform Spatial Development Frameworks (SDFs), Environmental Management Frameworks (EMFs), Strategic Environmental Assessments (SEAs) and in the Environmental Impact Assessment (EIA) process in the province.

The North-West province is very rapidly approaching a critical threshold (60% natural habitat remaining) in the state of biodiversity within the province. Lack of capacity, resources and biodiversity information, and a significantly under representative protected area network in the

province is hampering the province's ability to effectively manage biodiversity in this rapidly changing landscape. This biodiversity assessment through the development of a critical biodiversity area map for the province is aimed at assisting biodiversity and land use managers and decision makers in this demanding task.

The proposed prospecting site falls within a Critical Biodiversity Area 2 as identified in the North-West Province Biodiversity Conservation Assessment. CBA 2 areas are near-natural landscapes where the ecosystems and species largely intact and undisturbed. These areas have intermediate irreplaceability or some flexibility in terms of area required to meet biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising our ability to achieve targets. These are landscapes that are approaching but have not passed their limits of acceptable change.

The information content of the CBA map is limited by the depth of knowledge on the distribution of biodiversity in the province captured in electronic databases. Note that the biodiversity knowledge base for the NW Province is very limited.

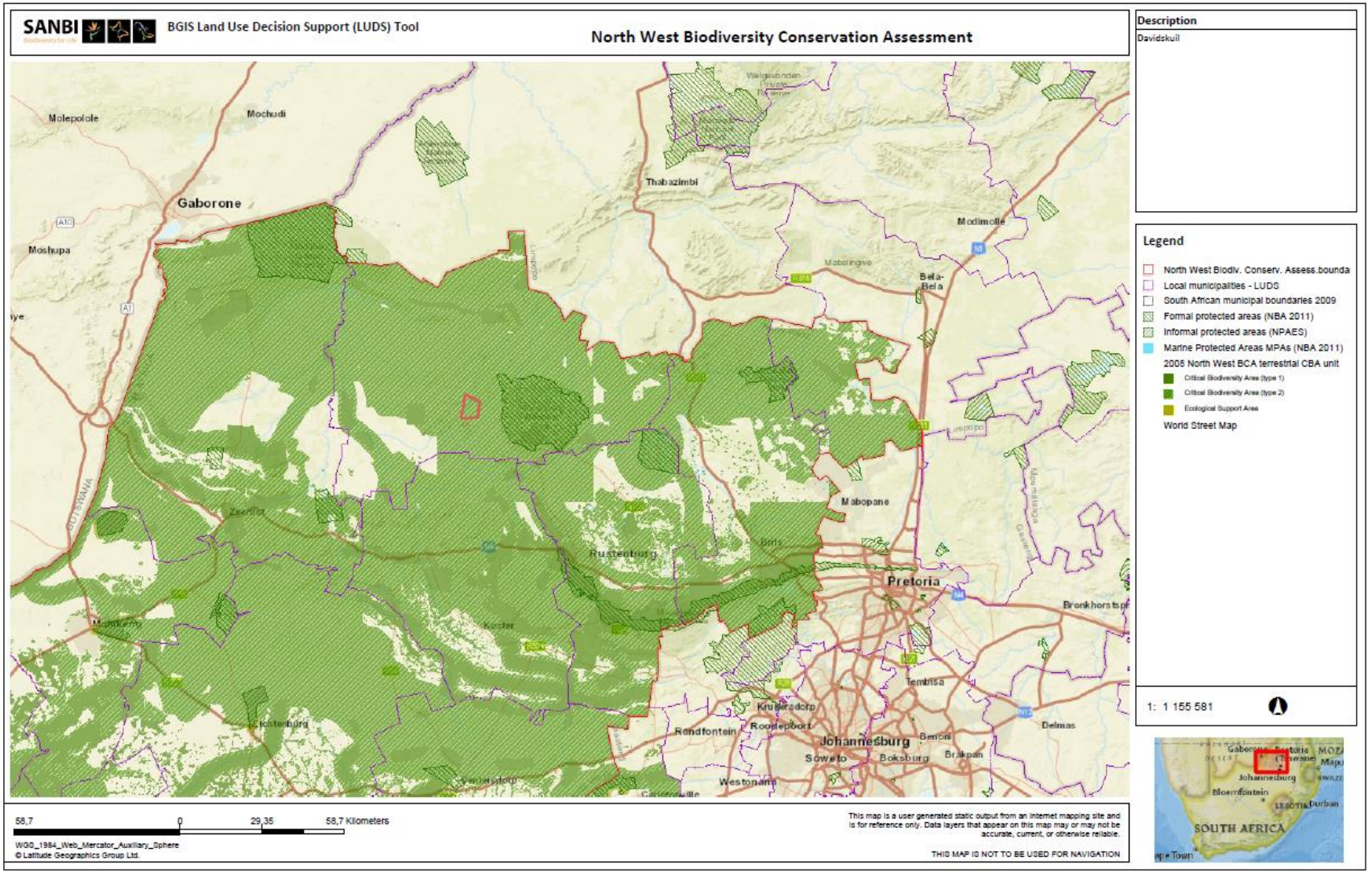

Figure 19: North West Biodiversity Assessment Map

8.11 SENSITIVE ENVIRONMENTS

Ecosystem Status

There are no threatened ecosystems in the Moses Kotane Municipality.

Protected Areas

The proposed site is located approximately 7km form the Pilanesberg Provincial Nature Reserve.

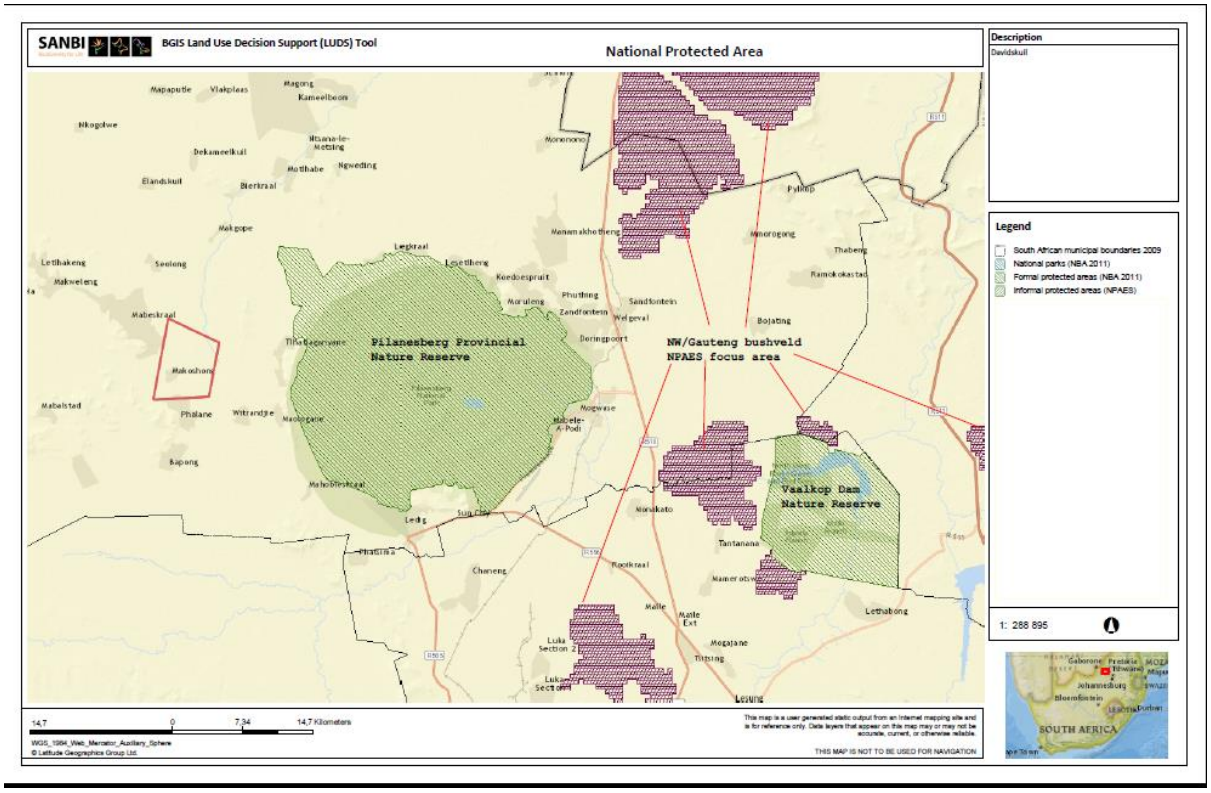

Figure 20: Protected Areas Map

Mining and Biodiversity Guideline, 4 October 2012

The Mining and Biodiversity Guideline& associated Maps were developed to facilitate the sustainable development of South Africa's mineral resources in a way that enables regulators, industry and practitioners to minimise the impact of mining on the country's biodiversity and ecosystem services. The document was approved by MINME Con 4 October 2012 and was formally launched in 2013.

The Guideline provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into the planning processes and managing biodiversity during the operational phases of a mine, from exploration through to closure. The Guideline provides

explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining.

The Guideline distinguishes between four categories of biodiversity priority areas in relation to the importance from a biodiversity and ecosystem service point of view as well as the implications for mining. It gives direction on how to avoid, minimise or remedy mining impacts, as part of a thorough environmental impact assessment and robust environmental management programme. The mitigation of negative impacts on biodiversity and ecosystem services is a legal requirement and should take on different forms depending on the significance of the impact and the area being affected. Mitigation requires proactive planning that is enabled by following the mitigation hierarchy. Its application is intended to avoid disturbance of ecosystems and loss of biodiversity, and where they cannot be avoided altogether, to minimise, rehabilitate or offset negative impacts on biodiversity.

The map below indicates the classification of the proposed prospecting area in accordance with the Mining and Biodiversity Guideline. The site falls mainly outside areas of biodiversity importance in terms of the guidelines except for a very small portion which is most likely the small hill that is located in the centre of the site close to the eastern boundary.

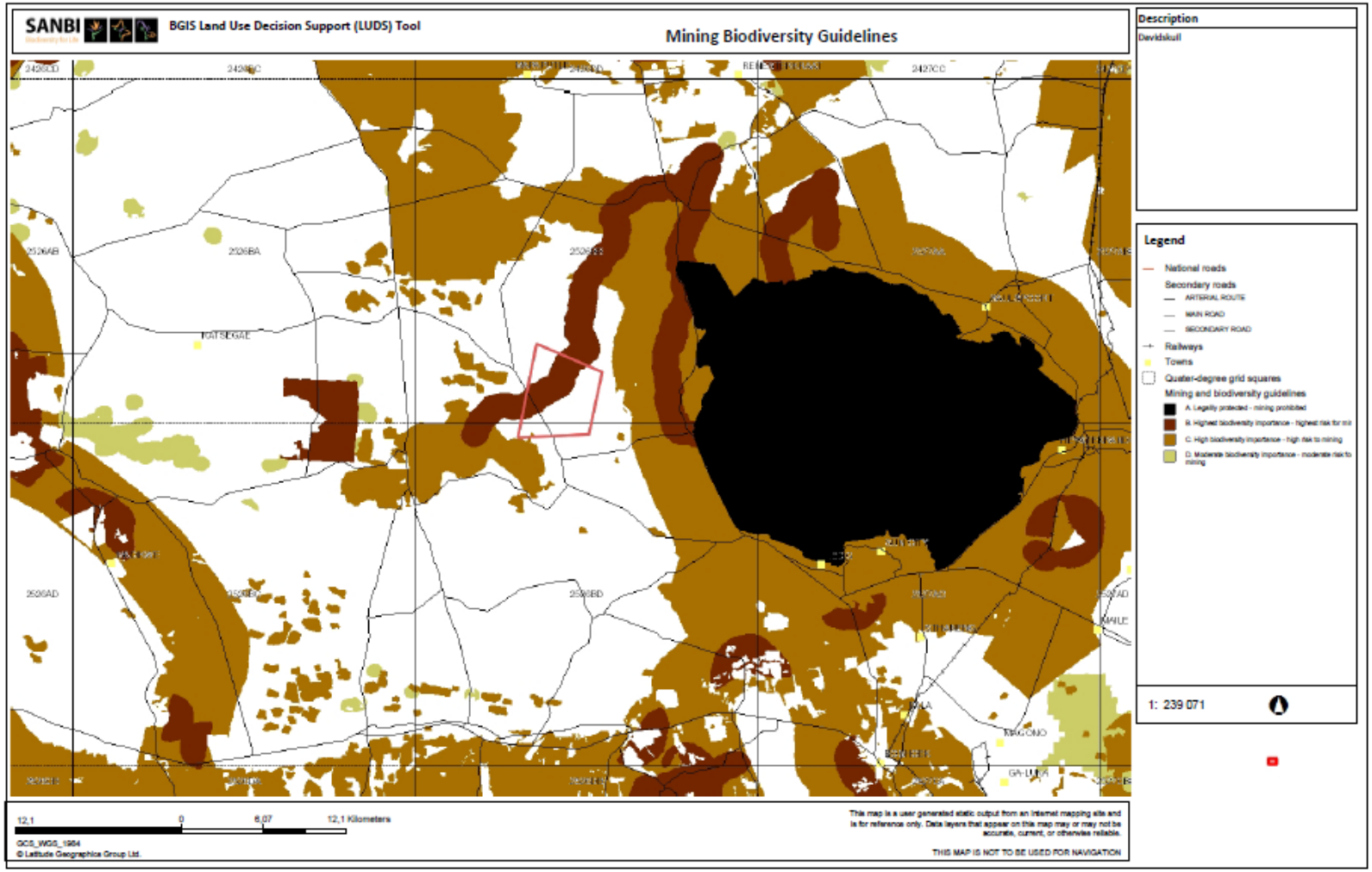

Figure 21: Mining Biodiversity Guideline Map

8.12 SOCIO-ECONOMIC ENVIRONMENT

The proposed site is located in Ward 26, Moses Kotane Local Municipality.

According to Census 2011, Moses Kotane Local Municipality has a total population of 242,554 people and Ward 26 has a population of 7,583. The ratio of men to woman are summarised in the table below:

Table 2: Population size & ratio

Moses Kotane Local Municipality	Moses Kotane, Ward26
1:1.01	1:1.06

It is reported that 418(5.5%) people living in Moses Kotane Ward 26, had no schooling. Key statistics for the Moses Kotane Local Municipality is based on the 2001 and 2011 censuses are presented in the tables below:

Table 3: Key statistics for Moses Kotane Municipality

Description	2011	2001
Total population	242,554	237,175
Young (0-14)	29,2%	32,4%
Working Age (15-64)	63,1%	63,1%
Elderly (65+)	7.7%	6,9%
Dependency ratio	58,6%	64,8
Sex ratio	98,8	95,3
Population density (persons/km^2)	42	
Unemployment rate	37,9%	50,9%
Youth unemployment rate	47,4%	63,7
No schooling aged 20+	9,3%	18,8%
Higher education aged 20+	5,3%	5,8%
Matric aged 20+	27,4%	18,9%
Number of households	75,193	61,759
Number of Agricultural households	20,846	
Average household size	3,2	3,7

Description	2011	2001
Female headed households	44,1%	49,1%
Formal dwellings	78,3%	77,9%
Housing owned/paying off	62,3%	68,5%
Flush toilet connected to sewerage	12,3%	10,1%
Weekly refuse removal	80,8%	8,2%
Piped water inside dwelling	18,6%	8,3%
Electricity for lighting	89,9%	91,2%

According to the 2011 Census, Moses Kotane Local Municipality has a total population of 242,554 people, of which 98,3% are black African,0,8% are white, with the other population groups making up the remaining 0,9%.

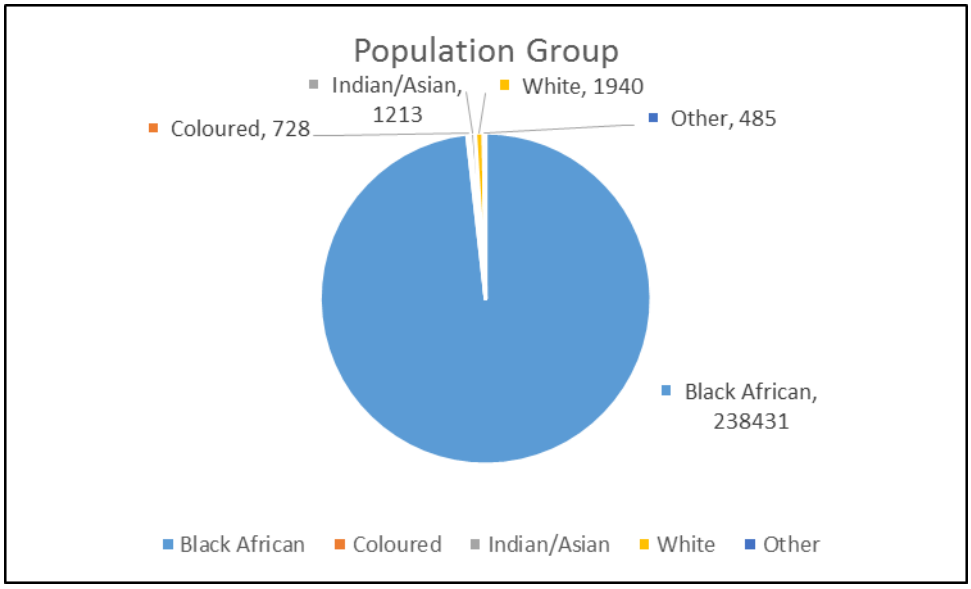

Figure 22: Moses Kotane Local Municipality Population Groups

Source: Census 2011

Ward 26 has a population size of 7,583people. The split amongst the population groups are presented below:

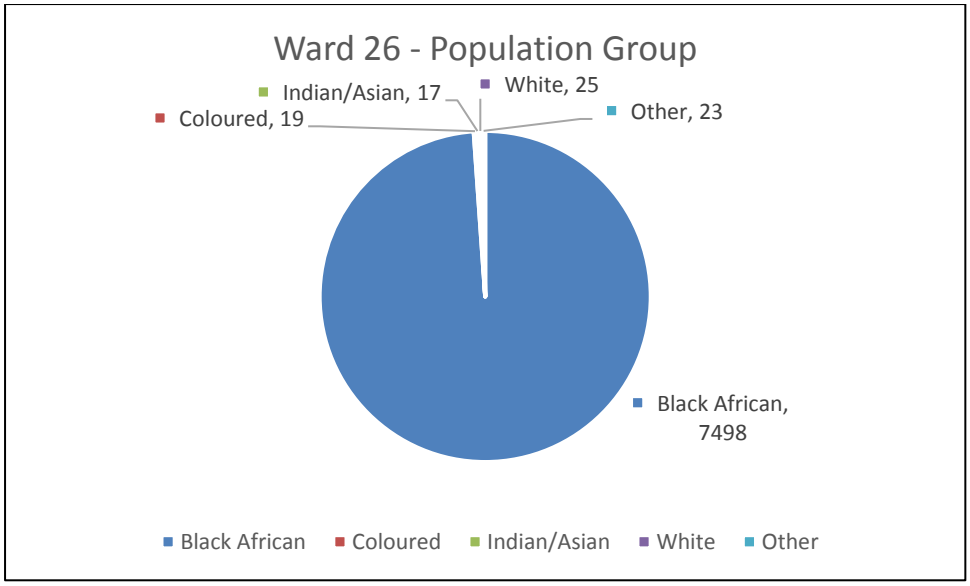

Figure 23: Ward 26 Population Groups

Source: Census 2011

In the municipality, of those aged 20 years and older,9,3% have no schooling,17,1%have some primary school education,35,3%have some secondary education, 27,4% have completed matric, and 5,3% have some form of higher education.

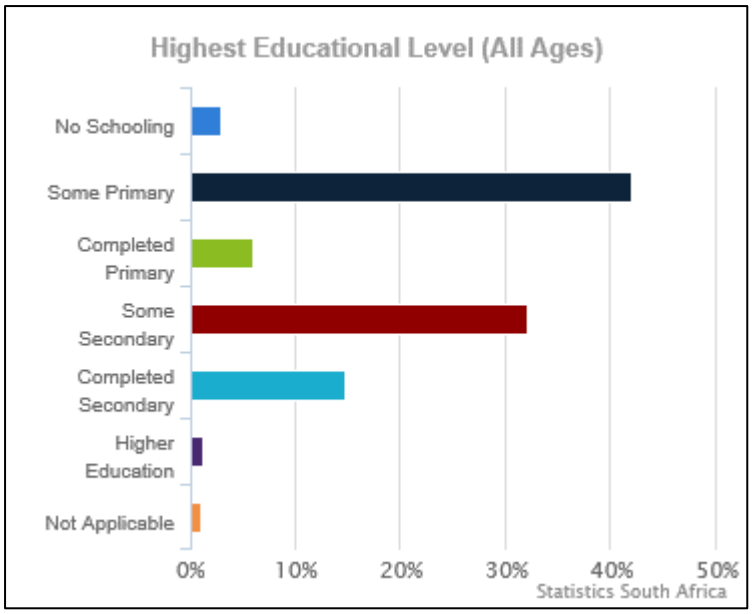

Figure 24: Moses Kotane Local Municipality Education level

Source: Census 2011

In Ward 2627.1% the highest percentage of people has completed some form of secondary education,17.7% has competed secondary education and only 2.6% has completed some form of higher education.

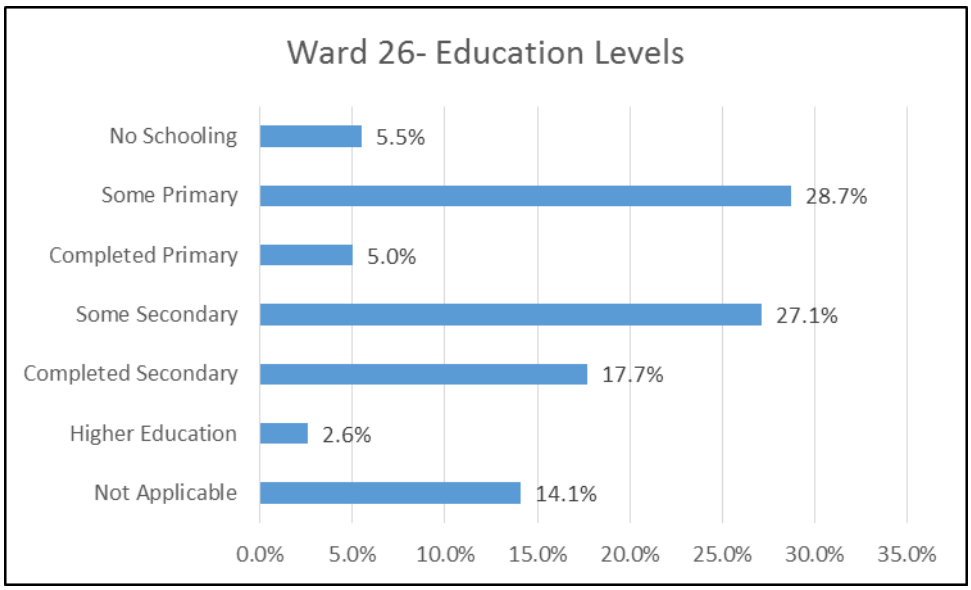

Figure 25: Ward 26 Education Level

In the Moses Kotane Local Municipality 74,744 people are economically active (employed or unemployed but looking for work), and of these 37,9% are unemployed. Almost half (47,4%)of the economically active youth(15–34years) in the municipality are unemployed.

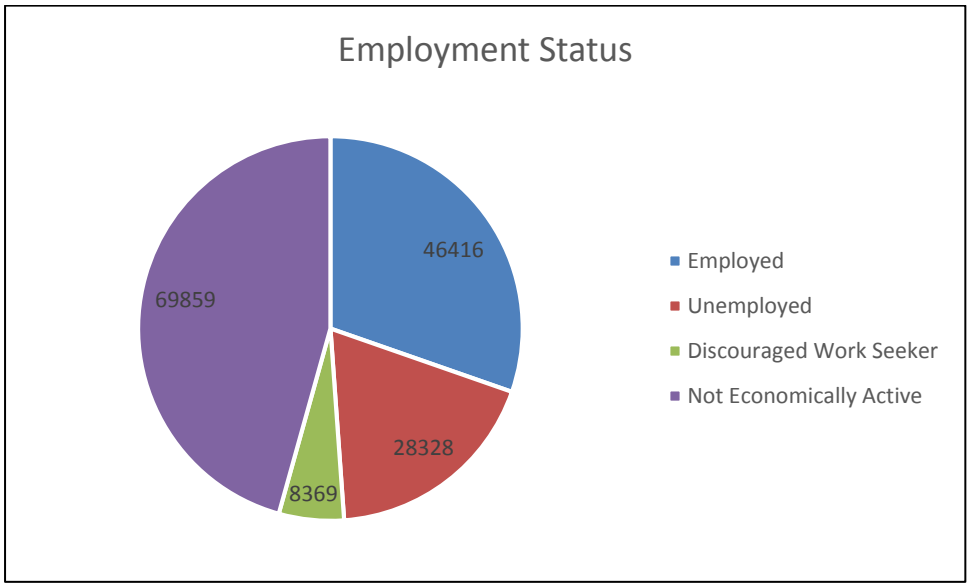

Figure 26: Moses Kotane Local Municipality Employment Status

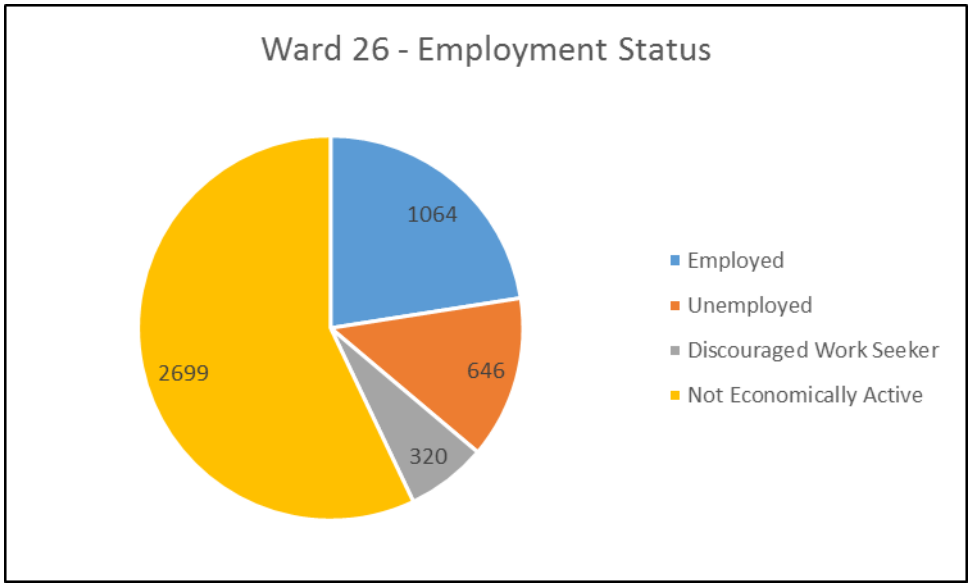

Figure 27: Ward 26 Employment Status

There are 75,193 households in the municipality, with an average household size of 3, 2 persons per household. Nearly 81% of households (80, 7%) have access to piped water either in their dwellings or in the yard.

About 90% of households (89, 9%) have access to electricity for lighting.

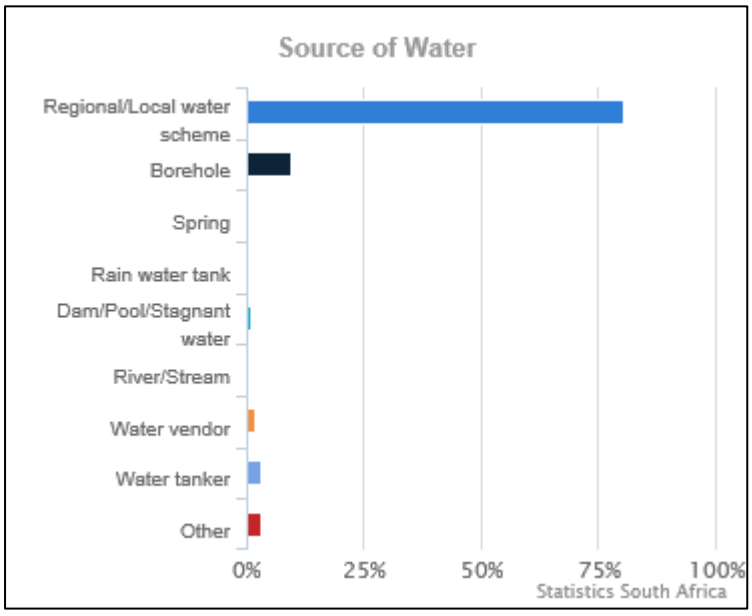

Figure 28: Moses Kotane Local Municipality Source of Water

8.13 CULTURAL ENVIRONMENT

The North-West Province of South Africa has a rich heritage comprised of remains dating from the pre-historic and from the historical (or colonial) periods of South Africa. Pre-historic and historical remains in the North-West Province present a record of the heritage of most groups living in South Africa today.

A number of heritage impact assessments studies have been done in the larger Project Area, some of which are listed below:

- Heritage Assessment 2008.Horizon Chrome Mine on portions of the farm Ruighoek 169JP, Pilanesberg North West Province. Matakoma-ARM on behalf of Wits Enterprises

- Pistorius, J.C.C. 2007. A Phase I Heritage Impact Assessment (HIA) study for the proposed new Sedibelo Platinum Mine near the Pilanesberg in the North-West Province of South Africa. Unpublished report prepared for Barrick Platinum.

- Pistorius, J.C.C. 2007. A Phase I Heritage Impact Assessment (HIA) study for Batlhako Mining Limited on the farm Ruighoek 169JP near the Pilanesberg in the North-West Province. Unpublished report prepared for Golder Associates (Africa) Ltd..

- Pistorius, J.C.C. 2008. A Phase I Heritage Impact Assessment (HIA) study for a proposed new sport complex and associated facilities in Saul spoort near the Pilanesberg in the North-West Province of South Africa. Unpublished report prepared for Metago Environmental Engineers.

- Pistorius, J.C.C. 2010. A Phase I Heritage Impact Assessment (HIA) study for the farm Magazynskraal 3JQ near the Pilanesberg in the North-West Province of South Africa. Unpublished report prepared for Metago Environmental Engineers.

- Pistorius, J.C.C. 2010. Mitigating and managing heritage resources within the Horison Chrome Mine on Portions of the farm Ruighoek 169 JP near the Pilanesberg in the North-West Province. Unpublished report prepared for Natural Scientific Services (NSS).

- Pistorius, J.C.C. 2011. A Phase I Heritage Impact Assessment (HIA) study for Lonmin Platinum’s proposed exploration activities on the farm Vlakfontein 207JP and Diamand 206 JP near the Pilanesberg in the North-West Province. Unpublished report prepared for Lonmin Platinum.

- Pistorius, J.C.C. 2011. Follow-up report on Lonmin's exploration activities on Vlakfontein207JPandDiamand206JPnearthePilanesbergintheNorth-West Province: completion of exploration activities during 2011. Unpublished report prepared for Lonmin Platinum.

- Pistorius, J.C.C. 2012. A Phase I Heritage Impact Assessment (HIA) study for chrome mining activities on various portions of the farms Groenfontein 138JP, Vlakfontein 163JP and Vogelstruisnek 174JP west of the Pilanesberg in the North-West Province of South Africa. Unpublished report prepared for Golder Associates (Africa) Ltd.

- Pistorius, CC. 2013. An Updated Phase I Heritage Impact Assessment (HIA) Study for Pilanesberg Platinum Mine(Ppm) near the Pilanesberg in the North-West Province Of South Africa. report prepared for SLR Consulting (Africa) (Pty) Ltd.

Contextualising the Project Area

A brief overview of pre-historical and historical information is provided below in order to contextualise the region and to help to determine the significance of any heritage resources that may occur in the Project Area. The information is taken from the report done for the Pilanesberg Platinum Mine - Pistorius , 2013.

Stone Age sites

Stone Age (SA) sites are marked by stone artefacts that are found scattered on the surface of the earth or that are part of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (ESA, the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA, the period from 250 000 years ago to 22000 years ago) and the Late Stone Age(LSA,theperiodfrom22000 years ago to about 2 000 years ago).

A few isolated, haphazardly scattered stone tools were observed north of the proposed site. These tools date from the MSA and were not geo-referenced as they were possibly carried into the area.

The LSA is associated with rock paintings and engravings done by the San, Khoi Khoi and, in more recent times, by Negroid (Iron Age) farmers. It was communicated previously that there are caves higher up the mountain of Matone. Such phenomena, if they do exist, may contain stone tools dating from the SA, Late Iron Age remains and even rock paintings. A few rock paintings have been recorded in the Pilanesberg.

Late Iron Age remains

The Pilanesberg area is dominated by stone walled sites that date from the Late Iron Age (LIA), some of which were occupied into the historical period. These sites are associated with Tswana groups such as the Kgatla Kgafêla, the Tlhako, the Tlôkwa and Nguni-affiliated clans who were either living in the area from an earlier time, before the Sotho-Tswana arrived, or who were descended from Mzilikazi's Ndebele who temporarily occupied several settlement complexes in the area before they moved to the Zeerust-Marico area in AD1832. Large numbers of the descendants of these original Nguni-speaking people today live in Groenfontein, Rhenosterhoek and Kraalhoek, to the north of the PPM Project Area.

The following contextual evidence serves as background to the proposed prospecting site: the origins of the Kgatla group; the history of the Kgatla Kgafêla and the Tlhako; the arrival of the first colonists and early chrome mining in the area.

Origins of the Kgatla group

The ancestral Kgatla were composed of the Kgatla, the Tlôkwa, the Makgolokwe and probably the Bahlakwana and the Basia sections. (The latter three clans no longer exist).The Kgatla also maintained that there was an early relationship with the Hurutshe (under common chiefs such as Malekele-Masilo-Legabo) which may date back to AD1450 when the Hurutshe and Kwena separated.These earliest Kgatla groups initially lived in the central part of the former Transvaal province, somewhat to the south of what is today Thabazimbi, near the Rooiberg Tin Mines.

Phohoti, the son of Mokgatle, is usually regarded as the first Kgatla chief. His son and successor was Botlholo (Mashiasebara), whose sons Mogale, Pule and Modise split up. Pule initially ruled on behalf of Mogale's son Mosetlha, who died before he could succeed, and this encouraged Pule (whose son Masego died before his father) to leave the tribe and to form a separate tribe under his grandson Kgafele. Bothlolo's third son, Modise, and his son Tabane were the forefathers of the sections of the Mmakau, the Motša and the Seabe.

Today there are numerous sub sections of the Kgatla. In1 953 a leading anthropologist distinguished at least eleven tribes within this group.

The totem of the Kgatla is the blue monkey (kgabo), although they also had another totem, the 'kgabo ya mollo', or the 'tip of the flame', which they used when the Kgatla were on the warpath.

Mogale, the ancestor of the Mosetlha, lived at a place called Dirolong/Direleng in the Bela Bela area (some say in the Rustenburg area). Mogale (Mosetlha) or Mashego (Kgafela) moved to Momuseng (the old Makapans Location). Towards the end of the 17th century, the

Kgafela section broke away under Mahego (the son of the regent, Pule). However, Kgafela and his son Tebele remained east of the Crocodile River and Kgafela's grandson Masellane moved to Molokwane ('Vliegge poort') near the confluence of the Crocodile and Pienaars Rivers (This split was the result of a dispute whether Mosetlha, a woman, should rule the tribe). This was also the time when Tabane (the Mmakau section) broke away and settled at Mogwete (Varkfontein, in the Premier Mining area).

While the Kgatla Mosetlha remained one section, Tabane's branch later broke up into several tribes. Modise or Moptsha had a young wife who left the tribe while she was pregnant, as she was accused of witchcraft, saying that her child was crying in her womb. It was called 'lelelateng' ('crying inside').Thischildlaterbecamethe great Pedi chief Thulare, who was also called 'Thulare a Mmakau'. Further divisions of the Kgatla were caused by internal strife during the time of Mzilikazi (Breutz 1954, 1986; Schapera 1942, 1952, 1955).

Brief history of the Kgatla Kgafêla

After the Kgafêla broke away from the Mosetlha at Momusweng (Makapans Location, Hammanskraal) probably during the first half of the17th century, they settled in various places on their way to the north-west and the Crocodile River.

Known places of settlement were Ntuane (to the north-west of Makapans Location near the Pienaars River), Momoseu (nearNtwane),and Tshekane(Leeuwpoort, south of the Rooiberg Tin Mine). Tshekane proved to be unhealthy, so they dwelt at Matone (Tuschenkomst) for a while and then settled at Molokwane ('Vlieggepoort', at the confluence of the Crocodile and Pienaars Rivers) near Ramakokas Location.

At the start of the 18th century, they lived at Mabule, Kruidfontein (near Saulspoort). During the first half of the 18th century, Kgwefane lived at Saulspoort in the Dithubaruba section of Moruleng. Molefe lived at Maramapong at Saulspoort.

Towards the end of the 18th century, Phetso lived at Sefikile (Spitskop, 8km to the west of Northam). Letsebe ruled at Mabule (Kruidfonten) at the confluence of the Modderkuil and Middelkuil. When Senwelowas invested as chief, he moved from Mabuleto Tlokwane (Rhenosterkop).Motlotle ruled at Magakwe or Dithubarubu (Kruidfontein).

Pilane built his village at Monamaneng (Kafferskraal). Later he moved to Bogopana (Witfonteinrand), to the north-east of Witfontein, and from there to Mmamodimokwana (Schilpads nest) near the Crocodile River.

After the Matabele invasion in AD1827 Pilane went to live at Motsitle (Mabeskraal). After AD1837 he settled at the Elands River at Mmasebudule (Rhenosterfontein).

During the Matabele invasion, the Kgatla were too weak to defend them against enemies. Consequently, they paid attribute to the Ndebele. Nevertheless, their villages were destroyed and the young men were incorporated into the Ndebele army. After the Ndebele had left the Pilanesberg area (AD1832) Ndebele raiders returned to the area and took three of Pilane's sons with them in AD1842. Molefi Pilane's uncle negotiated their release. Molefi, who maintained good relations with the Ndebele took charge of the tribe when Pilane fled to the Langa Ndebele.

The far northern part of Kgatla territory, incorporating the farms Holfontein, Cyferfontein and Rhenosterkraal was a separate tribal section for some years under the authority of a sub-chief, Dikema Pilane. He played an important role in the times of Paul Kruger. It was also in this far northerly area that the descendants of one of Mzilikazi's sons lived.

Kgamanyana lived at Moruleng the present tribal headquarters at Saulspoort. In 1869 Kgamanyana and many tribesmen left the country to settle at Mochudi on the banks of the Nkgotwane River in Botswana, after camping one year at Tshwene-Tshwene (near Vleesfontein). The other part of the tribe remained at Saul spoort and acquired most of the farms to the north of the Pilanesberg.

Many of these Tswana clans were uprooted during the difaqane when Mzilikazi's Matabele (Ndebele) entered the North-West Province, crossing the Magaliesberg at Mpame (Kommandonek) in the middle of August 1832 (Breutz 1954, 1986; Schapera 1942, 1952, 1955).

Brief history of the Tlhako

The Tlhako is one of the numerous Nguni-related clans who lived in the central part of the former Transvaal province from early on. They branched off from the Ndzundza-Ndebele who lived near what is today the Premier Mine (Cullinan, Mangolwana) and Wonder boom (Pretoria). Thereafter they dwelt in the Boshoek (Pharami)area for sometime,before settling along the Thulani River near Pella towards the end of the 17th century.

Chief Seutlwane settled on the northern slope of Pilwe Mountain.Hisson, Mabe, who lived about the middle of the 18th century, moved six kilometres further to the north to Mothoutlung on the eastern part of Palmietfontein. Mabe's youngest son, Motsisi,went to live at Legatalle,to the north-east of Ruighoek426, where he became involved with a long struggle with the Kgatla

Kgafêla. His son, Molotsi, also lived and died at Legatalle, probably around AD1820 to AD1830.

Mabe became chief in 1820 and settled at Motsitle, today known as Mabieskraal. When Mzilikazi invaded the region, the Tlhako did not leave the area, but were subjugated by the Ndebele. Many of the Tlhako later accompanied the Ndebele and crossed the Marico River to settle with the Ndebele at Silkaatskop. However, when the Ndebele were defeated by the Voortrekkers in the far North-Western Transvaal, many returned to their old home at Motsitle in 1837.

Maabe and the Voortrekkers' relationship deteriorated. After he was flogged by the Boers in AD1860, the tribe moved to Molepolole and settled at Magagarape, where Maabe died in 1869. His sons Moetle, Mokgatele, Leotwane and Setadi returned to Mabeskraal.

Moetle Mabe became chief in 1870. He raided the cattle of the local white farmers and also supplied labour to surrounding white farmers. He died on 15 May 1908. Stone walled sites identified on Ruighoek 169JP located to the east of the site can therefore possibly be associated with this group (Breutz 1954, 1986).

Arrival of the first colonists

During the first half of the 19th century, the first colonial traders who operated between the far north-west and the central part of the Bankeveld used the gap between the northern tip of the Magaliesberg and the south-western edges of the Pilanesberg, near the proposed site as a corridor. Wagons passed through this corridor on their way to Rustenburg and further to the east. Traders such as Schoon and McLuckie (1829), missionaries such as Robert Moffat (1829), the scientific expedition of Andrew Smith (1835) (Lye 1975), and adventurers such as Cornwallis Harris (1836) moved between the Magaliesberg and the Pilanesberg where they observed numerous Late Iron Age communities living in this part of the north-west (Horn 1996).

Rustenburg, 57km southeast of the site, was the first colonial town to be established by Europeans (Voortrekkers) during the first half of the 19th century (Pretorius 1967). Closer to Pilanesberg, Boshoek was established along the railway line from Pretoria, and the town initially served as a terminus (Erasmus 1995).

Early chrome mining

It has long been known that there were chrome ores in the Bushveld Igneous Complex. They were indicated on Carl Mauch's geological map of the area close to the Hex River near

Rustenburg, which he visited in 1865. Chromite is also mentioned in official reports that were compiled by a certain Molengraaf. The first exploration for chrome occurred in 1917 and general production of the metal began in 1924 when 4 570 tons were mined.

Chromite is present in the Bushveld Igneous Complex as layers in the pyroxinite, norite and an orthosite units and to a certain extent also in the harzburgite unit. The deposits in the Complex can be divided into a Western Zone and an Eastern Zone.

The deposits in the Western Zone stretch for approximately 200km from Brits to Rustenburg, further northwards to the west of the Pilanesberg, and from there, with some interruptions of seven to thirteen kilometres, to near the Crocodile River.The Eastern Complex starts near Draailkraal at the upper reaches of the Dwars River in the Lydenburg district. Further northwards the deposit crosses the Steelpoort River near the Steelpoort station and gradually turns north-westwards as far as Scheiding – a total distance of 120 kilometres.

The Western Zone can be divided into four sections, namely a sector to the north of Rustenburg, two sectors to the west and to the north of the Pilanesberg, and a sector in the Brits-Rustenburg area.

The sector to the west of the Pilanesberg seems to have been exploited the most. Here two distinct layers were distinguished, namely the Groenfontein layer and the Main Layer higher up in the sequence. These layers vary in thickness on farms suchas Palmietfontein 208JP, Groenfontein 138JP and Ruighoek 169JP.

By the start of 1974 seventeen chrome mines were already operating: eight in the Western Zone, six in the Eastern Zone, two in Marico and one near Mokopane (Viljoen & Reimold 1999; Wagner 1973).

8.14 LAND USE

The area North West, West and South West is being used for residential area in Makoshong and some portion of Phalane villages, there is a main road that runs from South to West. There is also a cemetery on the south west. The rest of the property is in a near natural state where grazing is taking place.

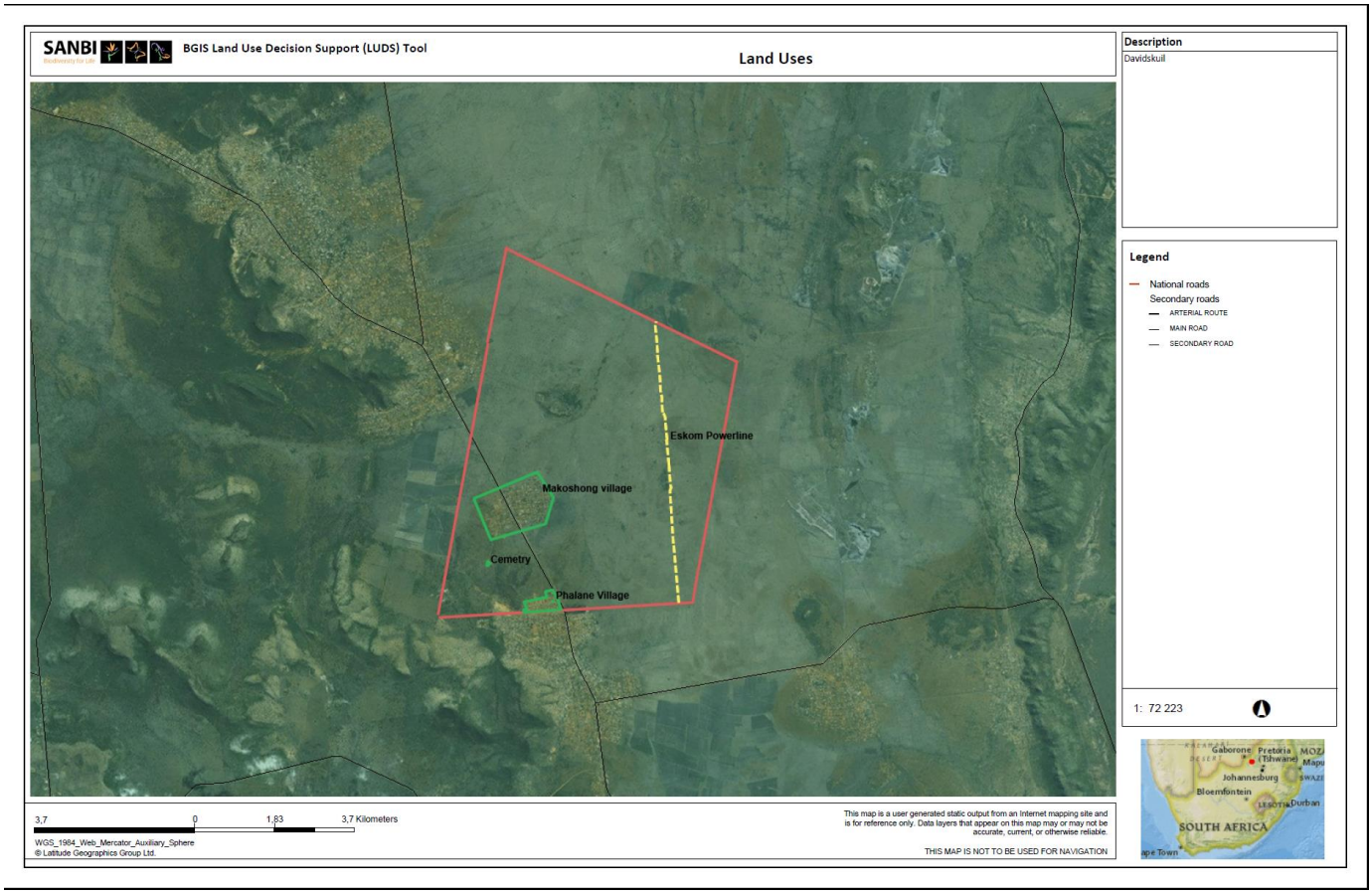

Figure 29: Land uses

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

Environmental features

There is Kolobeng River that runs on the property from West to North which falls under Class B which is largely natural. There is also a cemetery on the South east of the property.

Infrastructure

There is a high voltage (HV) overhead transmission line that crosses the property in a north-south direction (Figure 29). It crosses a medium voltage (MV) transmission line that distributes power to the rural settlements around the property.

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

80% of the proposed site have been classified as Natural land (green). Cultivated (yellow on map) is approximately 5% and Urban Built-up Areas (grey) covers approximately 15% (See Figure 30).

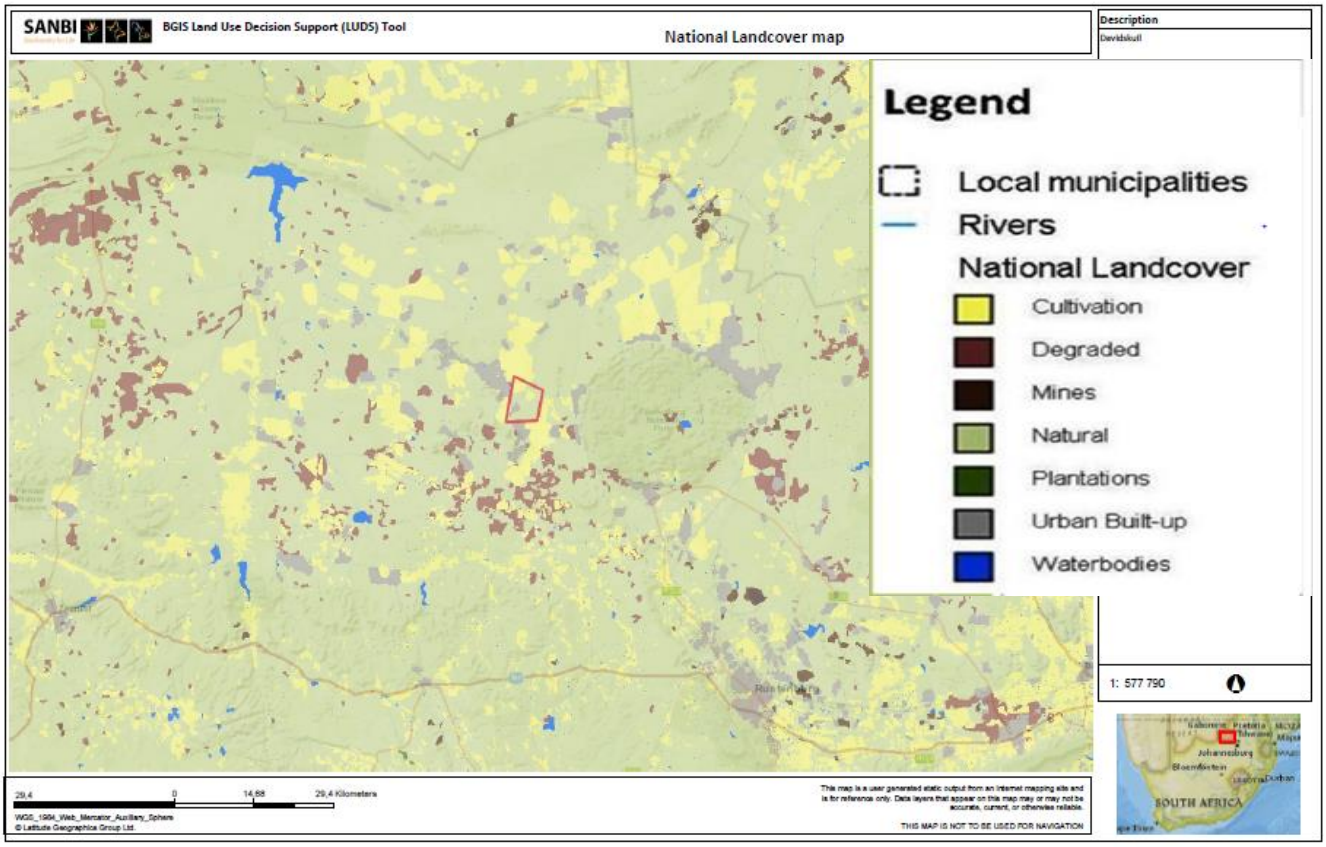

Figure 30: Land cover Map

9 IMPACT ASSESSMENT

iv) 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)

9.1 IMPACT ASSESSMENT

The Impact Assessment is presented in the table below.

Table 4: Impact Assessment Table

ACTIVITIES	POTENTIAL IMPACT	Extent of impact	Duration of impact	Intensity of impact	Frequency	Probability of occurrence of impact	SIGNIFICANCE if not mitigated
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	2	3	3	4	4	16
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and stormwater run-off can lead to the loss of topsoil	2	3	3	4	4	16
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	2	3	3	4	4	16
Vegetation clearance for establishment of drill sites	Impact on current land use	1	1	1	1	2	6
Vegetation clearance, Site establishment, Drilling activities & movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	3	4	3	1	4	15

ACTIVITIES	POTENTIAL IMPACT	Extent of impact	Duration of impact	Intensity of impact	Frequency	Probability of occurrence of impact	SIGNIFICANCE if not mitigated
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas	4	4	5	4	4	21
Vegetation clearance for establishment of drill site	Disturbance of Kolobeng River riparian habitats	5	4	5	4	5	23
Vegetation clearance for establishment of drill sites	Dust pollution	4	3	3	4	4	18
Vegetation clearance for establishment of drill sites	Storm-water run-off from cleared areas could lead to siltation of surface water	3	4	4	3	4	18
Vegetation clearance for establishment of drill sites	Disturbance of grazing and residential activities	3	2	3	4	4	16
Workers & material on site	Contamination of soils through spills from sanitation facilities & litter	3	3	3	2	4	15
Workers & material on site	Poaching	3	3	4	2	3	15
Workers & material on site	Fire	5	5	4	3	4	21
Workers & material on site	Collection of fire wood, damage to property	5	5	4	3	4	21

ACTIVITIES	POTENTIAL IMPACT	Extent of impact	Duration of impact	Intensity of impact	Frequency	Probability of occurrence of impact	SIGNIFICANCE if not mitigated
Workers & material on site	Contribution to the economy through employment	4	3	4	4	3	18 POSITIVE
Workers & material on site	Spread of HIV/Aids to local community	5	4	3	4	2	18
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	4	3	2	3	4	16
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	2	2	4	2	3	13
Use of heavy machinery & vehicles on site for drilling	Use of groundwater for drilling activities	3	3	3	4	3	16
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	5	4	4	4	4	21
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from	4	4	3	3	4	18

ACTIVITIES	POTENTIAL IMPACT	Extent of impact	Duration of impact	Intensity of impact	Frequency	Probability of occurrence of impact	SIGNIFICANCE if not mitigated
	machinery & equipment						
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	2	2	2	2	4	12
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	3	2	3	4	4	16
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	2	2	3	2	2	11
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	4	3	3	4	2	16
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	2	1	2	3	3	11
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	2	2	1	2	1	8
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	5	5	3	4	3	20

ACTIVITIES	POTENTIAL IMPACT	Extent of impact	Duration of impact	Intensity of impact	Frequency	Probability of occurrence of impact	SIGNIFICANCE if not mitigated
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	2	2	1	2	1	8
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	3	4	4	2	2	15
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	2	3	3	2	2	12
Closure							
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	2	3	3	4	4	16 POSITIVE
Concurrent rehabilitation	Use stockpiled top soil to close drilled holes	2	3	3	4	4	16 POSITIVE
Close drill hole	Restoration of land use and land capability	3	3	2	4	4	16 POSITIVE

9.2 IMPACT ASSESSMENT METHODOLOGY

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).

All activities associated with the different phases of the project (construction, operation and decommissioning) were listed and assessed to determine potential impacts. In order to determine the significance of an activity each activity was rated. The following parameters in the table below were used:

Table 5: Impact Assessment Methodology

IMPACT ASSESSMENT DESCRIPTIVE CRITERIA		
Nature	Include a descriptive sentence	
Probability	Categories 1 – 5	
	1	Improbable (less than 24% chance of occurring)
	2	Probable (25 – 49%)
	3	Likely (50 – 69%)
	4	Very likely (70 – 89%)
	5	Definite (90 – 100%)
Frequency	Categories 1 – 5	
	1	Very rare to remote (once or twice a decade)
	2	Unusual to occasional (once or twice every 5 years)
	3	Frequent (a few times a month)
	4	Very frequent (a few times a week, to daily)
	5	Continuous (daily to a significant percentage of every day)
Extent	Categories 1 – 5	
	1	Footprint / site
	2	Local
	3	Regional
	4	National
	5	International (trans-boundary)
Duration	Categories 1 – 5	
	1	Short (few days to a few months, less than a phase)

	2	Short (few months, or less than a phase in total)
	3	Medium (a few years, significant part of a phase)
	4	Long (lifespan of development (i.e. all of operation))
	5	Permanent
Intensity	Categories 1 – 5	
	1	Very low – natural processes not affected
	2	Low – natural processes slightly affected
	3	Medium – natural processes continue but in a modified manner
	4	Medium-high – natural processes are modified significantly
	5	High – natural processes disturbed significantly so that they cease to occur (temporarily /
Significance	Significance = P + F + E + D + I Minimum value of 5, maximum of 25 Status determines if positive / negative	
	Any positive value	No impact 1. High to low consequence, probability not an issue as positive, no mitigation required
	1– 5	Low 2. Low consequence, probably, minimal mitigation may be required
	6 to 10	Medium 3. Medium consequence, probably, mitigation is advised / preferred
	11 to 15	Medium–high 4. Medium to high consequence, probably to very probable, mitigation is necessary
	16 to 20	High 5. High consequence, probably / definite, mitigation is essential
	21 to 25	Extreme 6. Very high consequence, definite, fatal flaw!

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected. (Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Positive Impact associated with the proposed Prospecting:

- Employment contributing to the economy

- Concurrent rehabilitation during prospecting

Negative Impacts associated with the proposed prospecting

- Loss of soil resources
- Use of vehicles onsite–compaction
- Change of current land use
- Removal/damage of natural vegetation
- Destruction of cultural heritage sites and artefacts
- Damage to sensitive biodiversity area
- Disturbance of Kolobeng River riparian habitats
- Contamination of surface water
- Contamination of soils
- Litter

9.3 MITIGATION MEASURES

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).

Mitigation measures were identified for all possible impacts even though no impact was considered to be of high significance

Table 6: Impact and Mitigation Table

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	• Boreholes and access tracks will be located in areas that will result in minimal ground disturbance. • Permission will be obtained from landowners before trees are felled. • Where an access road is needed, the relevant occupant and owner will be consulted prior to the development of that access to ensure that consensus is reached on the matter and the access will be rehabilitated at the end of the drilling programme. • Vegetation clearance will be limited to 0.01 ha per drill hole
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and storm water	• Topsoil will be stripped to a depth of 250 mm from all disturbed areas and stored outside the 1:50 year flood levels of Kolobeng River and its streams, within the firebreak area.

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
	run-off can lead to the loss of topsoil	• Topsoil will be adequately protected from being blown away or being eroded. • Boreholes and access tracks will be located in areas that will result in minimal ground disturbance.
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	• During the planning phase for each borehole, specific controls will be identified and implemented, based on site conditions.
Vegetation clearance for establishment of drill sites	Impact on current land use	• Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use. • Exact location of drill holes and new access routes will be determined through communication with land owner
Vegetation clearance, Site establishment, Drilling activities &movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	• Potential heritage sites will be identified during the planning phase to ensure that such areas are avoided. Each prospecting site will be visited prior to any work starting to identify possible heritage sites. • Local knowledge will be used to identify and confirm heritage sites. • Prospecting activities will be kept away from excluded and exempted areas. • Where boreholes are sited in proximity to heritage sites and depending on the proximity to the drilling site, appropriate measures such as flagging, pegging or installation of temporary fencing will be undertaken to ensure that the site is not impacted on during prospecting.
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas	• A field survey will be undertaken before drilling commences at each drilling site to confirm that no ecologically sensitive areas or conservation areas are present in sections to be cleared. • Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation.
Vegetation clearance for establishment of drill site	Disturbance of Kolobeng River riparian habitats	• No prospecting operations will be undertaken within 100 metres from the Kolobeng River and 32 meters from the nearby wetland areas.
Vegetation clearance for establishment of drill sites	Dust pollution	• Dust will be effectively controlled in all areas cleared from vegetation through water spraying.
Vegetation clearance for establishment of drill sites	Storm water run-off from cleared areas could lead to	• Controls will be aimed at minimising erosion and sediment washing from drill pads, access roads and other disturbed areas.

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
	siltation of surface water	• Sediment and erosion controls will be designed to prevent runoff from the prospecting site into rivers & streams. • Sediment and erosion controls may include cut-off trenches and drains, culverts for tracks, silt fences, straw bales, rock armouring or mulching.
Vegetation clearance for establishment of drill sites	Disturbance of grazing activities	• Prospecting activities will be discussed with landowners prior to work commencing. • Drill holes and access routes not wanted by land owners on completion of prospecting activities will be rehabilitated
Workers & material on site	Contamination of soils through spills from sanitation facilities & litter	• A chemical toilet will be used on site during prospecting and will be used in such a way as to prevent water pollution. The use of a chemical toilet will be undertaken in consultation with the landowner. • Full or leaking toilets must be reported to the Supervisor for corrective action or replacement. • Prospecting areas will be maintained in a clean and tidy condition at all times. • All waste will be collected, separated and stored in properly constructed containers with lids and removed to an approved landfill or another site according to local municipal requirements. • Full waste bins must be reported to the Supervisor for collection and disposal at an approved landfill.
Workers & material on site	Poaching	• No employees will be permitted to stay on the site. • Hunting / poaching will not be allowed. • Only one drill site at any given time. • All employees present at the one drill site with appropriate supervision
Workers & material on site	Fire	• Vegetation around each exploration site within a 5m radius will be kept short to create a fire management zone. • Collection of firewood will not be allowed. • Open fires will be prohibited to people involved in prospecting. • No burning cigarettes or matches may be thrown down within the prospecting area. A bucket with sand will be provided for the disposal of cigarettes and matches • No smoking will be allowed near gas, paints or fuel storage areas. • Suitable welding blankets are to be used when welding or operating grinders and this equipment is to be serviced regularly.

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
		• Rubbish or vegetation may under no circumstances be burnt. All waste will be removed off site and disposed of at an approved landfill.
Workers & material on site	Collection of fire wood, damage to property	• Collection of firewood will not be allowed. • Only one drill site at any given time. All employees present at the one drill site with appropriate supervision • Complaints and outcomes of subsequent investigations will be recorded in a Complaints Register in the format of a spreadsheet. • If damage to private property occurs as a result of prospecting activities, such damage will be repaired or owners will be compensated as appropriate.
Workers & material on site	Contribution to the economy through employment	• Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (3 people) with specialised skills. Were possible, local people will however be employed during the project. • Local people and businesses with appropriate skills will be identified and included in the project tender process. The applicant is committed to employ local people and businesses during the project, where possible.
Workers & material on site	Spread of HIV/Aids to farm workers and local community	• Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (3 people) with specialised skills. Were possible, local people will however be employed during the project. • No employees will be permitted to stay on site. • Aids awareness talks
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	• Vehicles and equipment to be serviced regularly and maintained in good working condition
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	• All chemicals, fuels and oils to be stored on site will be appropriately bunded. • Precautions will be taken to prevent spills and soil contamination. • Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure.

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
		• Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site.
Use of heavy machinery & vehicles on site for drilling	Use of groundwater for drilling activities	• Existing water supply locations will be identified for use and agreements will be reached with landowners regarding on-site water use. The drilling rig will require approximately 1,000l/day. Where a suitable water supply is not available, water will be sourced from a commercial supplier and delivered to site by water tanker. • If required, a water use license will be applied for to DWS for the abstraction of surface- and/or groundwater during prospecting. • Adequate provision will be made for storing drinking water on site in the form of 2500 litre plastic water tanks.
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	• The drilling fluid that will be used during prospecting must be biodegradable and not pose a water pollution threat. • Drilling sumps and containment measures will be designed to contain all drilling fluid. • Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure. • Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site. • Drill sites to be located 100 m from rivers & stream.
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	• Machinery and equipment will only be maintained over a drip tray, a thin concrete slab or a PVC lining to prevent soil and water contamination. • No vehicle will be extensively repaired on site. • Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements to ensure correct clean-up procedure. • Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site.
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	• Stay on predefined areas and routes. • Scarify access roads and stockpile areas to a depth of 500 mm and restore topsoil cover. • Re-seed or plant vegetation indigenous to the area.

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	• Vehicles will only stay on dedicated roads (turning circles). • No movement of heavy machinery outside dedicated routes. • All routes and turning circles will be scarified and re-seeded with seeds from vegetation indigenous to the area.
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	• Vehicles and equipment will be maintained in a good working order.
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	• Speed limits on gravel roads will be 40 km/hr to minimise dust and noise generation. • Dust will be effectively controlled in all disturbed areas through water spraying.
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	• Speed limits on gravel roads will be 40 km/hr to minimise dust and noise generation. • Prospecting activities will be restricted to day light hours.
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	• Only one site to be drilled at any one time • Undertake concurrent rehabilitation • Measures will be undertaken by the applicant to ensure that visual aspects from the site are complying with the relevant visual standards objectives
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	• Prospecting activities will be kept away from excluded and exempted areas. • A field survey will be undertaken before drilling commences at each drilling site to confirm that no threatened species, ecologically sensitive areas or conservation areas are present in sections to be cleared • Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation. • One site to be drilled at a time. • Concurrent rehabilitation.
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	• Exploration boreholes are to be capped when no drilling work is being undertaken. • Exploration boreholes which will not be used during production to be sealed with cement once exploration work has been completed.
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	• For the purpose of future monitoring programmes, impact assessments and concurrent rehabilitation, the depth of water strikes will be recorded during exploration drilling. • The static groundwater level will be monitored in prospecting boreholes that

ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES
		intersected water after completion and before concurrent rehabilitation for future monitoring, impact assessment and concurrent rehabilitation purposes. • Any completed hole that is not required for groundwater monitoring, will be sealed to prevent groundwater contamination.
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	• Machinery will be cleared of dust/mud and seed prior to relocation to the next site to prevent the spread of alien invasive species.
Closure		
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	• Chemicals, fuels and waste materials will be removed from the site following the completion of the prospecting programme. Such waste will be disposed of to an approved landfill. • Erosion and sediment controls as well as the disturbed area will be rehabilitated • An inspection on whether there is evidence of weeds or pest invasion as a result of prospecting activities will be undertaken and appropriate remediation actions will be implemented as required.
Concurrent rehabilitation	Use stockpiled top soil to close sumps	• Scarify access roads and stockpile storage areas to a depth of 500 mm. • Restore topsoil cover. • Re-seed or plant vegetation indigenous to the area.
Close drill hole	Restoration of land use and land capability	• Exploration boreholes are to be capped when no drilling work is being undertaken. • Exploration boreholes which will not be used during production to be sealed with cement once exploration work has been completed.

ix) Motivation where no alternative sites were considered.

Location Alternatives: This property provides the ideal geological formation for the presence of the minerals. The properties around here have already been applied for prospecting or mining of chrome. No other sites are available.

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

This is an application for prospecting. The 15 holes will be drilled at locations determined by the geology of the site. Drill holes will be located 100m meters from any watercourse. No drilling will be allowed closer than 50m to the residential areas.

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 fall environmental issues and risks that are identified during the environmental impact assessment process and (ii)an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

Please refer to Tables 5 and 6.

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).

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	Vegetation	Operational	16	Control through limiting area	Low
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and storm water run-off can lead to the loss of topsoil	Soils	Operational	16	Control through storing of topsoil and protecting topsoil stockpiles	Low
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	Topography	Operational	16	Remedy through concurrent rehabilitation of drill sites & test pits	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT** **(Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated** **(e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Vegetation clearance for establishment of drill sites	Impact on current land use	Land Use & Land Capability	Operational	6	Control via communication with land owner	Low
Vegetation clearance, Site establishment , Drilling activities & movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	Cultural Heritage	Operational	15	Stop through identification of sites and protecting	Low
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas	Sensitive Biodiversity Areas	Operational	21	Stop through identification of areas and buffering of sensitive areas	Low
Vegetation clearance for	Disturbance of riparian habitats	Kolobeng River	Operational	23	Buffering of the River	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
establishment of drill sites						
Vegetation clearance for establishment of drill sites	Dust pollution	Air Quality	Operational	18	Control through dust suppression	Low
Vegetation clearance for establishment of drill sites	Storm water run-off from cleared areas could lead to siltation of surface water	Surface Water	Operational	18	Control through implementation of sediment and erosion controls	Low
Vegetation clearance for establishment of drill sites	Disturbance of farming / tourism activities	Social and Economic Environment	Operational	16	Control via communication with land owner	Low
Workers & material on site	Contamination of soils through spills from sanitation facilities & litter	Soils	Operational	15	Control through placement of facility and regular maintenance. Collection of waste	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Workers & material on site	Poaching	Fauna	Operational	15	Control through supervision and operational hours on site	Low
Workers & material on site	Fire	Social and Economic & Ecology Environment	Operational	21	Avoid through Code of Conduct & Control through Fire Breaks	Low
Workers & material on site	Collection of fire wood, damage to property	Vegetation	Operational	21	Control through supervision and operational hours on site	Low
Workers & material on site	Contribution to the economy through employment	Social and Economic Environment	Operational	18	Employment of local people and businesses where possible	Positive impact
Workers & material on site	Spread of HIV/Aids to farm workers and local community	Social and Economic Environment	Operational	18	Control through awareness	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT** **(Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated** **(e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	Fossil fuels	Operational	16	Control through maintenance	Low
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	Soils	Operational	13	Avoid through engineering controls. Remedy through clean-up	Low
Use of heavy machinery & vehicles on site for drilling	Use of groundwater for drilling activities	Groundwater	Operational	16	Control through use of existing water supply. Avoid through sourcing of water from commercial supplier	Low
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	Surface Water	Operational	21	Avoid through buffer of 60 m	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	Groundwater	Operational	18	Avoidance through engineering controls and clean-up	Low
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	Soils	Operational	12	Avoid through limiting area. Remedy through concurrent rehabilitation	Low
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	Vegetation	Operational	16	Avoid through limiting area. Remedy through concurrent rehabilitation	Low
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	Air Quality	Operational	11	Control through maintenance	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	Air Quality	Operational	16	Control through speed limit & dust suppression	Low
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	Social and Economic Environment	Operational	11	Control through speed limit & operational times	Low
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	Social and Economic Environment	Operational	8	Control through limiting amount of drill rigs on property	Low
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	Fauna	Operational	20	Remedy through concurrent rehabilitation of drill sites & test pits	Low

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	Air Quality	Operational	8	Control through capping of boreholes	Low
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	Groundwater	Operational	15	Control through monitoring	Low
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	Vegetation	Operational	12	Avoid through cleaning of machinery	Low
Closure						
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	Land Use & Land Capability	Closure	16	Remedy through concurrent rehabilitation of drill sites & test pits	Positive impact

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 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, powerlines, conveyors, etc…etc…etc.)**	**POTENTIAL IMPACT (Including the Potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, flyrock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post closure)**	**SIGNIFICANCE If not mitigated**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control, Control through management and monitoring through rehabilitation.**	**SIGNIFICANCE If mitigated**
Concurrent rehabilitation	Use stockpiled top soil to close drilled holes	Soils	Closure	16		Positive impact
Close drill hole	Restoration of land use and land capability	Land Use & Land Capability	Closure	16	Control through capping of boreholes	Positive impact

The supporting impact assessment is attached as an **Appendix 4.**

9.4 SPECIALIST STUDIES

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALISTREPORTS**	**SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT** (Mark with an X where applicable)	**REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.**
No specialist studies required for the prospecting application	*No specialist studies required for the prospecting application*	*No specialist studies required for the prospecting application*	*No specialist studies required for the prospecting application*

Attach copies of Specialist Reports as appendices

Motivation on why no specialist studies were conducted:

As a qualified professional (See CV Attached) the EAP of this application has executed a desktop study to describe the environmental features of the project area.

The desktop vegetation study, included the following:

- *Classification of the main biome and description of the dominant vegetation type;*
- *Investigation of the dominant indigenous species within this region;*
- *Listing the endemic species;*
- *Listing the IUCN Red Data species; and*

The desktop invertebrate and mammal study, included the following:

- *Endemic species;*
- *Baseline occurrences of species within the area;*
- *Virtual Museum and Animal Demographic Unit consultation; and*
- *IUCN Red Data species*

The following provincial and national legislation and best-practice documents are relevant to this study:

- *North West Biodiversity Sector Plan 2014*
- *North West Environmental Outlook 2013*
- *National Environmental Management Protected Areas Act (Act 57 of 2003)*
- *National Environmental Management Biodiversity Act (Act 10 of 2004)*
- *National Protected Area Expansion Strategy*
- *National Biodiversity Assessment (2004, updated 2011)*
- *National Freshwater Ecosystems Priority Atlas*
- *Mining and Biodiversity Guidelines. Mainstreaming biodiversity into the mining sector*
- *National Forests Act, 1998 (Act No. 84 of 1998)*

The following information resources were consulted in order to ascertain whether any environmental features of biodiversity conservation concern occur, or could possibly occur within the study area:

- *CITES;*
- *IUCN Red Data List;*
- *SANBI Red List of South African Plants;*
- *List of Protected Trees - National Forests Act, 1998 (Act No. 84 of 1998); and*
- *ToPS List – Government Gazette Notice No. 389 of 2013: "Publication of Lists of species that are Threatened or Protected, Activities that are prohibited and Exemption from Restriction",*
- *National Environmental Management: Biodiversity Act (NEMBA), 2004 (Act 10 of 2004).*
- *Virtual Museum Data Base*
- *SA Bird Atlas Project Database*
- *SANBI Biodiversity GIS:*
    - *National Information*
        - *Important Bird Areas (2015)*
        - *DEA South African National Land-Cover (2013)*
        - *Mining Guidelines (2013)*
        - *Vegetation Map of Southern Africa (2012)*
        - *Climate Change, Agriculture and Biodiversity in South Africa (2011)*
        - *National Biodiversity Assessment (2011)*
        - *National Freshwater Ecosystem Priority Areas (2011)*
        - *National List of Threatened Ecosystems (2011)*
        - *Protected Areas (2010)*
        - *National Land Cover (2009)*
        - *National Wetlands Inventory (2006)*
        - *National Spatial Biodiversity Assessment (2004)*
        - *Soils*
    - *Provincial Information*

- *North West Province Biodiversity Conservation Assessment*

The desktop study enabled the identification of sensitive environmental areas / habitats on the proposed site. These sensitive areas were considered during the impact assessment process. Mitigation measures / buffers are recommended to ensure that these areas are not impacted on.

The area of disturbance is quite small (0.15 ha), all impacts were rated as low - medium without mitigation and as low with the implementation of mitigation measures. Furthermore, adequate financial provision is made for rehabilitation.

Apart from the Heritage Assessment no other specialist studies are required as the desktop study effectively identified sensitive areas, all impacts were considered to be of low - medium significance and appropriate mitigation and management measures are recommended

l) Environmental impact statement

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

The possible environmental impacts associated with the proposed prospecting are considered insignificant. The drilling will be done by diamond drill rig, the drill team will not require site infrastructure and will not stay on site. The main impacts are associated with the river and located on site. During the planning phase for each borehole rivers and/or streams will be identified. The prospecting programme will be designed to avoid the river and to leave a buffer zone of 100m. The river/stream will not be crossed, accesses, drained, dredged or filled during prospecting. A buffer of 100m must be kept from the Kolobeng River.

There is also an Eskom line on the property and a buffer of 15.5m on each side of the centre of the power line will be kept and safety precautions will be observed.

(iii) 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. Attached as **Appendix 3**

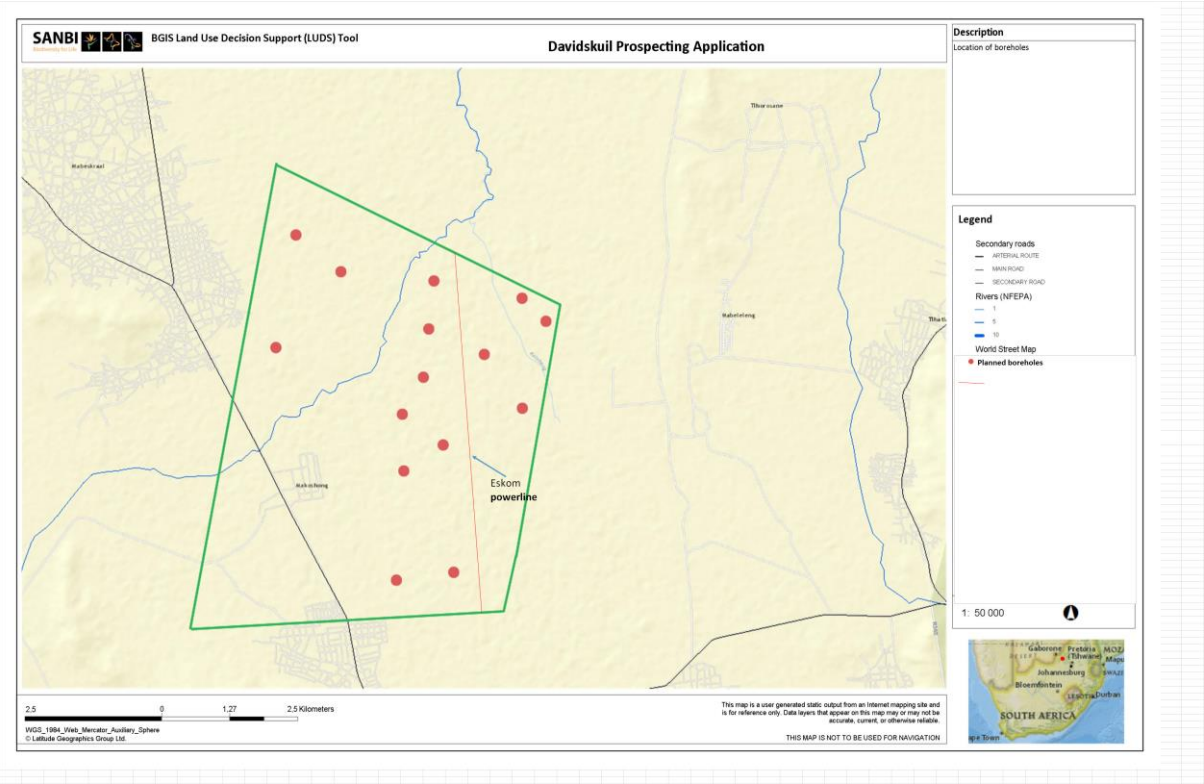

Figure 31: Drill Grid showing location of drill holes

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

Positive Impact associated with the proposed Prospecting:

- Employment contributing to the economy
- Concurrent rehabilitation during prospecting

Negative Impacts associated with the proposed prospecting

- Loss of soil resources
- Use of vehicles on site–compaction& dust
- Change of current land use
- Removal/damage of vulnerable natural vegetation
- Destruction of cultural heritage sites and artefacts
- Damage to sensitive biodiversity areas
- Disturbance of small hill
- Contamination of surface water
- Contamination of soils
- Litter

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

Based on the assessment and where applicable the recommendations from specialist reports, there cording 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 objectives of the impact management process are as follows:

Air Quality:

To ensure that the prospecting activities has a minimal adverse impact on air quality. Dust limitation and suppression to be applied.

Groundwater:

To ensure that the prospecting activities have minimal adverse impact on the surrounding groundwater water quality and prevents pollution of existing groundwater resources.

Surface Water

To ensure that the prospecting activities effectively utilise the consumption of freshwater, have minimal adverse impact on the surrounding surface water quality and prevent pollution of surrounding surface water resources. A buffer of 100m to be observed from the water course.

Soils

To ensure that the prospecting activities have a positive impact on land and soils by mitigating potential erosion, preventing contamination and pollution.

Biodiversity

To ensure that the prospecting activities do not have an adverse impact on the current biodiversity.

Socio-Economic

To aid in the improvement of the current local economy and improve the social environment of communities affected by the prospecting activities.

Visual

To limit the visual impact of the prospecting activities. Only one drill rig to be used and concurrent rehabilitation to be implemented

Noise

To control noise pollution stemming from the prospecting activities through the restriction of operational hours.

Heritage

To ensure that the prospecting activities avoid adverse impacts on the heritage resources of significance. Interaction with local residents to identify and confirm heritage sites. Marking and avoidance of sites if identified.

Waste

To ensure that the proposed prospecting operation adopts and implements waste management principles that are environmentally responsible.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

- Prospecting should not occur within 100m of the Kolobeng River.
- Prospecting should not occur within 15.5m on each side of the 132kv power line and or 9m from any other Eskom structures and or supporting mechanisms.
- Boreholes and access tracks to be located in areas that will result in minimal ground disturbance
- During the planning phase for each borehole, specific controls must be identified and implemented, based on site conditions
- A field survey must be undertaken before drilling commences at each drilling site to confirm that no threatened species, cultural heritage site, ecologically sensitive areas or conservation areas are present in sections to be cleared
- No employees will be permitted to stay on the site.
- Collection of fire wood will not be allowed.
- Where an access road is needed, the relevant occupant and owner will be consulted prior to the development of that access to ensure that consensus is reached on the matter and the access will be rehabilitated at the end of the drilling programme

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

(Which relate to the assessment and mitigation measures proposed)

The exact location of drill sites is not yet known and will be identified through the phased approach of the prospecting programme. This assessment is therefore based on a desktop approach at a broad scale and assuming that drilling could occur anywhere within the proposed prospecting license area. Once drill sites have been identified, then it is recommended that focus should be given to these sites in order to identify any cultural or heritage resources of significance, any ecologically significant areas that may occur as well as re-engaging land owners regarding the intention to access and conduct drilling activities on their property.

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

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

This is a proposed prospecting application to determine the value of the chromite mineral. The holes will be drilled to a maximum depth of 100m and will only be 60 - 75.7 mm in size at a spacing of 350m-1000m.

Drilling will have low impact on existing farming activities and is not expected to impact on unidentified heritage artefacts. No permanent structures or infrastructure will be required on site. No workers will be required to stay on site and no site camp will be required.

Rehabilitation will be done concurrently with prospecting. After drilling, when each site is left, a clearing team will restore the site and monitor its recovery. Any completed hole that is not required for groundwater monitoring, will be sealed with cement to prevent groundwater contamination.

Compacted areas (access roads, stockpile storage areas) will be scarified to a depth of 500mm and topsoil cover will be restored. Indigenous vegetation will be planted on the site. Remaining refuse, chemicals, fuels and waste materials will be removed from the site following the completion of the prospecting programme. Such waste will be disposed of to an approved landfill. An inspection on whether there is evidence of weeds or pest invasion as a result of prospecting activities will be undertaken and appropriate remediation actions will be implemented if required.

ii) Conditions that must be included in the authorisation

- No prospecting should occur within 100m from any watercourse
- Boreholes and access tracks to be located in areas that will result in minimal ground disturbance

- During the planning phase for each borehole, specific controls must be identified and implemented, based on site conditions
- A field survey must be undertaken before drilling commences at each drilling site to confirm that no threatened species, cultural heritage site, ecologically sensitive areas or conservation areas are present in sections to be cleared
- No employees will be permitted to stay on the site.
- Collection of fire wood will not be allowed.
- Where an access road is needed, the relevant occupant and owner will be consulted prior to the development of that access to ensure that consensus is reached on the matter and the access will be rehabilitated at the end of the drilling programme

q) Period for which the Environmental Authorisation is required

The authorization is required for the duration of the prospecting right which is 5 years.

r) Undertaking

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

Lethabo Super Market herewith confirms both its capacity and willingness to make the financial provision required should the prospecting right be granted.

s) Financial Provision

A financial provision of approximately **R** 49,776.91 has been budgeted for the prospecting programme over 5 years, which includes concurrent rehabilitation activities. A breakdown of these costs is presented on Table 8 below.

Table 7: Assessment of the quantum for financial provision for prospecting project, 2017

CALCULATION OF THE QUANTUM

No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor	E=A*B*C*D Amount
1	Dismantling of processing plant and related structures	m^3					R0.00
2(A)	Demolition of steel buildings and structure	m^2					R0.00
2(B)	Demolition of reinformced concrete buildings and structures	m^2					R0.00
3	Rehabilitation of access roads	m^2	250	R32.00	1	1	R8,000.00
4(A)	Demolition and rehabilitation of electrified railway lines						R0.00
4(B)	Demolition and rehabilitation of non-electrified railway lines	m					R0.00
5	Demolition of housing and/or administration facilities	m^2					R0.00
6	Opencast rehabilitation including final voids and ramps	m^2					R0.00
7	Sealing of shafts, adits and inclines	m^3					R0.00
8(A)	Rehabilitation of overburden and spoils	ha	0.15	R66,400.00	1	1	R9,960.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (salts)	ha					R0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha					R0.00
9	Rehabilitation of subsided areas	ha					R0.00
10	General surface rehabilitation	ha	0.15	R99,033.88	1	1	R14,855.08
11	River diversions	ha					R0.00
12	Fencing	m					R0.00
13	Water management	ha					R0.00
14	2 to 3 years of maintenance and aftercare	ha	0.15	R13,179.41	1	1	R1,976.91
15(A)	Specialist study	sum					
15(B)	Specialist study	sum					
						SUBTOTAL 1	R34,791.99
1	Weighting factor 2	(0%, 5% or 10%)					
2	Preliminary and General	12,5% of subtotal 1					R4,349.00
3	Administration and supervisionn costs	6,0% of subtotal 1					R2,087.52
4	Engineering drawings and specifications	2,0% of subtotal 1					R695.84
5	Engineering and procurement of specialist work	2,5% of subtotal 1					R869.80
6	Development of closure plan	2,5% of subtotal 1					R869.80
7	Final groundwater modelling**	2,5% of subtotal 1					R869.80
8	Contingency	10,0% of subtotal 1					R3,479.20
						SUBTOTAL 2	R8,871.96
						VAT (14%)	R6,112.95
						GRAND TOTAL (SUBTOTAL 1 + SUBTOTAL 2 + VAT)	**R49,776.91**

i) Explain how the aforesaid amount was derived.

The drilling contractor will be responsible for rehabilitating the drill pad once the drilling activities have been completed at each exploration hole. This is typically a contractual arrangement between Lethabo Supermarket and the drilling contractor employed to implement drilling activities which include construction / set-up of drill pad, operational drilling activities and the rehabilitation of the drill site after drilling has ceased. The financial guarantee was calculated using the DMR official financial quantum calculator below.

	Item	Comment	Size
1	Dismantling Processing Plant	There is no processing plant in the prospecting right application area	0
2(A)	Demolition of Steel buildings and structures	There will be no steel buildings and structures	0
2(B)	Demolition of reinforced concrete buildings and structures	Concrete structures include the floors of the diesel tank, compressor room and workshop. Applicant will	0

		erect these structures the properties they own. All concrete buildings and structures will remain post mining.	
3	Rehabilitation of access roads	Where an access road is needed, the relevant occupant and owner will be consulted.	250m^2
4(A)	Demolition and rehabilitation of electrified railway lines	There are no electrified railway line(s) through the property	0
4(B)	Demolition and rehabilitation of non-electrified railway lines	There are no non-electrified railway lines(s) through the property	0
5	Demolition of housing and/or administration facilities	There are no housing and/ administration facilities that will need demolishing. Storage containers will be moved off site.	0
6	Opencast rehabilitation including final voids and ramps	No voids will be created	0
7	Sealing of shaft adits and inclines	There are no shaft adits and inclines.	0
8(A)	Rehabilitation of overburden and spoils	No overburden and spoils will be created	0
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	There are no waste deposits and evaporation ponds	0
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	There are no waste deposits and evaporation ponds.	0
9	Rehabilitation of subsided areas	There are no subsided areas.	0
10	General surface rehabilitation	An area of 0.01ha will be cleared for each for all 15 drill holes	0.15ha
11	River diversions	There are no river diversions.	0
12	Fencing	Existing fence will remain post mining.	0
13	Water management	No water management is required. There are no water bodies within a 100m radius of the operation.	0
14	2 to 3 years of maintenance and aftercare	An area of 0.001ha will be cleared and fenced off for each drill hole. To ensure the success of the rehabilitated area a rehabilitation team will frequent the site to provide maintenance and aftercare	0.15ha
15(A)	Specialist study	No specialist study required	
15(B)	Specialist study	No specialist study required	

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

The financial support for Lethabo Supermarket proves the availability of funds to undertake prospecting of the desired mineral.

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(Act107of1998). the EIA report must include the following: -

(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.

As the final positioning of the drill sites cannot be confirmed without completion of phase 1 of the prospecting programme, a recommendation has been made to ensure that the directly affected landowners are re-consulted a minimum of 1 month prior to implementing invasive activities (drilling). The purpose of the re-consultation is to ensure that socio-economc impacts on directly affected persons can be raised and where possible addressed.

(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).

Due to the fact that the positioning of the drill sites will only be determined after phase 1 of the prospecting works programme, and in order to ensure that there is no impact on unknown heritage sites, a recommendation has been made to undertake a heritage survey of the drill sites once these are known in order to identify any cultural or heritage resources of significance.

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 5).

The proposed prospecting activities (including the drilling) 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 compliant resource which is a minimum requirement to determine whether it is viable to invest in a future mine

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME

10 ENVIRONMENTAL MANAGEMENT PROGRAMME

1) Draft environmental management programme.

a) Details of the EAP, (Confirm that the requirement or the provision of the details and expertise of the EAP are already included in PART A, section1 (a) here in as required).

Please refer to the Details of the EAP included in Part A, section1 (a).

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

The aspects of the activity are described in Part A Section 1(h).

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)

Please refer to **Appendix 2.**

d) Description of Impact management objectives including management statements

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

The overall goal for closure of the prospecting site is to re-instate the predetermined land-use of the land owners, neighbours and community, ensuring that the land is stable and safe in the long-term.

The closure objectives apply to the prospecting area in its final closed state and not whilst the site is in transformation towards this state. They nevertheless provide guidance during the operational phase. Closure objectives relate to the following:

Physical stability: To back-fill boreholes on the prospecting site to ensure continuation of the land use after completion of prospecting activities.

Environmental quality: To ensure that local environmental quality is not adversely affected by possible physical effects and chemical contaminants arising from the prospecting site after completion of prospecting activities.

Health and safety: To limit the possible health and safety threats to humans and animals using the rehabilitated prospecting area after completion of prospecting activities.

Land capability/land-use: To ensure continuation or to the re-instate a suitable land capability over as large as possible area affected during prospecting.

Aesthetic quality: To leave behind a rehabilitated prospecting site that is neat and tidy, giving an acceptable overall aesthetic appearance.

Biodiversity: To encourage the re-establishment of indigenous and/ or appropriate vegetation on the rehabilitated prospecting site such that the biodiversity is largely re-instated over time, as well as protect the undisturbed areas to maintain/enhance the biodiversity of these areas. Prospecting area rehabilitated to limit impact on current land use

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

Approximately 2000 liters of water will be required per day for the drilling activities.

iv) Has a water use licence has been applied for?

No Water use license is required for the prospecting application. Water will be sourced from existing boreholes authorised in terms of General Authorisations or sourced from commercial supplier and transported in via road tanker.

v) Impacts to be mitigated in their respective phases

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

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vegetation clearance for establishment of drill sites	Operational	0.15 ha (drill sites, access routes)	1) Boreholes and access tracks will be located in areas that will result in minimal ground disturbance. 2) Permission will be obtained from landowners before trees are felled. 3) Where an access road is needed, the relevant occupant and owner will be	Concurrent rehabilitation in line with sustainable development practices	During drill site establishment

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			consulted prior to the development of that access to ensure that consensus is reached on the matter and the access will be rehabilitated at the end of the drilling programme. 4) Vegetation clearance will be limited to 0.01 ha per drill hole		
Vegetation clearance for establishment of drill sites	Operational	0.15ha	1) Topsoil will be stripped to a depth of 250 mm from all disturbed areas and stored	Storage of topsoil in line with Regulation 70 of GN 527 (2004)	During drill site establishment & drill operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			outside the 1:50 year flood levels of river and streams, within the firebreak area. 2) Topsoil will be adequately protected from being blown away or being eroded. 3) Boreholes and access tracks will be located in areas that will result in minimal ground disturbance.		
Vegetation clearance for establishment of drill sites	Operational	The drilling of 15 drill holes of 60 - 75.7	1) During the planning phase for each borehole, specific controls	Number of boreholes stipulated in Prospecting Work Programme	During drilling operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
		mm in diameter	will be identified and implemented, based on site conditions.		
Vegetation clearance for establishment of drill sites	Operational	0.15 ha (drill sites, access routes)	1) Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use. 2) Exact location of drill holes, test pits and new access routes will be determined through communication with land owner	Concurrent rehabilitation in line with sustainable development practices	Prior to drill site establishment

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vegetation clearance, Site establishment , Drilling activities & movement of people and equipment on site	Operational	0.15 ha (drill sites, access routes)	1) Potential heritage sites will be identified during the planning phase to ensure that such areas are avoided. Each prospecting site will be visited prior to any work starting to identify possible heritage sites. 2) Local knowledge will be used to identify and confirm heritage sites. 3) Prospecting activities will be	Avoidance in line with National Heritage Resources Act (No. 25 of 1999)	Prior to drill site establishment

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			kept away from excluded and exempted areas. 4) Where boreholes are sited in proximity to heritage sites and depending on the proximity to the drilling site, appropriate measures such as flagging, pegging or installation of temporary fencing will be undertaken to ensure that the site is not impacted on during prospecting.		

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vegetation clearance for establishment of drill site	Operational	1 drill hole - 0.01ha	1) A field survey will be undertaken before drilling commences at each drilling site to confirm that no ecologically sensitive areas or conservation areas are present in sections to be cleared. 2) Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation.	Avoidance in line with National Biodiversity Act (10 of 2004)	Prior to drill site establishment

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vegetation clearance for establishment of drill sites	Operational	0. 15 ha (drill sites & access routes)	1) Dust will be effectively controlled in all areas cleared from vegetation through water spraying.	National Dust Control Regulations GN 827 (2013)	During drill site establishment & drilling operations
Vegetation clearance for establishment of drill sites	Operational	0.15 ha	1) Controls will be aimed at minimising erosion and sediment washing from drill pads, access roads and other disturbed areas. 2) Sediment and erosion controls will be designed to prevent runoff from the	Implementation of sediment controls in line with GN 704 and National Water Act (36 of 1998)	During drill site establishment & drilling operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			prospecting site into rivers & streams. 3) Sediment and erosion controls may include cut-off trenches and drains, culverts for tracks, silt fences, straw bales, rock armouring or mulching.		
Vegetation clearance for establishment of drill sites	Operational	0. 15 ha (drill sites & access routes)	1) Prospecting activities will be discussed with landowners prior to work commencing. 2) Drill holes and access routes not	Concurrent rehabilitation in line with sustainable development practices	During to drill site establishment & drilling operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			wanted by land owners on completion of prospecting activities will be rehabilitated		
Workers & material on site	Operational	0. 15 ha (drill sites & 250m^2 access routes)	1) A chemical toilet will be used on site during prospecting and will be used in such a way as to prevent water pollution. The use of a chemical toilet will be undertaken in consultation with the landowner. 2) Full or leaking toilets must be	Maintenance and replacement of chemical toilets in line with Regulation 71 of GN 527 (2004). Waste collection and disposal in line with Regulation 69 of GN 527 of 2004 and with National Environmental Management: Waste Act (59 of 2008)	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			reported to the Supervisor for corrective action or replacement. 3) Prospecting areas will be maintained in a clean and tidy condition at all times. 4) All waste will be collected, separated and stored in properly constructed containers with lids and removed to an approved landfill or another site according to local municipal		

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			requirements. 5) Full waste bins must be reported to the Supervisor for collection and disposal at an approved landfill.		
Workers & material on site	Operational	3345.791 ha (Total size of prospecting area – 3 workers on site)	1) No employees will be permitted to stay on the site. 2) Hunting / poaching will not be allowed. 3) Only one drill site at any given time. All employees present at the one drill site with appropriate supervision	No poaching in line with Animals Protection Act (No. 71 of 1962)	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Workers & material on site	Operational	3345.791 ha (Total size of prospecting area)	1) Vegetation around each exploration site within a 5m radius will be kept short to create a fire management zone. 2) Collection of firewood will not be allowed. 3) Open fires will be prohibited to people involved in prospecting. 4) No burning cigarettes or matches may be thrown down within the prospecting area.	Fire prevention in line with Regulation 65 of GN 527 (2004) and with National Veld and Forest Fire Act	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			A bucket with sand will be provided for the disposal of cigarettes and matches. 5) No smoking will be allowed near gas, paints or fuel storage areas. 6) Suitable welding blankets are to be used when welding or operating grinders and this equipment is to be serviced regularly. 7) Rubbish or vegetation may		

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			under no circumstances be burnt. All waste will be removed off site and disposed of at an approved landfill.		
Workers & material on site	Operational	3 345.791 ha (Total size of prospecting area - 3 workers on site)	1) Collection of firewood will not be allowed. 2) Only one drill site at any given time. All employees present at the one drill site with appropriate supervision 3) Complaints and outcomes of subsequent	Conditions stipulated in Access Agreement	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			investigations will be recorded in a Complaints Register in the format of a spreadsheet. 4) If damage to private property occurs as a result of prospecting activities, such damage will be repaired or owners will be compensated as appropriate.		
Workers & material on site	Operational	3 workers on site	1) Due to the nature of prospecting, employment opportunities will	Contractual agreements between the service provider and the applicant	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			be minimal. The prospecting crew is small (8 people) with specialised skills. Were possible, local people will however be employed during the project. 2) Local people and businesses with appropriate skills will be identified and included in the project tender process. The applicant is committed to employ local		

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			people and businesses during the project, where possible.		
Workers & material on site	Operational	3 workers on site	1) Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (8 people) with specialised skills. Were possible, local people will however be employed during the project. 2) No employees will be permitted	National Strategic Plan on HIV, STIs and TB 2012-2016	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			to stay on site. 3) Aids awareness talks		
Use of heavy machinery & vehicles on site for drilling	Operational	1 x drill rig, 1 x field vehicle	1) Vehicles and equipment to be serviced regularly and maintained in good working condition	Maintenance of vehicles and equipment in line with responsible environmental management practice	For duration of prospecting activities on site
Use of heavy machinery & vehicles on site for drilling	Operational	1 x drill rig, 1 x field vehicle	1) All chemicals, fuels and oils to be stored on site will be appropriately bunded. 2) Precautions will be taken to prevent spills and soil contamination. 3) Material Safety	Prevention of soil pollution in line with Regulation 70 of GN 527 (2004)	For duration of prospecting activities on site

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			Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure. 4) Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site.		
Use of heavy machinery & vehicles on site for drilling	Operational	15 drill sites	1) Existing water supply locations will be identified for use and	Responsible use of groundwater resources in line with Regulation 68 of GN 527	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			agreements will be reached with landowners regarding on-site water use. The drilling rig will require approximately 1,000l/day. Where a suitable water supply is not available, water will be sourced from a commercial supplier and delivered to site by water tanker. 2) If required, a water use license will be applied for	(2004) and with the National Water Act (36 of 1998)	

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			to DWS for the abstraction of surface- and/or groundwater during prospecting. 3) Adequate provision will be made for storing drinking water on site in the form of 2500 litre plastic water tanks.		
Use of heavy machinery & vehicles on site for drilling	Operational	Kolobeng River and the streams -. 15 drill holes in that area	1) The drilling fluid that will be used during prospecting must be biodegradable and not pose a water pollution threat.	Buffer of 60 m greater than 32 m stipulated in NEMA 2014 EIA Regulations	Prior to establishing drill sites in southern section

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			2) Drilling sumps and containment measures will be designed to contain all drilling fluid. 3) Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure. 4) Any contaminated soil will be collected into non-permeable bags		

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			and disposed of to an approved landfill site. 5) Drill sites to be located 60 m from rivers & stream.		
Use of heavy machinery & vehicles on site for drilling	Operational	3 345.791 ha (Total size of prospecting area)	1) Machinery and equipment will only be maintained over a drip tray, a thin concrete slab or a PVC lining to prevent soil and water contamination. 2) No vehicle will be extensively repaired on site. 3) Material Safety Data Sheets for	Prevention of groundwater pollution in line with National Water Act (36 of 1998)	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			the item(s) spilled will be consulted for information concerning clean-up requirements to ensure correct clean-up procedure. 4) Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site.		
Use of heavy machinery & vehicles on site for drilling	Operational	0.15 ha (drill sites, access routes)	1) Stay on predefined areas and routes. 2) Scarify access roads and	Concurrent rehabilitation in line with sustainable development practices	Concurrently on completion of drilling activities at drill site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			stockpile areas to a depth of 500 mm and restore topsoil cover. 3) Re-seed or plant vegetation indigenous to the area.		
Use of heavy machinery & vehicles on site for drilling	Operational	0.15 ha (drill sites, access routes)	1) Vehicles will only stay on dedicated roads (turning circles). 2) No movement of heavy machinery outside dedicated routes. 3) All routes and turning circles will be scarified and re-seeded with	Concurrent rehabilitation in line with sustainable development practices	Concurrently on completion of drilling activities at drill site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			seeds from vegetation indigenous to the area.		
Use of heavy machinery & vehicles on site for drilling	Operational	1 x drill rig, 1 x field vehicle	1) Vehicles and equipment will be maintained in a good working order.	Maintenance of vehicles and equipment in line with responsible environmental management practice	For duration of prospecting activities on site
Use of heavy machinery & vehicles on site for drilling	Operational	0.15 ha (drill sites, access routes)	1) Speed limits on gravel roads will be 40km/hr to minimise dust and noise generation. 2) Dust will be effectively controlled in all disturbed areas through water spraying.	National Dust Control Regulations GN 827 (2013)	During drill site establishment & drilling operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Use of heavy machinery & vehicles on site for drilling	Operational	1 x drill rig, 1 x field vehicle	1) Speed limits on gravel roads will be 40 km/hr to minimise dust and noise generation. 2) Prospecting activities will be restricted to day light hours.	Noise Standards - SANS 10103:2008	For duration of prospecting activities on site
Use of heavy machinery & vehicles on site for drilling	Operational	1 x drill rig	1) Only one site to be drilled at any one time 2) Concurrent rehabilitation		For duration of prospecting activities on site
Use of heavy machinery & vehicles on site for drilling	Operational	0.15 ha (drill sites, access routes)	1) Prospecting activities will be kept away from excluded and exempted areas. 2) A field survey will be undertaken	Number of boreholes stipulated in Prospecting Work Programme	During drilling operations

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			before drilling commences at each drilling site to confirm that no threatened species, ecologically sensitive areas or conservation areas are present in sections to be cleared. 3) Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation.		

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			4) One site to be drilled at a time. 5) Concurrent rehabilitation.		
Use of heavy machinery & vehicles on site for drilling	Operational	15 Boreholes	1) Exploration boreholes are to be capped when no drilling work is being undertaken. 2) Exploration boreholes which will not be used during production to be sealed with cement once exploration work has been completed.	Capping of boreholes in line with sustainable management principles	For duration of prospecting activities on site
Use of heavy machinery & vehicles on site for drilling	Operational	15 Boreholes	1) For the purpose of future monitoring	Responsible use of groundwater resources in line with Regulation 68 of GN 527	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			programmes, impact assessments and concurrent rehabilitation, the depth of water strikes will be recorded during exploration drilling. 2) The static groundwater level will be monitored in prospecting boreholes that intersected water after completion and before concurrent rehabilitation for future monitoring,	(2004) and with the National Water Act (36 of 1998)	

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			impact assessment and concurrent rehabilitation purposes. 3) Any completed hole that is not required for groundwater monitoring, will be sealed to prevent groundwater contamination.		
Use of heavy machinery & vehicles on site for drilling	Operational	0.15 ha (drill sites, access routes)	1) Machinery will be cleared of dust/mud and seed prior to relocation to the next site to prevent the	Prevention of proliferation of invasive plant species in line with National Environmental Management Biodiversity Act (10 of 2004)	For duration of prospecting activities on site

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			spread of alien invasive species.		
Closure					
Concurrent rehabilitation	Closure	0.15 ha (drill sites, access routes)	1) Remaining refuse, chemicals, fuels and waste materials will be removed from the site following the completion of the prospecting programme. Such waste will be disposed of to an approved landfill. 2) Erosion and sediment controls as well as the disturbed area will be rehabilitated a 3) An inspection	Concurrent rehabilitation in line with sustainable development practices	During drilling operations after site has been rehabilitated

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			on whether there is evidence of weeds or pest invasion as a result of prospecting activities will be undertaken and appropriate remediation actions will be implemented as required.		
Concurrent rehabilitation	Closure	0.15 ha (drill sites, access routes)	1) Scarify access roads and stockpile storage areas to a depth of 500 mm. 2) Restore topsoil cover. 3) Re-seed or	Concurrent rehabilitation in line with sustainable development practices	During drilling operations after site has been rehabilitated

ACTIVITIES (**E.g.For prospecting**-drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE** of disturbance (volumes, tonnages and hectaresorm²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			plant vegetation indigenous to the area.		
Close drill hole	Closure	15 Boreholes	1) Exploration boreholes are to be capped when no drilling work is being undertaken. 2) Exploration boreholes which will not be used during production to be sealed with cement once exploration work has been completed.	Capping of boreholes in line with sustainable management principles	For duration of prospecting activities on site

e) Impact Management Outcomes

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

ACTIVITY **(whether listed or not listed). (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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	Vegetation	Operational	Control through limiting area	Rehabilitate impacted area to be in line with current land use
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and storm water run-off can lead to the loss of topsoil	Soils	Operational	Control through storing of topsoil and protecting topsoil stockpiles	Impact avoided through storage of topsoil

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	Topography	Operational	Remedy through concurrent rehabilitation of drill sites & test pits	Rehabilitate impacted area to be in line with current land use
Vegetation clearance for establishment of drill sites	Impact on current land use	Land Use & Land Capability	Operational	Control via communication with land owner	Minimise disturbance to and alternation of current land use practices
Vegetation clearance, Site establishment, Drilling activities & movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	Cultural Heritage	Operational	Stop through identification of sites and protecting	Avoid impact - identify as no go area
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas (small hill)	Sensitive Biodiversity Areas	Operational	Stop through identification of areas and buffering of small hill (50 m)	Impact avoided

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Vegetation clearance for establishment of drill sites	Dust pollution	Air Quality	Operational	Control through dust suppression	Dust suppression to ensure dust fall out is below thresholds stipulated in Dust Control Regulations
Vegetation clearance for establishment of drill sites	Storm water run-off from cleared areas could lead to siltation of surface water	Surface Water	Operational	Control through implementation of sediment and erosion controls	Rehabilitate impacted area to be in line with current land use
Vegetation clearance for establishment of drill sites	Disturbance of farming / tourism activities	Social and Economic Environment	Operational	Control via communication with land owner	Minimise disturbance of current activities on area
Workers & material on site	Contamination of soils through spills	Soils	Operational	Control through placement of facility and regular	Impact to be controlled to avoid

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	from sanitation facilities & litter			maintenance. Collection of waste	contamination of soil
Workers & material on site	Poaching	Fauna	Operational	Control through supervision and operational hours on site	No loss of cattle and/ or wildlife
Workers & material on site	Fire	Social and Economic & Ecology Environment	Operational	Avoid through Code of Conduct & Control through Fire Breaks	No fires
Workers & material on site	Collection of fire wood, damage to property	Vegetation	Operational	Control through supervision and operational hours on site	No complaints from land owners, no collection of fire wood
Workers & material on site	Contribution to the economy through employment	Social and Economic Environment	Operational	Employment of local people and businesses where possible	Creation of employment opportunities

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Workers & material on site	Spread of HIV/Aids to farm workers and local community	Social and Economic Environment	Operational	Control through awareness	Impact to be avoided
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	Fossil fuels	Operational	Control through maintenance	Well maintained equipment & vehicles (annually)
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	Soils	Operational	Avoid through engineering controls. Remedy through clean-up	No hydrocarbon spillages
Use of heavy machinery & vehicles on site for drilling	Use of groundwater	Groundwater	Operational	Control through use of existing	Avoid wastage of groundwater.

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	for drilling activities			water supply. Avoid through sourcing of water from commercial supplier	Legal use of groundwater
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	Surface Water	Operational	Avoid through buffer of 60 m	Impact avoided
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from	Groundwater	Operational	Avoidance through engineering controls and clean-up	No groundwater contamination

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	machinery & equipment				
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	Soils	Operational	Avoid through limiting area. Remedy through concurrent rehabilitation	Limit areas of compaction. Rehabilitate impacted area to be in line with current land use
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	Vegetation	Operational	Avoid through limiting area. Remedy through concurrent rehabilitation	Limit areas. Rehabilitate impacted area to be in line with current land use
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	Air Quality	Operational	Control through maintenance	Well maintained equipment & vehicles (annually)
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	Air Quality	Operational	Control through speed limit & dust suppression	Dust suppression to ensure dust fall out is below

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
					thresholds stipulated in Dust Control Regulations
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	Social and Economic Environment	Operational	Control through speed limit & operational times	Ambient noise levels to be below thresholds stipulated in SANS 10103:2008 for sub-urban sound environment-
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	Social and Economic Environment	Operational	Control through limiting amount of drill rigs on property	No complaints from land owners.
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	Fauna	Operational	Remedy through concurrent rehabilitation of drill sites & test pits	Rehabilitate impacted area to be in line with current land use

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	Air Quality	Operational	Control through capping of boreholes	Capping of all boreholes that releases methane gas
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	Groundwater	Operational	Control through monitoring	Recording of depth of water strikes and static groundwater level
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	Vegetation	Operational	Avoid through cleaning of machinery	No proliferation of invasive plant species
Closure					
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve	Land Use & Land Capability	Closure	Remedy through concurrent rehabilitation of drill sites & test pits	Rehabilitate impacted area to be in line with current land use

ACTIVITY **(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, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g.•Modify through alternative method. •Control through noise control, control through management and monitoring remedy through rehabilitation.**	**STANDARDTOBE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	drainage and control erosion				
Concurrent rehabilitation	Use stockpiled top soil to close sumps	Soils	Closure		Rehabilitate impacted area to be in line with current land use
Close drill hole	Restoration of land use and land capability	Land Use & Land Capability	Closure	Control through capping of boreholes	Capping of all boreholes that releases methane gas

f) Impact Management Actions

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

ACTIVITY **Whether listed or not listed.** **(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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	Control through limiting area	During drill site establishment	Concurrent rehabilitation in line with sustainable development practices
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and storm water run-off can lead to the loss of topsoil	Control through storing of topsoil and protecting topsoil stockpiles	During drill site establishment & drill operations	Storage of topsoil in line with Regulation 70 of GN 527 (2004)
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	Remedy through concurrent rehabilitation of drill sites & test pits	During drilling operations	Number of boreholes stipulated in Prospecting Work Programme

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Vegetation clearance for establishment of drill sites	Impact on current land use	Control via communication with land owner	Prior to drill site establishment	Concurrent rehabilitation in line with sustainable development practices
Vegetation clearance, Site establishment, Drilling activities & movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	Stop through identification of sites and protecting	Prior to drill site establishment	Avoidance in line with National Heritage Resources Act (No. 25 of 1999)
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas	Stop through identification of areas	Prior to drill site establishment	Avoidance in line with National Biodiversity Act (10 of 2004)

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Vegetation clearance for establishment of drill sites	Dust pollution	Control through dust suppression	During drill site establishment & drilling operations	National Dust Control Regulations GN 827 (2013)
Vegetation clearance for establishment of drill sites	Storm water run-off from cleared areas could lead to siltation of surface water	Control through implementation of sediment and erosion controls	During drill site establishment & drilling operations	Implementation of sediment controls in line with GN 704 and National Water Act (36 of 1998)
Vegetation clearance for establishment of drill sites	Disturbance of farming / tourism activities	Control via communication with land owner	During to drill site establishment & drilling operations	Concurrent rehabilitation in line with sustainable development practices
Workers & material on site	Contamination of soils through spills from sanitation facilities & litter	Control through placement of facility and	For duration of prospecting activities on site	Maintenance and replacement of chemical toilets in line with

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
		regular maintenance. Collection of waste		Regulation 71 of GN 527 (2004). Waste collection and disposal in line with Regulation 69 of GN 527 of 2004 and with National Environmental Management: Waste Act (59 of 2008)
Workers & material on site	Poaching	Control through supervision and operational hours on site	For duration of prospecting activities on site	No poaching in line with Animals Protection Act (No. 71 of 1962)

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Workers & material on site	Fire	Avoid through Code of Conduct & Control through Fire Breaks	For duration of prospecting activities on site	Fire prevention in line with Regulation 65 of GN 527 (2004) and with National Veld and Forest Fire Act
Workers & material on site	Collection of fire wood, damage to property	Control through supervision and operational hours on site	For duration of prospecting activities on site	Conditions stipulated in Access Agreement
Workers & material on site	Contribution to the economy through employment	Employment of local people and businesses where possible	For duration of prospecting activities on site	Contractual agreements between the service provider and the applicant
Workers & material on site	Spread of HIV/Aids to farm workers and local community	Control through awareness	For duration of prospecting activities on site	National Strategic Plan on HIV, STIs and TB 2012-2016

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	Control through maintenance	For duration of prospecting activities on site	Maintenance of vehicles and equipment in line with responsible environmental management practice
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	Avoid through engineering controls. Remedy through clean-up	For duration of prospecting activities on site	Prevention of soil pollution in line with Regulation 70 of GN 527 (2004)
Use of heavy machinery & vehicles on site for drilling	Use of groundwater for drilling activities	Control through use of existing water supply. Avoid through sourcing of water from commercial supplier	For duration of prospecting activities on site	Responsible use of groundwater resources in line with Regulation 68 of GN 527 (2004) and with

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
				the National Water Act (36 of 1998)
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	Avoid through buffer of 100m	Prior to establishing drill sites in southern section	Buffer of 60 m greater than 32 m stipulated in NEMA 2014 EIA Regulations
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	Avoidance through engineering controls and clean-up	For duration of prospecting activities on site	Prevention of groundwater pollution in line with National Water Act (36 of 1998)

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	Avoid through limiting area. Remedy through concurrent rehabilitation	Concurrently on completion of drilling activities at drill site	Concurrent rehabilitation in line with sustainable development practices
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	Avoid through limiting area. Remedy through concurrent rehabilitation	Concurrently on completion of drilling activities at drill site	Concurrent rehabilitation in line with sustainable development practices
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	Control through maintenance	For duration of prospecting activities on site	Maintenance of vehicles and equipment in line with responsible environmental management practice

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	Control through speed limit & dust suppression	During drill site establishment & drilling operations	National Dust Control Regulations GN 827 (2013)
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	Control through speed limit & operational times	For duration of prospecting activities on site	Noise Standards - SANS 10103:2008
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	Control through limiting amount of drill rigs on property	For duration of prospecting activities on site	
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	Remedy through concurrent rehabilitation of drill sites & test pits	During drilling operations	Number of boreholes stipulated in Prospecting Work Programme

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	Control through capping of boreholes	For duration of prospecting activities on site	Capping of boreholes in line with sustainable management principles
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	Control through monitoring	For duration of prospecting activities on site	Responsible use of groundwater resources in line with Regulation 68 of GN 527 (2004) and with the National Water Act (36 of 1998)
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	Avoid through cleaning of machinery	For duration of prospecting activities on site	Prevention of proliferation of invasive plant species in line with National Environmental

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
				Management Biodiversity Act (10 of 2004)
Closure				
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	Remedy through concurrent rehabilitation of drill sites & test pits	During drilling operations after site has been rehabilitated	Concurrent rehabilitation in line with sustainable development practices
Concurrent rehabilitation	Use stockpiled top soil to close sumps		During drilling operations after site has been rehabilitated	Concurrent rehabilitation in line with sustainable development practices

ACTIVITY **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, stormwater control, berms, roads, pipelines, powerlines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, ground water contamination, air pollution etc.…)**	**MITIGATIONTYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc.)** **E.g.• Modify through alternative method.** **•Control through noise control** **•Control through management and monitoring** **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: - Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case maybe.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Close drill hole	Restoration of land use and land capability	Control through capping of boreholes	For duration of prospecting activities on site	Capping of boreholes in line with sustainable management principles

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The following closure objectives will be applicable for concurrent rehabilitation:

- Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use e.g. cattle grazing.
- The final land use will be similar to surrounding land-use i.e. cattle grazing
- There will be no adverse environmental effect outside the small disturbed areas (0.15 ha for boreholes and 250m^2 for access roads) and the affected area will be shaped to ensure effective drainage.

The closure objectives are to minimise disturbance wherever possible so that normal land use can continue after closure.

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

The closure objectives as outline above will be made available to all land owners I&APs during the period for comment on the Draft BAR.

(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.

After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original state by carrying out the following:

- Removing all infrastructures, including the drill rig, the temporary office, the mobile diesel tank, the mobile water tank and the chemical toilet.
- Capping the boreholes as per legal requirements.
- Ensure that no foreign matter is left behind on the drill site.
- Refilling the sump required for the drilling activities. Initially the plastic lining will be removed and disposed of in a registered landfill site and the soil returned to in order to rehabilitate the area.
- The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site.

- Any area compacted as a result of the drill rig will be ripped and any ruts created by accessing or leaving the site for the drilling activity will be filled in to ensure that no future erosion shall occur on site.
- Applicable landowner will be requested to inspect the rehabilitated area.

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

The closure objectives are to return the land disturbed by drilling activities back to its original condition. The rehabilitation plan above provides the detail on how this will be achieved. Through experience, we can confirm that effective rehabilitation of drill sites is possible and achievable with the rehabilitation plan set out above.

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

As per Part A, Section (s) (i) of this report.

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

Lethabo Supermarket confirms both its capacity and willingness to make the financial provision required should the prospecting right be granted.

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
Vegetation clearance for establishment of drill sites	Removal of / damage to natural vegetation	Visual checks that no more than 0.01 ha vegetation is removed per drill hole	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Vegetation clearance for establishment of drill sites	The stripping of soil, incorrect stockpiling, erosion and storm water run-off can lead to the loss of topsoil	Ensure removal of 250 mm topsoil and storage thereof. Visual checks to ensure topsoil stockpile is protected from being blown away or being eroded.	Site supervisor	Annual Performance Assessment & Reporting
Vegetation clearance for establishment of drill sites	Changes to the shape or form of the land	Drill equipment - 60mm - 75.7 mm drill rigs.	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Vegetation clearance for establishment of drill sites	Impact on current land use	Communication with land owner. Access agreement conditions	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate

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
Vegetation clearance, Site establishment, Drilling activities & movement of people and equipment on site	Destruction of cultural heritage sites and artefacts	Communication with land occupiers and land owners to identify sites of cultural importance. Identification of such sites as no-go areas	Site supervisor	Annual Performance Assessment & Reporting
Vegetation clearance for establishment of drill site	Damage to sensitive biodiversity areas (riparian areas)	Avoid drilling activities in sensitive areas (Riparian areas)	Site supervisor	Annual Performance Assessment & Reporting
Vegetation clearance for establishment of drill sites	Dust pollution	Dust suppression - dry season	Site supervisor	Annual Performance Assessment & Reporting
Vegetation clearance for establishment of drill sites	Storm water run-off from cleared areas could lead to siltation of surface water	Establishment of sediment controls at drill site and access routes	Site supervisor	Annual Performance Assessment & Reporting
Vegetation clearance for establishment of drill sites	Disturbance of farming / tourism activities	Communication with land owner. Access agreement conditions	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Workers & material on site	Contamination of soils through spills from sanitation facilities & litter	Regular maintenance of chemical toilets. Replacement if required.	Site supervisor	Annual Performance Assessment & Reporting

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
		Collection and disposal of waste		
Workers & material on site	Poaching	Daily attendance checks and register	Site supervisor	Annual Performance Assessment & Reporting
Workers & material on site	Fire	Visual checks to ensure fire breaks is in place and Code of Conduct is adhered to	Site supervisor	Annual Performance Assessment & Reporting
Workers & material on site	Collection of fire wood, damage to property	Complaints register & daily attendance register	Site supervisor	Annual Performance Assessment & Reporting
Workers & material on site	Contribution to the economy through employment	Contractual agreement	Site supervisor	Invoicing Annual Performance Assessment & Reporting
Workers & material on site	Spread of HIV/Aids to farm workers and local community	Toolbox talks	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Resource consumption (diesel - non-renewable resource)	Maintenance records	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Contamination of soils through hydrocarbon leaks and spills from machinery & equipment	Visual checks at storage areas. Material Safety Data Sheets	Site supervisor	Annual Performance Assessment & Reporting

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
Use of heavy machinery & vehicles on site for drilling	Use of groundwater for drilling activities	Specification of drill rig. General Authorisation / WUL	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Contamination of surface water through hydrocarbon leaks and spills from machinery & equipment	Visual checks that drill holes are located 100 m from river & streams. Drill grid coordinates	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	Drip trays, PVC Liners. Material Safety Data Sheets	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Compaction of soils through movement of heavy vehicles and machinery on site	Determination of access routes (drill grid). Rehabilitation of drill sites & access routes	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Use of heavy machinery & vehicles on site for drilling	Damage to vegetation	Determination of access routes (drill grid). Rehabilitation of drill sites & access routes	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate

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
Use of heavy machinery & vehicles on site for drilling	Release of gaseous emissions	Maintenance records	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Dust Fallout	Dust suppression - dry season	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Increase in ambient noise levels	Complaints register	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Visual intrusion	Prospecting Work Programme	Site supervisor	Annual Performance Assessment & Reporting
Use of heavy machinery & vehicles on site for drilling	Disturbance of fauna species in the vicinity	Drill equipment - 60mm - 75.7 mm drill rigs.	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Use of heavy machinery & vehicles on site for drilling	Release of methane gas from exploration boreholes	Visual checks to ensure capping of boreholes	Site supervisor	Annual Performance Assessment & Reporting Closure Application
Use of heavy machinery & vehicles on site for drilling	Cross-contamination of aquifers due to borehole construction	Monitoring records	Site supervisor	Annual Performance Assessment & Reporting Closure Application

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
Use of heavy machinery & vehicles on site for drilling	Proliferation of invasive plant species	Works Instruction	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Closure				
Concurrent rehabilitation	Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	Visual checks to determine level of rehabilitation	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Concurrent rehabilitation	Use stockpiled top soil to close sumps	Visual checks to determine level of rehabilitation	Site supervisor	Annual Performance Assessment & Reporting Application for Closure Certificate
Close drill hole	Restoration of land use and land capability	Visual checks to ensure capping of boreholes	Site supervisor	Annual Performance Assessment & Reporting Closure Application

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

A performance assessment on this EMP will be conducted every second year by an external independent auditor and the results of the audit will be provided to the regional manager.

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.

All employees will be required to undergo site induction. Additionally, daily tool box talks will be held each morning before the activities for the day are commenced.

The Site Induction training will focus on the following:

- Discussion of environmental impacts identified
- Waste management–The removal of all waste from site to prevent litter
- Water usage–Conservation of water, correlation between water & erosion.
- Driving protocol–Pre-start vehicle checks prior to driving, adhering to speed limits on dirt roads.
- Environmental mitigation–Example no collection of wood, no open fires, no snaring of animals, no unnecessary destruction of vulnerable natural vegetation, clean-up of hydrocarbon spills, etc.
- Emergency procedure–Type of emergencies, type of alarms, emergency equipment, location of assembly point and identification of emergency wardens.

During the daily tool box talks the following will be discussed:

- Any environmental or health and safety incidents that may have occurred the previous day
- Status of housekeeping on site
- Adhoc refresher in terms of emergency procedures

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

Before commencement of the prospecting activities all employees and contractors who are involved with such activities should attend relevant induction and training. It is standard practice for employees and the employees of contractors that will be working on a new project

or at a new site to attend an induction course where the nature and characteristics of the project and the site are explained.

The training course should include key information abstracted from the EMPR pertaining to the potential environmental impacts, the mitigation measures that will be applied, the monitoring activities that will be undertaken and the roles and responsibilities of contractors' and Lethabo Supermarket personnel. The full EMPR document is also made available to attendees.

n) Specific information required by the Competent Authority

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

- Prospecting Work Programme
- The Financial Provision reviewed on an annual basis
- Performance assessment
- External Audits

2) UNDERTAKING

The EAP here with confirms

a. the correctness of the information provided in the reports
b. the inclusion of comments and inputs from stakeholders and I&APs;
c. the inclusion of inputs and recommendations from the specialist reports where relevant; 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.

(Draft electronic copy)

Signature of the environmental assessment practitioner:

Name of company:

Green Vision Consulting CC

Date:24/ 03/2017