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**AMENDED FINAL BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT
FOR THE PROPOSED PROSPECTING OF VARIOUS MINERALS IN FARM TAUNG 894 HN UNDER GREATER
TAUNG LOCAL MUNICIPALITY WITHIN THE JURISDICTION OF DR RUTH SEGOMOTSI MOMPATI IN NORTH WEST
PROVINCE**

PREPARED BY: TSHIKOVHA ENVIRONMENTAL AND COMMUNICATION CONSULTING

APPLICANT: BATLAPING BA GA PHUDUHUCWANA COMMUNITY

SAMRAD FILE REFERENCE NUMBER: NW 30/5/1/1/2/11836 PR

NW 30/5/1/1/2/11836 EM

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT
And
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	BATLAPING BA GA PHUDUHUCWANA COMMUNITY
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FILE REFERENCE NUMBER SAMRAD:	NW 30/5/1/1/2/11836 EM

1. IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner: Bonita Mtengwa
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ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence) (Refer to **Appendix 1**)

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

(In carrying out the Environmental Impact Assessment Procedure)

Bonita has nine years' experience in the Environmental Management field with her focus areas being in Environmental Management, Environmental Auditing, Environmental Impact Assessment (EIA), Environmental Sustainability, Project Management and Stakeholder Liason. She has been fully engaged in the above in the capacity of Senior Environmental Assessment Practitioner/Project Manager for the past four years. She has also held the position of Environmental Manager for the past three years, which she currently holds.

She has conducted EIA studies in various sectors including road infrastructure, electricity generation and distribution infrastructure, bulk water supply, municipal infrastructure, solar energy generation and distribution, water use licence applications, mining right/permit applications including deep sea mining activities, waste management licence applications, private developments, and residential developments including low cost housing in various provinces throughout South Africa. She has also undertaken Environmental Control Officer duties for roads infrastructure projects.

b) Location of the overall Activity

Farm Name:	Taung 894 HN
Application area (Ha)	132933.67 ha
Magisterial district:	Dr Ruth Segomotsi Mompoti

Distance and direction from nearest town	48 km south of Vryburg
21 digit Surveyor General Code for each farm portion	TOHN00000000089400000

The application covers the whole farm of Taung 894HN, the area where there are heritage sites and the villages will be avoided and marked as No-Go areas Prospecting activities will not be undertaken within 100m of any built up infrastructure and will not be undertaken within 200m of any heritage sites.

c) Locality map

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

The Map has been attached as **Appendix 2**

d) Description of the scope of the proposed overall activity

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

i) Listed and specified activities

NAME OF ACTIVITY <i>(E.g. For prospecting - drill site, site camp, ablation facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</i> <i>E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablation, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</i>	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE
Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Potroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, stuctures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No.28 of 2002)	132933.67 ha	X	R 983
Site Camp Establishment	1 ha		
Clearing of access roads	Less than 1 ha		
Sample Storage Facility	0.3 ha		
Fuel and Chemical Storage	Less than 30 M ³		

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 commodities to be explored for are:

- Coal
- Natural Gas
- Diamond
- Gold
- Oil
- Rare earth minerals
- Shale/slate
- Zinc &
- Uranium

The prospecting method for these minerals may be the same; where different methods may be required an explanation for such methods will be provided. The prospecting activities are expected to be concluded in a 5 years period and have been divided into 6 phases:

PHASE 1: Planning

Desktop Study –Geological maps, reports, these and other technical data relevant to the area will be gathered as part of the literature survey as well as lists of previous title holders, existing well logs, seam analysis and production histories. Base maps will be used for correctly plotting of borehole locations, fault lines, igneous intrusions. From the desktop study sensitive areas to be avoided will be identified. All possible geological reports and data, including aerial and satellite photographs, maps whether topographical, base maps, legislative boundary maps etc. will be obtained.

Site and water Access – The project manager will engage with the plot and the adjacent land owners for site access. There will be no need to construct new access road. There will be water requirements and as such the project manager should identify means of sourcing the water. There is a running Kolong River on site; however, water should not be sourced from the stream without preapproval by the authorities.

Site Camp – Location for the site camp should be identified avoiding sensitive areas and away from the drainage lines. The site camp should be big enough for storage of site equipment. The site camp must be demarcated and secured.

PHASE 2: FIELD MAPPING

Geological field mapping is the process of selecting an area of interest and identifying all the geological aspects of that area with the purpose of preparing a detailed geological report which must include a map. During this phase the following parameters will be observed in order to produce a geological presentation of the proposed site:

- The geology itself – thus identifying the rock types at the site.
- Geological landforms – this includes features such as mountains/hills, calderas craters, canyons and valleys.
- Geological landforms – These includes Faults and Fractures which indicates the movement within the earth's crust
- Geothermal Manifestations – The presence of hot springs, fumaroles, altered or hot ground, geysers, steam or/and sulphur deposition must be mapped and their extent measured.

Tools required:

Maps, Aerial photographs and stereoscope, Compass/Clinometer, GPS(Geographic Positioning System), Geological hammer, Hand held lens, Sample bags, Field notebook, masking tape, marker pens and Field camera.

PHASE 3: GEOPHYSICAL SURVEY

Exploration geophysics is an applied branch of geophysics, which uses physical methods (such as seismic, gravitational, magnetic, electrical and electromagnetic) at the surface of the Earth to measure the physical properties of the subsurface, along with the anomalies in those properties.

- **REMOTE SENSING** – The use of aerial photographs to locate and map surface features. Even though the photographs are taken from several hundred miles up in space, they are able to show features only a few feet in size. And satellite imagery not only indicates what the human eye can see, but they can also reveal subtle variations in soil moisture, mineral and vegetation distribution, and soil type, all of which are important pieces to the exploration puzzle. Once an area is selected and the satellite imagery obtained, the exploration geologist utilizes mapping techniques to produce a geologic map (a map that indicates geological structures by using conventional symbols) for the area. The series of lines and arrows indicate the type of structure that exists at the surface. This method is suitable for prospecting of all proposed minerals.
- **SEISMOLOGY** – Involves artificially creating seismic waves, the reflection of which are then picked up by sensitive pieces of equipment called 'geophones' that are embedded in the ground. The data picked up by these geophones is then transmitted to a seismic recording truck, which records the data for further interpretation by geophysicists and petroleum reservoir engineers. The drawing shows the basic components of a seismic crew. The source of seismic waves (in this case an underground explosion)

creates that reflect off the different layers of the Earth, to be picked up by geophones on the surface and relayed to a seismic recording truck to be interpreted and logged. In addition to using seismology to gather data concerning the composition of the Earth's crust, the magnetic properties of underground formations can be measured to generate geological and geophysical data. This is accomplished through the use of magnetometers, which are devices that can measure the small differences in the Earth's magnetic field. This method can mainly be used for **natural gas** and **oil** exploration.

- **GRAVITY METHOD** – Gravity measurements define anomalous density within the Earth; in most cases, ground-based gravimeters are used to precisely measure variations in the gravity field at different points. Gravity anomalies are computed by subtracting a regional field from the measured field, which result in gravitational anomalies that correlate with source body density variations. Positive gravity anomalies are associated with shallow high density bodies, whereas gravity lows are associated with shallow low density bodies. Thus, deposits of high-density chromite, hematite, and barite yield gravity highs, whereas deposits of low-density halite, weathered kimberlite, and diatomaceous earth yield gravity lows. The gravity method also enables a prediction of the total anomalous mass (ore tonnage) responsible for an anomaly. **This method is applicable for exploring all minerals applied for including natural gas and oil.**
- **MAGNETIC METHOD** – The magnetic method exploits small variations in magnetic mineralogy (magnetic iron and iron-titanium oxide minerals, including magnetite, titanomagnetite, titanomaghemite, and titanohematite, and some iron sulfide minerals, including pyrrhotite and greigite) among rocks. Measurements are made using fluxgate, proton-precession, Overhauser, and optical absorption magnetometers. Magnetic anomalies may be related to primary igneous or sedimentary processes that establish the magnetic mineralogy, or they may be related to secondary alteration that either introduces or removes magnetic minerals. Magnetic exploration may directly detect some iron ore deposits (magnetite or banded iron formation), and magnetic methods often are an useful for deducing subsurface lithology and structure that may indirectly aid identification of mineralized rock, patterns of effluent flow, and extent of permissive terranes and (or) favorable tracts for deposits beneath surficial cover. **This method can be used for mapping of all the minerals applied for including natural gas and oil.**

PHASE 4: SOIL SAMPLING, PRELIMINARY DRILLING AND ASSAYING

The drilling points will be determined based on the results of the geophysical surveys. The drill wells for natural gas and oil will be located away from other minerals exploration areas.

- **Exploratory wells for oil and Natural gas**

Following the analysis of geological data and geophysical surveys, exploratory wells are drilled, either on land or offshore. Exploratory wells which are drilled in areas where neither oil nor gas has been previously found are called "wildcats." Those wells which strike oil or gas are called "discovery wells." A well which does not

find any oil or gas, or finds too little to produce economically, is called a “dry hole”. The samples obtained from these wells will then be analysed to determine the quality of the reserve.

Rotary drilling is the most common method and is used to drill both exploratory and production wells at depths over 5 miles (7,000 m). Lightweight drills, mounted on trucks, are used to drill low-depth seismic wells on land. Medium and heavy rotary mobile and floating drills are used for drilling exploration and production wells. Rotary drilling equipment is mounted on a drilling platform with a 30- to 40-m-high derrick, and includes a rotary table, engine, mud mixer and injector pump, a wire-line drum hoist or winch, and many sections of pipe, each approximately 27 m long. The rotary table turns a square kelly connected to the drilling pipe. The square kelly has a mud swivel on the top which is connected to blowout preventors. The drill pipe rotates at a speed of from 40 to 250 rpm, turning either a drill which has drag bits with fixed chisel-like cutting edges or a drill whose bit has rolling cutters with hardened teeth.

- **Ore exploration drill holes**

These are holes that will be drilled where the geological mapping has located subsurface structures that are mineralised. The drill holes will be to confirm that indeed there are ore bodies at such points. The method of drilling are described below:

Drilling Methods

Air Drilling method for shallow surfaces – These methods usually involve a utility or small truck-mounted drill rig with an air compressor carried on-board or towed separately. This type of drilling creates rock fragments or ‘rock chips’. Compressed air is forced down the hole which lifts the rock chips to the surface. This type of drilling requires minimal site preparation and is usually completed in well under a day.

Diamond Drilling – Uses a truck-mounted rig with support vehicles to extract a continuous cylinder of rock. This method uses a rapidly rotating drill bit that uses water and drilling fluids, contained in either an in-ground sump or above ground tanks, to cool and lubricate the drill bit. As the drill rods advance, the cylinder of remaining rock gradually becomes enveloped by the drill rods. The core of rock is logged by a geologist and samples are sent for laboratory analysis. Ground up rock material is transported to the surface by the returning drilling fluids and is separated from the fluids, typically in drill sumps or small ponds. Above ground sumps may be used in sensitive environments. Diamond drilling is the most costly form of drilling and is capable of drilling holes many kilometres in depth. Each drill hole can take a number of days to complete and some programs drill over 24 hours a day if practical.

Drilling will be done in phases, over anomalous target areas. It is anticipated that at least 20 holes measuring 3m x 2m x 5m will be drilled in the first year. The drill holes will be sent to the laboratory for assay. It is further anticipated that no more than 100 boreholes will be drilled in total during the whole prospecting phase.

PHASE 5: DETAILED DRILLING AND ASSAYING

Detailed Exploratory Wells

Once the discovery wells has been established, other exploratory wells, known as “step-out” or “appraisal” wells, are drilled to determine the limits of a field following discovery, or to search for new oil- and gas-bearing formations next to, or beneath, those already known to contain product. The appraisal wells determine if the reserve can be mined at an economic value. The horizontal as well as the vertical extent of the reserve can then be determined.

Detailed Ore Exploration

The initial drill holes would have provided the much needed information to confirm the presence of the ore body. During the detailed phase ore exploration, drill holes that have yielded positive results will be supplemented by other drill holes to further confirm the lateral and vertical extent of the ore body. The new drill holes will determine the depth of burial of the ore body together with the dip and strike directions. The cores obtained from these activities will be sent to a lab for further analysis on the grade of the ore. The main aspects to be addressed by the detailed ore exploration are the following:

- ✓ The extent of the ore body
- ✓ The depth of burial
- ✓ The dipping and striking direction of the ore body
- ✓ The grade of the ore body
- ✓ The ore tonnage

PHASE 6: GEOLOGICAL MODELLING AND EVALUATION

Geo-modelling is the applied science of creating computerized representations of portions of the Earth's crust based on geophysical and geological observations made on and below the Earth surface. From the models evaluations of ore mining feasibility will be conducted. The feasibility of the mining is affected by the following aspects:

- ✓ The mineable grade of the ore
- ✓ The depth of burial of the ore
- ✓ The current market value of the ore
- ✓ The mineable size of the ore body
- ✓ Determine the ore reserve
- ✓ All in all it is the analysis of economic viability of the proven ore reserve.

Table 1: Resources Required

Equipment and/or Technology to be used	1 drill rig mounted on a 10 tonne truck or trailer 1 X 5000 Litres water tanker 2X (4X2) Bakkie
Materials required	Diesel
	Grease
	Hydraulic Oil
	One 50 kg Bag of cement/ Expansion foam per borehole
	Picks, shovels,
Storage Facility	Diesel, Grease and Oil
Spillage control	Dip trays
Sanitation Facility	Chemical toilets
Waste Management	Waste skip and Bins
Water	Water will be transported to site
Safety	Safety Boards

e) Policy and Legislative Context

Table 2: 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.
The South African Constitution The South African Constitution (Act 108 of 1996) constitutes the supreme law of the country and guarantee the right of all people in South Africa. Furthermore, the Bill of Rights (Chapter 2- Section 24 (a) (b) under the South African Constitution (Act 108 of 1996) emphasize that <i>“Everyone has the right (b) to have the environment protected, for the benefit of present and future generations, through reasonable</i>	Applied at potential impacts identification as well as mitigation measures and public participation	Rights of all personnel who are directly or indirectly involved in the project has been respected and their concerns attended to during public consultation
National Environmental Management Act The NEMA (Act No.107 of 1998) amended Dec 2014 is regarded as one of the important pieces of general environmental legislation as it provides a framework for environmental law reform. The main objective of this act is to ensure that ecosystem services and biodiversity are protected and maintained for sustainable development. Furthermore, Section 28 (1) of the NEMA requires that <i>“every person who causes has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring”</i> .	Impact assessment (best practices)	Mitigation measures and recommendations where provided according to best practice standards.
Mineral and Petroleum Resources Development Act	The prospecting activities requires a prospecting right from the DMR	An application for a prospecting right has been lodged with the DMR

<p>National Environmental Biodiversity Act</p> <p>The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No. 10 of 2004), provides for:</p> <ul style="list-style-type: none"> (i) the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; (ii) the protection of species and ecosystems that warrant national protection; (iii) the sustainable use of indigenous biological resources; (iv) the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; (v) the establishment and functions of a South African National Biodiversity Institute; 	<p>Impact Assessment</p>	<p>Impacts on the biodiversity have been identified and mitigation has been provided.</p>
<p>National Heritage Resources Act</p> <p>The National Heritage Resources Act (NHRA), 1999 (Act No. 25 of 1999) provides for the management of national heritage resources to set norms and maintain national standards for the management of heritage resources in South Africa, and to protect heritage resources of national significance, so that heritage resources may be bequeathed to future generations.</p> <p>Section 35(4) of the NHRA related to archaeology, palaeontology, and meteorites, and states that: no person may, without a permit:</p> <ul style="list-style-type: none"> (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite; (b) destroy, damage, excavate or remove from its original position, collect or own any archaeological material or paleontological material or object or meteorite; (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object; (d) Bring onto or use any equipment which assists in the detection or recovery of metals or archaeological and paleontological material or objects. 	<p>Impact Assessment</p>	<p>Any area or feature of Heritage importance will be managed.</p>

<p>National Water Act</p> <p>The NWA (Act No. 36 of 1998) objectively ensures that water or water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all people. Water use refers to all activities that have direct or indirect impact on the source, environment, quality, and quantity of water. Authorisation of water use for any designated activities above Schedule 1 of the NWA (Act No. 36 of 1998), is subjected Water Use Licence Application (WULA). The conditions of WULA are based in terms of Section 21 principles of the NWA (Act No. 36 of 1998):</p> <p>a) Taking water from a water resource; (b) Storing water;</p> <p>(c) Impeding or diverting the flow of water in a watercourse;</p> <p>(d) Engaging in a stream flow reduction activity contemplated in section 36;</p> <p>(e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);</p> <p>(f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;</p> <p>(g) Disposing of waste in a manner which may detrimentally impact on a water resource;</p> <p>(h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;</p>	<p>The proposed activities will use water, however it will not consume enough water to trigger water use license application.</p>	<p>The project manager will negotiate for water access and also engage relevant stakeholders.</p>
<p>Mine Health and Safety Act, 1996 (Act No. 29 of 1996)</p>	<p>Health and Safety Policy</p>	<p>Risk Impact Assessment conducted</p>

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).

It was the discovery of gold in the old Transvaal and, just a few years later, diamonds at Kimberley that suddenly put this far-flung land firmly on the world map. South Africa boomed – towns sprung up on the gold and diamond fields, immigrants and migrant labourers flooded in to find their fortune and ancillary businesses were established by entrepreneurs eager to capitalise on the opportunities presented to them. Within decades, the economy was transformed – from one based simply on agriculture and trade into a thriving economy based on the rich mineral reserves underground. Mining contributed directly to the establishment of the Johannesburg

Stock Exchange, the development of infrastructure, providing the catalyst for the development of other economic sectors and, in so doing, elevating the status of the South African local economy.

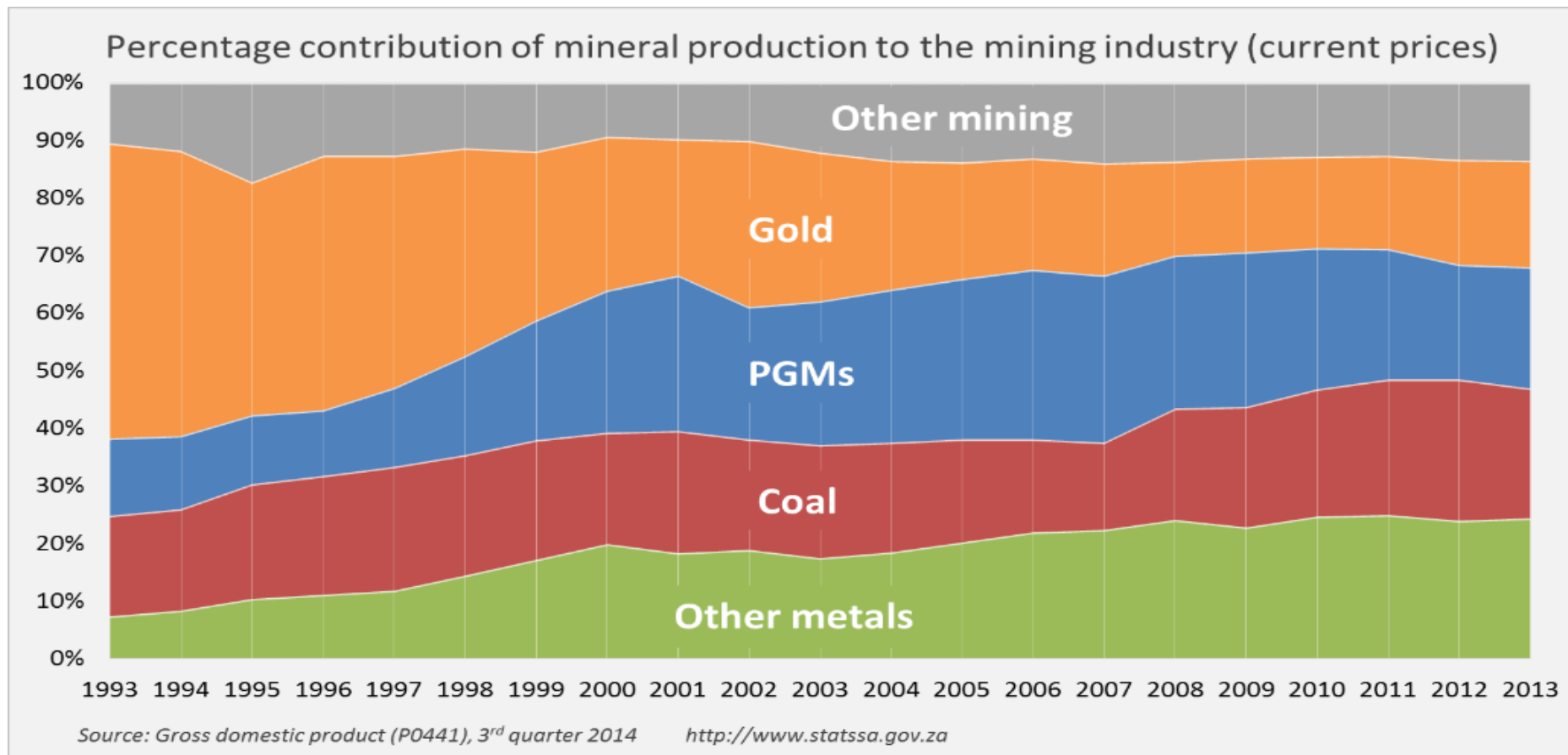


Figure 1: Commodity Comparison

REVENUE AND EXPENDITURE

South Africa's total mineral reserves are estimated at \$2.5 trillion, with the mining sector contributing 18% of GDP and over 50% in foreign exchange earnings. The sector brings in an annual income exceeding R330 billion and accounts for 20% of all investment in the country. All that revenue generated needs spending somewhere – of the R441 billion in expenditure which the mining industry generates, R407 billion is spent locally, further stimulating the economy. Mining also contributes significantly to the State Treasury – around R17 billion in corporate tax and R6 billion in royalties. Having helped found the JSE, today mining houses still provide around 30% of its market capitalisation. A successful prospecting of the reserves in Taung will further enhance the revenue of the country and mainly that of the North West Province which has an unemployment rate which is higher than the national.

EMPLOYMENT

The Mining Intelligence Database points out that, currently, the mining and related industries not only employ over one million people – spending R78 billion in wages and salaries – but is the largest contributor by value to Black Economic Empowerment (BEE). Importantly, mining provides job mining opportunities for unskilled and semi-skilled people. Although the prospecting activities will not require large number of employees, a successful prospecting project will eventually lead to the realisation of mining activities which will require a large number of both skilled and unskilled labour.

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

Preferred Site

- The site has a high potential as it is located in a mineralised zone of the Ventersdorp and Witwatersrand Groups.
- There has been no mining activities at or near the site since the abandonment of Buxton Limestone Quarry in 1924 when the Taung skull was discovered and as such, there are no major cumulative impacts that would affect the environment.
- The rate of unemployment in the area is high, successful prospecting would result in mining activities and as such large number of employees will be required.
- There has been illegal small scale mining activities for Diamond Commodity in the area, this confirms that the area has high potential for Diamond mineral. The site was also preferred to fight selling of commodities through the black market.

Activities

- Geophysical surveys – this were preferred to give an outline of the geological setting of the area. The activities will aid in locating the borehole points and areas to avoid.
- Camp site demarcation and fencing – the site was demarcated to prevent free movement of wild animals and also local people as this would increase risks to the environment.

Technology

- The core drilling will be conducted using diamond bits and water circulation. This was preferred because of its high precision and ability to cut through hard sequence. It also uses a triple tube core barrel which recovers the core in a split metal tube that allows it to be exposed for inspection with minimum disturbance.

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

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

No location alternative has been considered. The applicant has the right to the land and as such the prospecting activities can only be undertaken within the applicant's legal land. Based on the geological setting of the area, the site has a higher potential for ore reserves which has not been explored.

b) The type of activity to be undertaken;

It is mandatory that prior to mining activities can be undertaken, a prospecting be conducted so that investments can be made on a proven reserve. The prospecting activity provides the economic value of the ore bodies, oil and natural gas reserves in the underground and also provides the information on the required earth work for stripping the surface for exposure of the ore bodies. From prospecting activities estimation can be made of the total mining cost, ore tonnages, ore grade, and also the mine lifetime can be determined.

c) The design or layout of the activity;

The layout of the activity is determined by the location and extent of the ore bodies, which can be determined through surface surveys such as magnetic, gravity and seismic surveys. From the

conducted studies the location of the boreholes can then be determined. The surveys also determine the areas to be avoided, and also areas that have been intruded by ingenious formations.

d) The technology to be used in the activity;

The choice of technology is determined by the thickness and the hardness of the buried formations. The diamond drill bits were preferred because of their ability to drill and penetrate hard rocks.

e) The operational aspects of the activity

Water Supply – The employees will bring their own water to site, while operational water will be sourced outside the site. This is mainly to avoid extreme extraction and added pressure on the local water sources. There will be no need to apply for water use license as the water usage will be minimised to be below 50 000 litres a month. The Department of Water Affairs and Sanitation will be contacted to further advice on the water requirement.

Sanitation – The ablution facility will be provided onsite in the form of chemical toilets that will be emptied by a registered company. The choice was made to prevent the employees from using the forest as toilets which would have other impacts on the environment. The chemical toilets can be easily managed as compared to pit latrines that have a potential for ground water contamination.

Drilling activities – Drilling is the most appropriate way of obtaining representative samples of the subsurface geological settings. The samples are required in this project so as to analyse the mineral content of the subsurface rocks.

f) The option of not implementing the activity

- The mining sector forms the backbone of the South African economy, and in the North West Province the mining sector is the main contributor to the Provincial GDP and as such the option of not carrying out the prospecting activities would prevent future prospects of mining.
- The jobs that were to be created during prospecting phase will also be missed; these employment opportunities would reduce the economic burden on the government as people dependant on social grants would be reduced.
- Continuous illegal mining and prospecting of minerals in the area which could results in social conflicts between the miners and community members.
- The state of the natural environment will remain the same, amongst other things the following will be beneficial:
 - ✓ There will be no geological and soil disturbance which may lead to ground water contamination.
 - ✓ No excessive generation of wastes from the proposed activities

- ✓ No compaction of path ways affecting the Growth pattern of grasses and movement of micro animals
- ✓ The biodiversity will be not altered as there will be no removal of plants and induced noise from prospecting activities.

ii) Details of the Public Participation Process Followed

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

iii) Summary of issues raised by I&As

(Complete the table summarising comments and issues raised, and reaction to those responses)

Refer to Annexure H (Comments and Response Report) of Appendix 5: Consultation Report for a comprehensive summary.

Interested and Affected Parties		Date	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.
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Comments Received			
AFFECTED PARTIES					
Landowner/s	X		None thus far		
Lawful occupier/s of the land			None thus far		
Landowners or lawful occupiers on adjacent properties	X		None thus far		
Municipal councillor	X		None thus far		

Municipality	X		None thus far		
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	X				
Mr Motlhabane Mosiane (Coordinator : North West Provincial Heritage Resources Agency) (PHRA)		14/042016	PHRA has no objection to this project based on complying with all the necessary legislations and working closely with all the affected parties in this project.	This has been noted and will be adhered to.	Part B (Environmental Management Programme)
Communities	X				
Dept. Land Affairs	X				
Traditional Leaders	X				
Dept. Environmental Affairs	X				
Ms Portia Krisjan (Rural Environmental and Agriculture Development. Environmental Quality Management)	X	18/05/2016	The Basic Assessment Report must be compiled as outlined in Appendix 1 and Public Participation must be conducted as per Regulation 41(Chapter 6) of Regulation 983 of 2014 Regulations.	The Basic Assessment Report has been compiled as outlined in Appendix 1 of the EIA Regulations, 2014 and the Public Participation Process undertaken meets the requirements of Regulation 39-44(Chapter 6) of Regulation No. R 983 of the EIA Regulations, 2014.	The whole report and accompanying appendices.

			Farm portions on which prospecting activities will take place must be specified. The area specified in Farm Taung 894 HN and this area include villages around Taung, including the World Heritage site.	The farm is not sub divided into portions. Prospecting will not be undertaken in any of the villages or homesteads or within 100 m of any built up infrastructure. Furthermore, it was stated during the meeting that although the whole farm of Taung 894 HN would be prospected sensitive areas such as heritage sites, graveyards, Taung Dam and Buxton Limestone will not be prospected and will be demarcated as No-go areas.	The whole report and accompanying appendices.
			On page 24 is indicated that infrastructure on site include the old Buxton limestone quarry which has been declared World Heritage Site.	The World Heritage Site has been noted and is demarcated as a sensitive area with a buffer zone of 200m, as shown in the Sensitivity Map attached as Appendix 3. Therefore no prospecting activities will be allowed to be undertaken within the buffer zone area.	Part B (Environmental Management Programme)
			The proposed prospecting activities will have a detrimental impact on the Taung Skull World Heritage Site (TSWHS).	The World Heritage Site has been noted and is demarcated as a sensitive area with a buffer zone of 200m, as shown in the Sensitivity Map attached as Appendix 3. Therefore no prospecting activities will be allowed to be undertaken within the buffer zone area.	Section J (Impact Assessment) and Part B (Environmental Management Programme)
			On Page 3 and 21 is also indicated that Kolong River is running on site and Taung Dam on the North East of the farm Taung 894 HN, and is not	The Taung Dam, Kolong River and all associated drainage areas have been demarcated as No-Go Areas and a buffer zone applied around these water bodies therefore no prospecting activities will be	Section J (Impact Assessment) and Part B (Environmental Management Programme)

			specified how they will be impacted by the activities and how to mitigate.	undertaken in these areas. The Impact Assessment on these areas has been included in the BAR Section J (Table 6: Impact Assessment) and mitigation measures have also been included.	
			On page 53 of the report there is contradiction of what has been stated in Page 3, 21 and 24, therefore the report must be re-evaluated and compiled as required by Regulations.	The contradiction on page 53 of the Report stated as <i>“there is no perennial stream traversing the site that could create environmental concerns such as water contamination”</i> has been re-evaluated to reflect that though there are streams traversing the site these will be demarcated as No-Go areas and a buffer zone of at least 100m will be maintained around these.	Section U
			The applicant is responsible for compliance with the provisions for Duty of Care and remediation of Environmental damage contained in Section 28 of the National Environmental Management Act, 1998(Act 107 of 1998)	This has been noted and will be adhered to	Part B (Environmental Management Programme)
Other Competent Authorities affected	X				
<u>OTHER AFFECTED PARTIES</u>					

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).

Biophysical Environment

- **Topography**

The site is characterized by both rugged terrains and flat lying areas. The residential and business areas are located on the flat lying areas whereas the mountainous area has been used agricultural purpose mainly livestock farming.

- **Climate**

Taung normally receives about 318mm of rain per year, with most rainfall occurring mainly during summer. The chart below shows the average rainfall values for Taung per month. It receives the lowest rainfall (0mm) in June and the highest (65mm) in February. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Taung range from 18.7°C in June to 32.5°C in January. The region is the coldest during July when the mercury drops to 0.7°C on average during the night.

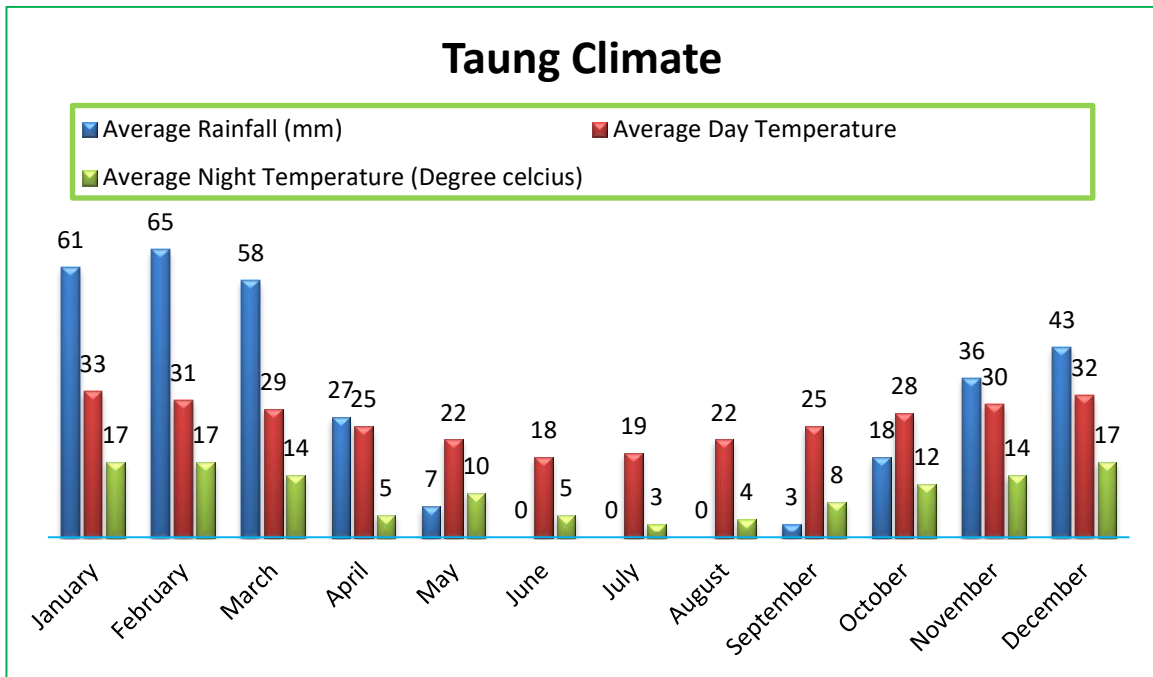


Figure 2: Climate Conditions

- **Surface Water**

The significance surface water flow is the Taung Dam which is on the northern east of the proposed Taung 894 HN Farm. There are 2 perennial streams with Kolong River which flows from the Taung Dam having a greater water volume.

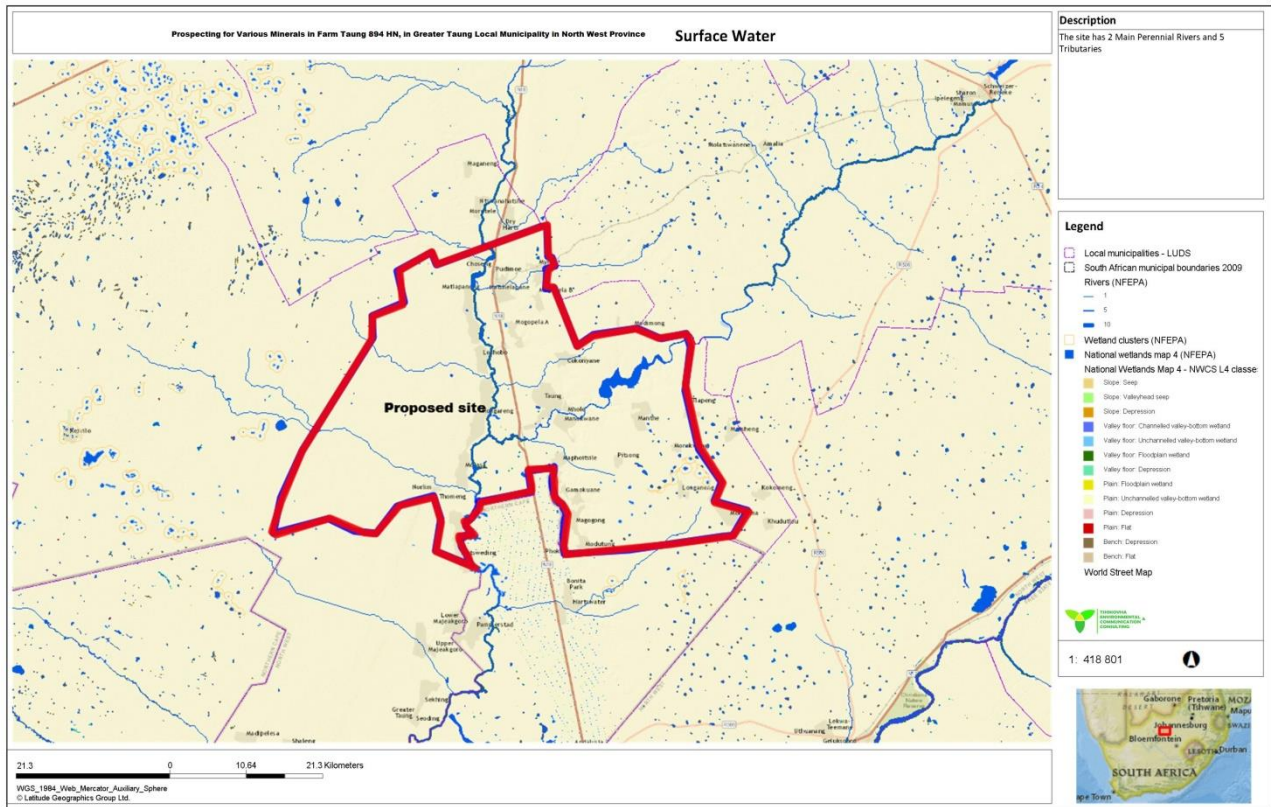


Figure 3: Surface Water Map

- **Geology and Soil**

The area is situated in the south of Ventersdorp Supergroup which provides a unique volcano-sedimentary supracrustal record and contains the largest and most widespread sequence of volcanic rocks on the Kaapvall Craton. The Ventersdorp unconformably overlies the Witwatersrand Supergroup and is in turn unconformably overlain by the Transvaal Supergroup. The Ventersdorp Supergroup comprises the Klipriviersberg Group at the base, followed by the Platberg Group, the sedimentary Bothaville Formation and the volcanic Allanridge Formation.

The site soils are mainly sandy with red to yellowish colour, and are well drained. The sandy soils are derived from the sedimentary rocks namely quartzite and sandstone that are dominant at the site.

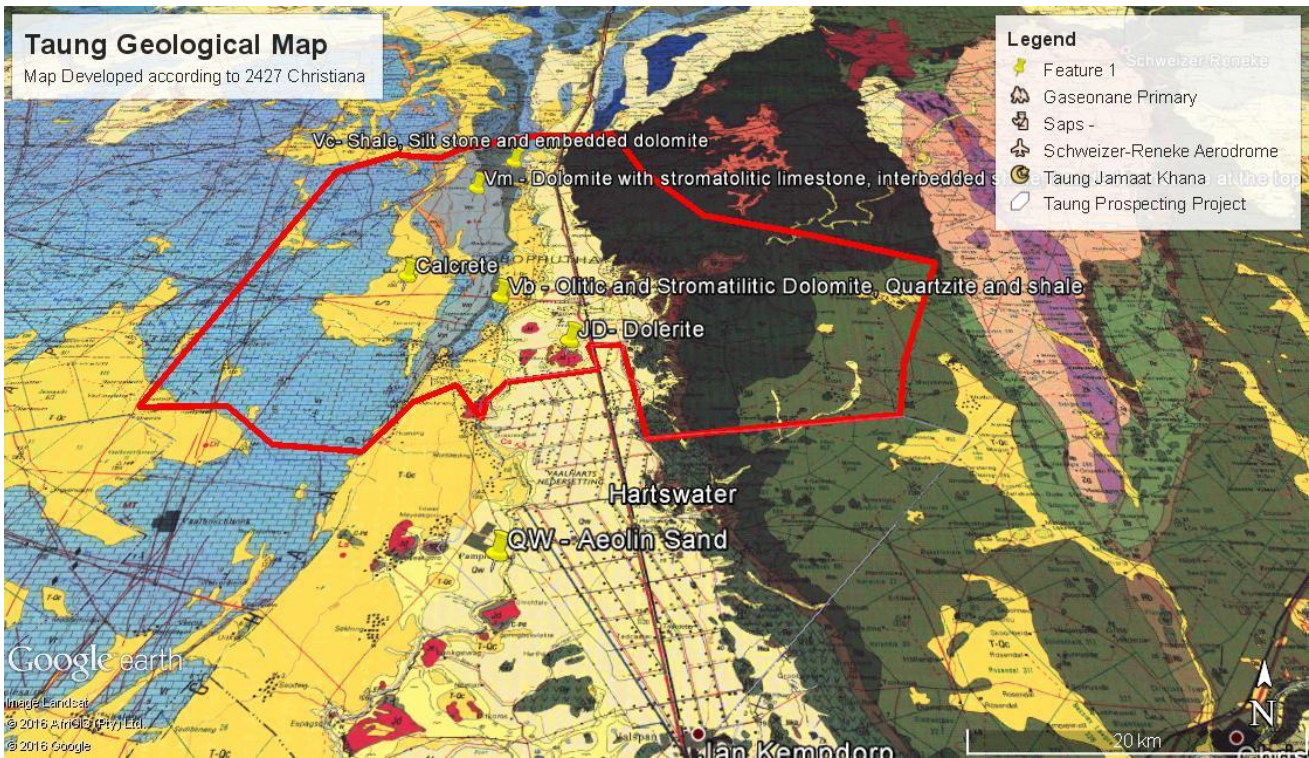


Figure 4: Geological Map

- **Biodiversity**

The large portions of the site are regarded as the Critical Biodiversity Area (Category 2) of the North West Province. From the provided biodiversity map below it is evident that prospecting activities should be conducted with extra care for the natural environment. The site is located within the Ghaap Plateau Vaalbosveld. Although the area is classified as CBA, there has been activities onsite that have altered the vegetation, including the need for human settlements and agricultural activities. There are now bare patches where the vegetation has been cleared. In the mountainous areas which are mainly used for livestock farming, the vegetation has been not cleared.

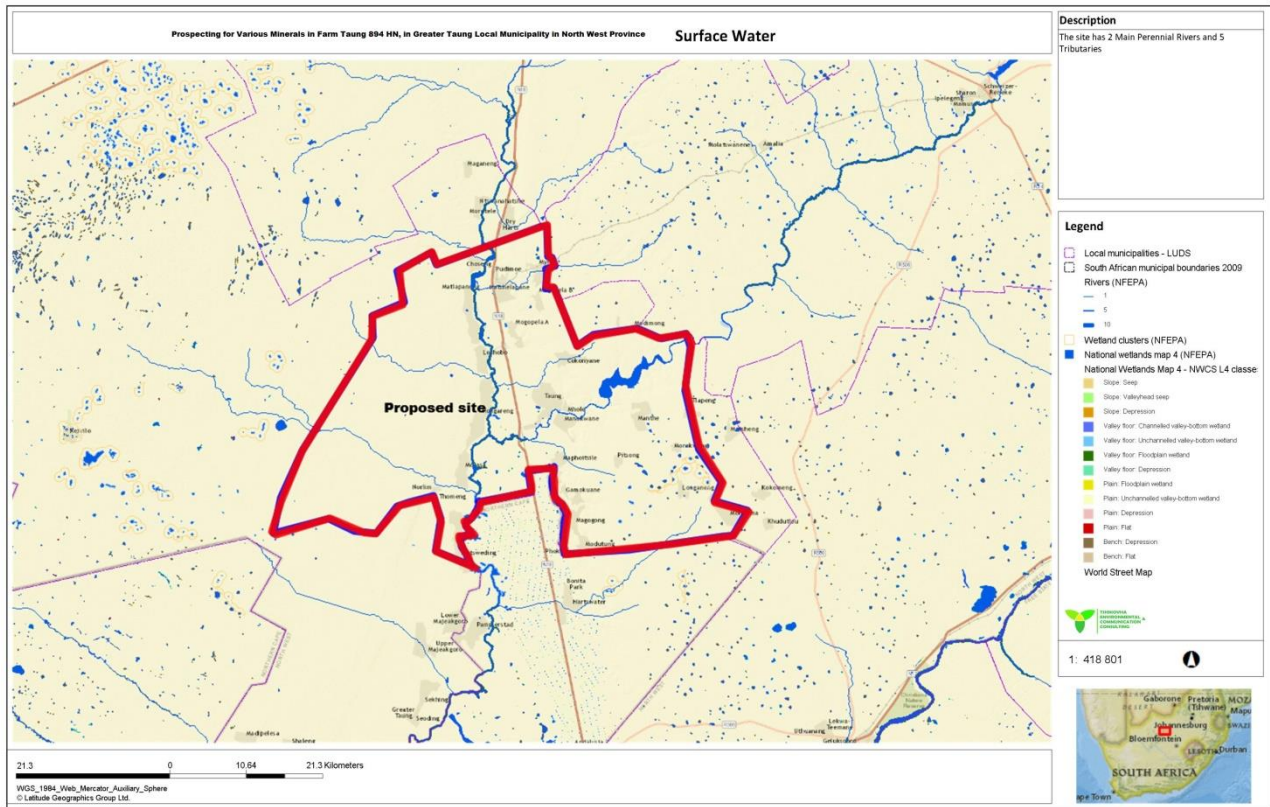


Figure 5: Biodiversity Map

- **Socio-Economic Environment**

- ✓ 48.3% of the population is not economically active and among those 50% are unemployed.
- ✓ 85% of the population have access to electricity and use it for lighting.
- ✓ The unemployment rate is at 50%
- ✓ The average household size is about four people per households, with 88% of the dwelling units/structures built from bricks/concrete blocks.
- ✓ The agricultural sector is the main job provider for the local community.

Cultural Environment

- ✓ The prospecting site covers a very wide area and as such 3 sites were identified during the site visit which was used as grave yards.
- ✓ Taung was made famous by the 1924 discovery of the child skull at the Buxton Limestone Quarry, and the mining site has been declared a World Heritage Site.

(a) Description of the current land uses.

- ✓ Portions of the site is used for residential purpose with a population estimate of 60 000 peoples, with a population density of 31.5 km².
- ✓ Portions of the site are also used for both subsistence and commercial farming practicing both livestock and agricultural farming.
- ✓ There has been mining activities in the past including the famous Buxton Limestone Quarry which was abandoned when the Taung Fossil Skull was Discovered.
- ✓ On the north eastern side of the site there is Taung Dam which supplies water to the Dr Ruth Segomotsi Mompati District Municipality.

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

- ✓ The infrastructure on site includes the old Buxton Limestone Quarry which has been declared a World Heritage site.

(c) Environmental and current land use map.

(Show all environmental, and current land use features)

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

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

Table 3: List of Potential Impacts

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence							Where (E + D + I) X P = Significance			
Activity	Potential Impact	What are the Consequences?	Rating Before Mitigation				Significance Before Mitigation	Impact reversal	Irreplaceable loss of resources	
			E	I	D	P				
Desktop Study	No Impacts		N/A							
Site Establishment	Loss of Biodiversity	Disturbance of the natural ecosystem	1	2	1	4	16 Negative	4	1	
	Soil Contamination	Loss of soil fertility	1	1	1	4	12 Negative	4	1	
	Water exploitation	Water shortages	1	1	1	2	6 Negative	4	1	
	Surface water contamination	Destruction of aquatic habitat and fauna	1	1	1	2	6 Negative	4	1	
	Conflict with local community	Property Vandalism and Criminality	1	1	1	1	3 Negative	4	1	
	Employment Opportunity	Employment of local people	1	1	1	4	12 Positive	4	1	
Geophysical Survey	Loss of Biodiversity	Disturbance of the natural ecosystem	1	1	1	2	3 Negative	4	1	
	Noise generation from site fly-overs	Disturbances of school and hospital operation	1	2	1	3	12 Negative	4	1	
Drilling	Soil and Geology disturbance	Contamination of Groundwater	1	2	1	4	12 Negative	3	1	
		Ground instability								
	Groundwater Contamination	Shortage of water for local supply	1	2	1	3	12 Negative	4	1	
	Soil contamination	Loss of Biodiversity	1	2	1	3	8 Negative	4	1	
	Soil Compaction	Soil infertility								
	Noise nuisance	Community disapproval	1	2	1	2	8 Negative	4	1	

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence						Where (E + D + I) X P = Significance			
Activity	Potential Impact	What are the Consequences?	Rating Before Mitigation				Significance Before Mitigation	Impact reversal	Irreplaceable loss of resources
			E	I	D	P			
	Release of Sulphide gas	Bad odour	1	1	1	1	3 Negative	4	1
Decommissioning	Soil Contamination	Loss of soil fertility	1	1	1	2	6 Negative	4	1
	Waste generation	Littering	1	3	1	4	15 Negative	4	1
		Water Contamination	1	1	1	1	3 Negative	4	1
		Soil Contamination	1	2	1	2	8 Negative	4	1

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

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

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration:** Indicates what the lifetime of the impact will be;
- **Intensity:** Describes whether an impact is destructive or benign;
- **Probability:** Describes the likelihood of an impact actually occurring; and
- **Cumulative:** In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Table 4: Criteria Used for Rating of Impacts

CRITERIA	DESCRIPTION			
Extent	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighbouring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
Duration	Permanent (4) Mitigation either by man or natural process will not occur in such a way or in such a time span that	Long-term (3) The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural	Medium-term (2) The impact will last for the period of the construction phase, where after it will be entirely negated	Short-term (1) The impact will either disappear with mitigation or will be mitigated through natural process in a

	the impact can be considered transient	processes thereafter. The only class of impact which will be non-transitory		span shorter than the construction phase
Intensity	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
Probability Of Occurrence	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low
Impact Reversal	Highly Impossible (4) Impact reversal will certainly be impossible	Moderate (3) Impact can be reversed to some extent with loss of natural resources	Possible (2) High possibility of impact reversal	Definite (1) Impact can be totally reversed
Loss of irreplaceable resources	Definite (4) Resources definitely be lost	Highly Probable (3) Most likely that resources will be lost	Possible (2) Resources may be lost	Improbable (1) Loss of resources is highly unlikely

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 5: Criteria for Rating of Classified Impacts

Low impact/ Minor (3 -10 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact/ Moderate (11 -20 points)	Mitigation is possible with additional design and construction inputs.
High impact (21 -30 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact/ Major (31 - 48 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

The suitability and feasibility of all proposed mitigation measures is included in the assessment of significant impacts. This was achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented.

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

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

POSITIVE IMPACTS

Creation of Employment Opportunities

- The prospecting activities will be undertaken over an extensive area and as such 3 crews made up of 5 to 10 people will be required, thus job will be created for general labours that would be sourced from the within community.
- The illegal prospecting and mining of diamond will cease in the area.
- While no significant short term positive impacts are associated with the prospecting activities, in the event that a viable reserve is confirmed, there would be high degree of positive impacts such as employment of large number of local residents, socioeconomic balance of the local community and on the National and Provincial scale mining contribute highly to the Gross Domestic Product (GDP)

Negative Impacts

- Noise – The movement of the drilling vehicle and drilling activities generate noise although the noise is within tolerable range.
- Waste generation – Empty tins of oil, general wastes from the camping site and empty bags of cement.
- Underground water contamination – The drilling activities several kilometres deep depending on the burial depth of the ore bodies. There are possibilities of encountering underground aquifers and contaminate the ground water.
- Littering – As already highlighted that the activities will generate wastes, poor or improper management of the wastes will create littering problems affecting the visual stance of the area.
- Criminal Activities – The equipment on site will attract criminal activity. The community and the site crew may clash over the loss or unauthorised access into the site camp.

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).

Measures to manage Noise

- The Drilling activities and movement of vehicles into the site should be carried out during the day. The working hours should be between 07:00 hrs to 17:00 hrs.

- Directly affected, adjacent landowners in proximity to the site will be informed of the planned activities.

Heritage Impact Management

- All the known heritage sites including the Taung Skull Fossil World Heritage Sites and the three graveyards sites will be marked a no-go area and no prospecting activities will take place within 200m from the Taung Skull Fossil World Heritage site and the graveyards.
- Should any unknown heritage sites be identified during the drilling activities, all activities shall cease immediately and the SAHRA will be contacted and an appropriate Heritage Impact Assessment will be undertaken on the site.

Influx of Labour to site

- Casual labour will not be recruited at the site to eliminate the incentive for persons travelling to site seeking employment.
- If deemed necessary the South African Police Service will be informed of unauthorised persons encountered on site.

Visual Impact

- Wet dust suppression will be undertaken to manage dust emissions from vehicle movement and other activities as and when needed.
- The portable ablution facilities, water tanks and any other infrastructure should be acquired with consideration for colour, natural earth, green and mat black options which will blend in with the surrounding area must be favoured.
- Waste management system will be implemented and sufficient waste bins will be provided for on-site.
- The site camp should be established away from the residential areas.

Water and Soil Impact Management

- Existing tracks and roads must be used as far as is practicable to minimize the potential for soil erosion. In instances where access to drill sites are to be established, and if required, raised blade clearing will be undertaken with a view to maintain vegetation cover to limit soil erosion potential.
- Soil disturbances are to be limited as far as practicable to minimize the potential for soil erosion.

- When establishing the drill pad, topsoil including the remaining vegetation, will be stripped and stockpiled up-slope of the pad. The stockpile will be shaped to divert stormwater around the drill pad to minimise soil erosion of the pad. Stockpiled topsoil will be used during rehabilitation activities.
- Topsoil will be stockpiled to a maximum height of 1.5m with a side slope of not more than 1:3.
- To reduce the potential for water pollution during the drilling activities, a sump will be constructed with sufficient capacity to receive drill fluids and allow for evaporation.
- The sump will be constructed to divert storm water away and/or around the sump to avoid storm water inflow.
- Oils and lubricant will be stored within secondary containment structures
- Mixing of concrete or cement should be done on an impermeable board.
- Topsoil should be handled only twice, when removing and during rehabilitation.
- The movement of the vehicles should be restricted to minimise soil compaction. In the morning all the equipment and materials to be exported should be delivered at once.
- In the event that vehicle maintenance is undertaken on site, drip trays and / or UPVC sheets will be used to prevent spills and leaks into the soil.
- Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general wastes, recyclables and hazardous wastes).
- Receptacles will be closed (i.e. fitted with a lockable lid) to eliminate the possibility of access by animals overnight.
- Wastes will be removed and disposed of at an appropriately licensed landfill and recyclables will be taken to a licensed recycling facility.
- Drill holes must be permanently capped as soon as is practicable.

ix) Motivation where no alternative sites were considered

- The proposed prospecting area is targeted as the area lies over the mineral rich Geological Supergroups that are the Ventersdorp and the Witwatersrand Supergroups.
- There have been no mining activities in the area since the abandonment of the Buxton Limestone Quarry and as such there will be no cumulative impacts generated by mining activities.
- There is sufficient open area with no settlements or any economic activities that could possibly create conflicts with the land owners.
- There are historical sites that may be affected by prospecting activities are known and secured and as such there will be no impact on the Heritage resources.

x) Statement motivating the alternative development location within the overall site

(Provide a statement motivating the final site layout that is proposed)

As is clear from the information provided, each of the phases is dependent on the results and success of the preceding phase. The location and extent of soil sampling and possible drilling will be determined based on information derived from the geophysics surveys. Sampling and drill sites will be selected to avoid water courses where practicable.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

(In respect of the final site layout plan) through the life of the activity (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

In order to identify the potential impacts associated with the proposed prospecting activities the following steps were undertaken:

- The stakeholder consultation process was undertaken in a manner that was meant to be interactive, providing landowners and identified stakeholders with the opportunity to provide input into the project. This is a key focus, as the local residence has capabilities of providing site specific information, which may not be available in desktop research material. Stakeholders are requested to provide their views on the project and any potential concerns which they may have. All comments and concerns are captured and formulated into the impact assessment.
- A detailed desktop investigation was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:
 - South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS system
 - Geographic Information System base maps;
 - Department of Water Affairs and Sanitation's information documents such as the ground water vulnerability report.

- Municipal Integrated Development Plan
 - Municipal Strategic Development Framework
 - South African National Biodiversity Institute GIS Map
-
- A site visit was conducted on the 19th of February 2016. The site visit was to ensure that the information gathered as part of the Desktop investigation reflects the current status of the land.
 - The ratings of the identified impacts were undertaken in a quantitative manner as provided in Impact Assessment Section. The ratings were undertaken in a manner to calculate the significance of each of the impacts. The EAP also assesses the outcomes of the calculation to determine whether the outcome reflects the perceived and the actual views.
 - The identification of management measures was done based on the significance of the impacts and measures that have been considered appropriate and successful, specifically as Best Practical and Economical Options.

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).

Table 6: Impact Assessment

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Desktop Study	None Identified	N/A	Planning Phase	N/a	No mitigation Proposed	
Identification of legislative requirements	Commencement of activities without all the required licenses and permits	Policy and legal Requirements	Planning Phase	Low (-ve)	The applicant must ensure that all relevant legislations and regulations have been adhered to before commencement of the project.	Insignificant
Camp site camp establishment	Removal of vegetation at the camp site and the access roads	Flora and Fauna	Planning Phase	Medium (-ve)	✓ The size of the construction camp should be kept to a minimum.	Low (-ve)
	Contamination of surface water from the site construction activities	Hydrology	Planning Phase	Medium (-ve)	✓ The camp site must be established away from the natural drainage areas. ✓ The contractor must attend to the drainage of the camp site	Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
	Compaction of soil at the camp site and the access roads	Geology and Soils	Planning Phase	Medium (-ve)	<p>to avoid standing water and / or sheet erosion.</p> <ul style="list-style-type: none"> ✓ Temporary chemical toilets must be provided by a company approved by the Engineer. These toilets must be made available for all site staff. The construction of “long drop” toilets is forbidden. ✓ Under no circumstances may open areas or the surrounding bush be used as a toilet facility. ✓ Bins and / or skips shall be provided for disposal of waste within the construction camp. ✓ Bins should have liner bags for efficient control and safe disposal of waste. ✓ Recycling and the provision of separate waste 	Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					<p>receptacles for different types of waste should be encouraged.</p> <p>✓ The available borehole water must be tested before human consumption</p>	
Site camp establishment	Conflicts with the locals	Socio-Economic Issues	Planning Phase	High (-ve)	<p>The community must be briefed regarding the prospecting activities to be undertaken.</p> <p>The number of employees required and the employment methods should be communicated.</p>	Low (-ve)
	Creation of employment opportunities	Socio-Economic	Planning Phase	Medium (+ve)	<p>The recruitment policy should be effectively communicated</p> <p>Employment should not be done at the camp site or at the working sites. All the employments should be done through the Local Leaders</p>	High (+)
	Conflicts over employment	Socio-Economic	Planning Phase	Very High (-ve)	<p>The number of employees required and the employment</p>	Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
	preferential and lack of support for the project from the locals				methods should be communicated. Employment should not be done at the camp site or at the working sites. All the employments should be done through the Local Leaders	
Chipping of outcrops to obtain outcrop samples	Bodily injuries or death at a worst case	Health and Safety	Field Mapping	Medium Significance (Negative)	The Geologists conducting field mapping should wear protective clothing.	Insignificant
Encounter with dangerous wild animals	Bodily injuries or death at a worst case	Health and Safety	Field Mapping	Medium Significance (Negative)	Repellent for snakes should be spread on the path ways. All site personnel must have a working cell phone to communicate in case of emergency	Low (Negative)
Geologist trapped in the caves	Loss of life or serious Body injuries	Health and Safety	Field Mapping	Medium Significance (Negative)	Entrance into the caves must be communicated and planned before such action is taken. The stability of the cave walls must be known.	Insignificant

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Flyover planes collecting data through remote sensing techniques	Generation of noise	Noise Impact	Geophysical Surveys	High (-ve)	The flyover times should be communicated with affected parties prior activity is undertaken	Medium (-ve)
					The schools and Hospitals should be marked as No-Go areas.	
Use of Vibrators for seismic geophysical method	Tremor ground vibrations	Geology & Ground Stability	Geophysical Surveys	Low (-ve)	Residential and business areas should be marked as No-Go areas where seismic method is used.	Low (-ve)
Set-up of Geophysical Survey Equipment	Clearing of Vegetation	Flora and Fauna	Geophysical Survey	Medium (-ve)	Already cleared areas should be preferred over heavily dense areas	Low (-ve)
Set-up of Geophysical Survey Equipment	Theft	Socio-Economic	Geophysical Survey	Low (-ve)	The site camp must be secured and entrance into the site must be controlled	Low (-ve)
Preparation of drilling sites and access roads	Loss of Vegetation	Flora and Fauna	Drilling Phase	Medium (-ve)	Where possible existing access roads must be used	Low (-ve)
	Loss of micro animals	Flora and Fauna	Drilling Phase	Medium (-ve)	Search and rescue mission should be undertaken for species on drilling site	Low (-ve)
	Contamination of surface water	Hydrology	Drilling Phase	High (-ve)	Alluvial diamond mining has a high potential for contaminating stream water i.e. Kolong river	Medium (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					where the activities will be undertaken. Large machinery crossing the river should be given extra care such that no chemical and oil leaks occur	
Preparation of drilling sites and access roads	Soil contamination	Soil & Geology	Drilling Phase	Medium (-ve)	The equipment and machinery must be monitored for leaks	Low (-ve)
Drilling Activities	Water pollution (Surface and groundwater) – due to possible spillages, leaks from vehicles or ablution facilities.	Hydrology	Drilling Phase	High (-ve)	Prospecting activities will not be conducted within 100 m of Kolong River and Taung dam. All preliminary drill hole locations are placed to not occur within these buffer zones. Limited amount of water (approximately 5000 litres/day) will be used during drilling. Water will be trucked to the site and no water from the Kolong River or Taung dam will be used for the activities.	Medium (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					<p>Enviro-loo ablation facilities will not be placed within 100m of the Kolong River and of the Taung dam.</p> <p>No construction footprint will take place inside or within 100m of the Kolong River and Taung dam.</p> <p>The drill bits must be maintained in good condition to prevent leakages of oil when in the underground.</p> <p>Aquifer detection methods should be applied before drilling can be undertaken.</p>	
Drilling Activities	Waste Generation	Waste Management	Drilling Phase	Very High (-ve)	The mud generated from the drilling activities must be contained, and contaminated mud must be handled separately, treated or disposed of at an appropriate landfill.	Medium (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					<p>Skips and marked bins must be provided at the site for waste separation.</p> <p>Waste water must not be released into the natural streams prior treatment</p> <p>The mechanical wastes must be stored separately from other areas in a waste skip and must be disposed of at an appropriate landfill site.</p> <p>Equipment maintenance must be done off site, and where there is need to conduct it on site, it must be done on a bunded area.</p> <p>Cleaning of equipment must be done on a bunded area.</p>	
Drilling Activities	Animals falling into drill holes	Health and Safety	Drilling Phase	Medium (-ve)	The drill holes must be capped overnight and when not in operation.	Low (-ve)
	Theft	Socio-economic	Drilling Phase	Medium (-ve)	Site Must be secured and Security personnel must be stationed at all points where there is equipment.	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
Drilling Activities	Lowering of groundwater levels	Hydrology	Drilling Phase	Medium (-ve)	Areas with shallow aquifers must be avoided	Low (-ve)
Drilling Activities	Removal of topsoil	Geology & Soils	Drilling Phase	Medium (-ve)	<p>Topsoil must be located away from the drainage lines</p> <p>Contaminated soil must not be mixed with clean stockpiles</p> <p>No chemicals should be placed near the topsoil stockpiles.</p> <p>The stockpiles must not be more than 1,5m high</p>	Low (-ve)
Drilling Activities	Spillages of hazardous chemicals	Soil & geology; Hydrology	Drilling Phase	Medium (-ve)	<p>All storage tanks containing hazardous materials will be placed in bunded containment areas with sealed surfaces.</p> <p>Hazardous substances / materials are to be transported in sealed containers or bags.</p> <p>Any hazardous substances will be stored at least 100m from the Kolong River and Taung dam on site.</p>	Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					<p>Contaminated wastewater will be managed by the contractor to ensure existing water resources (Kolong River and Taung dam) on site are not contaminated. All wastewater from general activities in the camp will be collected and removed from the site for appropriate disposal at a licensed commercial facility.</p> <p>Spillages must be attended to as soon as they occur. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p>	
Drilling Activities	Destruction of Heritage and Cultural Resources	Socio-Economic, Cultural	Drilling Phase	Medium	The known heritage sites which are the Taung Skull Fossil site and the 3 grave yards must be marked as No-Go areas and no prospecting activities should take place within 200m from the heritage site and the graveyards.	Low (-ve)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i>	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE	SIGNIFICANCE <i>if mitigated</i>
					Should any paleontological or cultural artefacts be discovered work at the point of discovery must stop, the location be clearly demarcated and SAHRA contacted immediately. Work at the discovery site may only be recommenced on instruction from SAHRA.	
Decommissioning of Site Camp	Waste generation	Waste management	Decommissioning Phase	Medium (-ve)	The uncontaminated stockpiled materials must be used for backfilling	Low (-ve)
Decommissioning of Site Camp	Contamination of the soil and water	Soil; Hydrology	Decommissioning	Medium (-ve)	The hazardous substances onsite must be stored in marked containers.	Low (-ve)
					All the equipment must be shipped out of the site	
					The compacted soils must be loosened and topsoil spread on top, and also spreading seeds of indigenous species.	

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

k) Summary of specialist reports

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

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT <i>(Mark with an X where applicable)</i>	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
No specialist studies have been undertaken	N/A	N/A	N/A

Attach copies of Specialist Reports as appendices: N/A

I) Environmental impact statement

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

- The significance of potential environmental impacts can be reduced to **Medium – Low** with implementation of mitigation measures and monitoring.
- Cumulative noise and visual impacts are rated with a negligible significance.
- Likewise, potential impacts on the socio-economic environment and livelihoods can be mitigated to **Medium – Low** significance.
- There are four sites that are of Heritage Importance, which are the Taung Skull Fossil Site and three grave yards.
- Taung Dam is located within the prospecting site and the storm water flows into the either dam or Kolong River.
- The prospecting activities may lower the ground water levels thus reducing the surface water recharge.
- There is a need for proper waste management for mud and other wastes generated during drilling activities and such wastes must not flow into the natural streams.
- It is expected that cumulative impacts on surface and groundwater quality and biodiversity will be major prior to mitigation. Mitigation measures for these potential impacts include: Application of best-practice water management at the drill and camp site, rehabilitation of infrastructure after mine closure and continuous monitoring of surface and groundwater quality.

ii) Final Site Map

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

The exact location of drilling points cannot be pinpointed as the prospecting activities are conducted in phases, and each phase depends on the success of the previous phase. The drill points must be identified after the geophysical surveys have confirmed the presence of the ore body. The sensitive areas will be identified during the planning phase of the project and no activities will be undertaken at any sensitive area. However, a preliminary Sensitivity Map has been appended as **Appendix 3**. A detailed map can be produced after the geophysical surveys has been undertaken, although the map will be subjected to changes depending on the results of the preliminary drilling and assaying.

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

- Increased ambient noise levels resulting from geophysical surveys site fly-overs and increased traffic movement during all prospecting phases as well as drilling activities.
- Potential water and soil contamination from hydrocarbon spills and soil erosion which may impact on the environmental resources utilized by communities, landowners and other stakeholders.

- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.
- Increased vehicle activity within the area resulting in the possible destruction and disturbance of fauna and flora.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunities of crime.
- Visual impacts created by drilling activities.
- Creation of employment opportunities.

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

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

Impact management objectives are described in terms of the Mitigation Hierarchy of the ERM Impact Assessment Standard. The mitigation hierarchy is as follows:

- **Avoid at Source:** Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind; Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

Impact management objectives:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts
- Provide sufficient information and guidance to plan the prospecting activities in a manner that would reduce impacts (both social and Environmental) as far as practicable.

- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation

Through the implementation of the proposed mitigation measures, it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that:

- Noise impacts can be managed through consultation and through the restriction of operating hours;
- The pollution of soil and water resources can be effectively managed through containment;
- Ecological impact can be managed through the implementation of pollution prevention measures, minimising land clearing, restricting working hours (faunal disturbances) and rehabilitation.
- Concerns regarding access control to the farm can be managed through the development and ensuring compliance to an appropriate access control procedure.
- Risks associated with crime can be mitigated through avoiding recruitment activities on site as well as monitoring and reporting.
- Visual impacts can be minimized through giving consideration to drill site, infrastructure placement and materials used.

n) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

- A map detailing the drilling locations should be submitted to the relevant landowners and the DWS and DMR prior to the commencement of these activities;
- No activities may be undertaken at or within 200 m from the graves, and protected Taung Fossil Skull Site;
- No activities, with the exception of the soil sampling, may take place within 100m from any river;
- The drilling activities should be restricted to daytime;
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site.
- Clearing of vegetation should be limited to the working area only.

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

(Which relate to the assessment and mitigation measures proposed)

- Detailed site layout is not available due to the nature of the prospecting activities. The study is therefore undertaken as a holistic assessment of the overall site.

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

It is the opinion of the EAP that the activity be authorised.

- The desktop studies have proven that the site is located on a mineralised zone, prospecting activities must be undertaken to confirm the ore reserves
- It has also been noted that mining sector is the pillar of South African economy and also provides employment opportunities for many.
- There has been illegal prospecting and mining activities onsite, and as such authorising the prospecting activities will curb illegal mining which may result in community conflict.
- The option of not approving the activities will result in a significant loss to valuable information regarding the status of the ore bodies present on these properties.
- In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves for future phases will be lost as well.

ii) Conditions that must be included in the authorisation

- A map detailing the drilling locations should be submitted to the relevant landowners and the DWS and DMR prior to the commencement of these activities;
- No activities may be undertaken at or within 100m from the protected Taung Skull fossil site and local grave yards
- No activities, with the exception of the soil sampling, may take place within 100m from any river;
- The drilling activities should be restricted to daytime;
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site.

q) Period for which the Environmental Authorisation is required

The Prospecting Right has been applied for a period of five years. The Environmental Authorisation should therefore allow for the five years of prospecting and one year for decommissioning and rehabilitation.

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.

An undertaken by the EAP and the client is provided for in Section 2 of the EMP.

s) Financial Provision

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

The site rehabilitation processes will require **R 375 728.00**

(i) Explain how the aforesaid amount was derived.

The aforesaid amount was derived using the department of mineral resource guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine.

Table B.2: Recommended procedure to determine the quantum for financial provision

Step No.	Description	Supporting information
1	Determine mineral mined and saleable by-products	Tables B.12, B.13 and B.14
2A	Determine primary risk class: <ul style="list-style-type: none">• Class A (High risk),• Class B (Medium risk), or• Class C (Low risk)	Either Table B.12 or B.13
2B	Revise primary risk class (if applicable) based on saleable by-products	Table B.14
3	Determine environmental sensitivity of mine area: <ul style="list-style-type: none">• Low sensitivity• Medium sensitivity• High sensitivity	Table B.4
4	For Class A or B mining operations	
4.1	Determine level of information available: <ul style="list-style-type: none">• Extensive, or• Limited	See section 1.4.1

	<p>For extensive information, either:</p> <ul style="list-style-type: none"> • Option 1: Accept the quantum determined, • Option 2: Commission an independent review by a competent person, or • Option 3: Follow a "rules-based" approach and proceed to step No. 4.2 <p>For limited information, follow a "rules-based" approach and proceed to step No. 4.2</p>	
4.2	Identify closure components	Section 1.4.2 and Table B.5
4.3	Identify unit rates for closure components	Table B.6
4.4	Identify and apply weighting factors	Tables B.7 and B.8
4.5	Identify areas of disturbance	Topographical plans and/or site visits
4.6	Identify closure costs from specialist studies	Table B.9 for recommended studies
4.7	Calculate closure costs	Table B.10
5	For Class C Mining operations	
5.1	Identify minimum rates per hectare for closure	Table B.11
5.2	Determine overall size of the mine (in hectares)	Topographical plans and/or site visits
5.3	Calculate closure cost	Overall mining area and minimum rate (per hectare)
	Alternatively, follow "rules-based" approach: Step 4.1 to 4.6.	
6	Independent review by competent person	
	Commission independent review should there be non-agreement on the quantum for financial provision determined from steps 4 or 5 above.	

Figure 6: Quantum Calculation Method

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

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

Should Prospecting Right be granted, Batlaping Ba Ga Phuduhucwana Tribal Council and the North West Department of Economic, Finance and Enterprise Development will make provision for the estimated closure cost by means of a Bank Guarantee or any other means available and accepted by the Competent Authority.

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

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

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

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

No specific report was generated for the purposes of the socio-economic conditions. All findings are presented hereafter:

- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion;
- Noise due to the undertaking of the site fly-overs and drilling activities;
- Generation of waste that would be injected into the local waste stream;
- Poor access control resulting in impacts on cattle movement breeding and grazing practices;
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime; and
- Visual Impact

Table 7: Impact Summary

Potential Impact	Significance Pre-Mitigation	Significance Post-Mitigation
Socio- Economic Environment and Livelihoods		
Creation of Employment opportunities	Minor (+)	Minor (+)
Loss of Productive land for Agricultural Purposes	Minor (-)	Insignificant (-)
Physical and Economic Impacts		
Water and Soil Pollution resulting from spillages of hydrocarbons	Moderate (-)	Minor (-)
Increased noise levels from the fly-overs planes and drilling activities	Major (-)	Moderate (-)
Generation of wastes that would be injected into local waste stream	Major (-)	Minor (-)
Legal and Legacy Issues		
Resentment and anger from unfulfilled expectations	Moderate (-)	Minor (-)

Influx of job seekers	Moderate (-)	Minor (-)
Criminal activities (Site Camp invasion)	Moderate (-)	Minor (-)

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).*

As outlined in Section d (ii), of this report, prospecting will be undertaken in phases: the first phase being a desktop assessment, followed by ground and/or aerial magnetic survey and soil sampling. There were 4 sites that were identified that are of heritage importance which are the Taung Skull Fossil Site (refer to Sensitivity Map shown in **Appendix 3**) and three graveyards, all the prospecting activities will take place 200m away from the sites and these sites will be marked as No-Go areas.

Based on the outcome of these activities, soil sampling and potential drill sites will be determined. Potential heritage impact may only occur once soil sampling and geophysics have been used to identify sites for drilling, and it is therefore recommended that the any Heritage Artefacts that may be encountered should be reported to SAHRA and at the mean time all the activities should cease.

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

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

No alternatives of the site were considered based on the following:

- The proposed prospecting area is targeted as historically, coal seams occurrences are common in the area and a number of this has been exploited for coal in the past. There have also been various mining operations within the vicinity of the exploration area.
- Though there are streams traversing the site these will be demarcated as No-Go areas and a buffer zone of at least 100m will be maintained around these
- There is sufficient open area with no settlements or any economic activities that could possibly create conflicts with the landowners.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme.

a) Details of the EAP,

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

The requirement for the provision of the details and expertise of the EAP are included in PART A, section 1(a).

b) Description of the Aspects of the Activity

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

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).

c) Composite Map

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

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)

As previously mentioned, each phase of prospecting activities is dependent on the success of the previous phase. The location and extent of soil sampling and drill sites can therefore not be determined at this stage. The closure objectives thus are as follows:

- Eliminate any safety risk associated with drill holes and sumps through adequate drill hole capping and backfilling.
- Remove and / or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To loosen the hardened surfaces which were used temporary site camp or access roads and re-vegetate with indigenous species.
- Establish rehabilitated area which is not subjected to soil erosion which may result in the loss of soil, degradation of the environment and cause pollution of surface water resources;
- Restore disturbed area and re-vegetate these areas with indigenous vegetation to restore the ecological function of such areas as far as is practicable.

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

Water is required during drilling activities to cool down the drill bits and to also eliminate dust pollution. The estimated water use per day is 5000 litres per day. The volume of the water to be used does not require a water use license, as the requirements fall within the “small industrial user”. Therefore the water that will be used for the prospecting activities will be sourced on agreement from an existing authorized water user which could be either local farmers or local municipality. No water will be abstracted in terms of section 21(a) of National Water Act, 1998 (Act No. 36 of 1998).

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

The water use licence has not been applied for thus because the volume of water to be used during the prospecting activities does not trigger any listed activities, as mentioned above. The Department of Water Affairs and Sanitation has been consulted as a project stakeholder.

iv) Impacts to be mitigated in their respective phases

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

Table 8: Impacts Mitigation

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT									
Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Desktop Study	Planning	No Impact	None	None	None	None	Protect sensitive site	Demarcate sensitive and protected areas such as streams, rivers, graveyards and protected areas such as the Heritage Sites e.g. (Taung Skull Fossil Site) as No-Go areas.	N/A
Geophysical Surveys	Planning	Noise nuisance affecting local schools, hospitals and livestock farming	132933.67 ha	Noise Generation	<ul style="list-style-type: none"> Control Deviation from approved PWP. Control through limiting activities to day time and an open and transparent channel of communication Control of access into the prospecting site. 	<ul style="list-style-type: none"> Notify directly affected parties of the planned date the fly-over activities will be undertaken Access control measures must be agreed 	Remain within the Noise Regulation Standards	Demarcate sensitive and protected areas such as rivers, graveyards and protected areas such as the Heritage Sites e.g. (Taung Skull Fossil Site) as No-Go areas.	Throughout Geophysical Survey Phase

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Site Camp Establishment	Planning	<ul style="list-style-type: none"> Loss of Vegetation when clearing for site camp area Soil contamination from possible chemicals and oil spills. Soil Compaction from the movement of vehicles into the site Water contamination when effluents flow from the site into natural water streams Spread of alien vegetation across the proposed site Loss of fauna during site clearing and vehicle movement. Restricted fauna movement by the camp site fence. The use of bushes as toilets by employees 	Less than 1,5 ha	<ul style="list-style-type: none"> Loss of Biodiversity Soil Contamination Soil Contamination Water Contamination Loss of Biodiversity 	<ul style="list-style-type: none"> Control of waste disposal Storm water control Alien vegetation control Monitoring of fauna movement. Rehabilitation of the site at closure Control of sewage handling 	<ul style="list-style-type: none"> Site camp must be demarcated before any activity can be undertaken. Site Camp should be located more than 200 m away from heritage sites Vegetation clearing must be limited to demarcated areas only The site camp must be located more than 100 m away from any water drainage. Removed topsoil must be stockpiled for rehabilitation purpose. Search and rescue should be conducted to save fauna Existing access roads must be used as far as possible. Alien vegetation must be given extra care to prevent spread. Site camp must not be established such that it does not impede storm water flow Marked waste bins must be provided for safe disposal of waste Chemical toilets must be provided at a ratio of 1:15 people and should be emptied regularly by certified sewage handling company. 	<ul style="list-style-type: none"> Remain within the approved PWP. Identify and Protect sensitive areas. Maintain communication with affected and Interested parties 	<ul style="list-style-type: none"> Identified protected and sensitive areas will be protected. No activity is to be undertaken within 100m of any rivers and streams or water bodies. Protected trees will not be removed. 	Throughout the project.
Drill site Preparation	Drilling Phase	<ul style="list-style-type: none"> Removal of protected and indigenous trees. 	Less than 20 ha	<ul style="list-style-type: none"> Water contamination 	<ul style="list-style-type: none"> Water quality monitoring Control of vegetation clearing 	<ul style="list-style-type: none"> Protected trees must be marked 	<ul style="list-style-type: none"> Remain within the approved Prospecting Work programme. 	<ul style="list-style-type: none"> All protected areas will be clearly marked on a sensitivity map 	

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Contamination of surface water. Restricted movement of livestock Damage of pipelines Generation of dust from clearing activities Soil contamination from spillages of oils and fuel Soil compacted by heavy trucks transporting equipment to site Site littering by generated wastes from clearing activities. Accidents and injuries when trucks transporting equipment slides or sinks on poorly compacted soils. Soil erosion where vegetation has been cleared. 		<ul style="list-style-type: none"> Soil contamination Air quality deterioration Visual disturbances Health and Safety Loss of vegetation Soil erosion Stream sedimentation 	<ul style="list-style-type: none"> Controlling access into the site. 	<ul style="list-style-type: none"> Oil and Fuel Spills must be attended to as soon as they occur. Removed topsoil must be stockpiled for rehabilitation purpose. Consultation with local farmers to communicate possible barricaded areas preventing cattle grazing. Buried pipelines positions must be clearly marked on the sensitivity map. Vehicle movement should be restricted to provided access roads. The transported load must be safely secured to prevent accidental load falls. Waste bins must be provided and clearly marked to promote waste separation. The working area must be watered regularly to prevent dust generation. Stormwater channels must be directed away from erosion prone areas Waste water must be contained in site, treated and released. 	<ul style="list-style-type: none"> Protect sensitive areas Prevent contamination of environmental elements. Creates risk and hazards free environment 	<ul style="list-style-type: none"> Health and Safety standards will be maintained Spillage kit control will be available on site 	
Drilling activities	Drilling phase	<ul style="list-style-type: none"> Ground water contamination when aquifers are disturbed 	Less than 20 ha	<ul style="list-style-type: none"> Water contamination. Air Pollution Stream sedimentation 	<ul style="list-style-type: none"> Controlling of access to the site Controlling flow of storm water Controlling dust generation 	<ul style="list-style-type: none"> Geophysical methods should be used to detect positions of aquifers to avoid ground water contamination. 	<ul style="list-style-type: none"> Remain within the Prospecting Work Programme. Protect sensitive areas Maintain consultation with land owners 	<ul style="list-style-type: none"> Protected trees will be marked by tapes Sensitive areas will be clearly marked on a scaled map 	The mitigation will be implemented before the commencement of drilling activities and

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Liquid waste flowing down the hole to contaminate ground water Soil contamination from drilling effluents Generation of muddy flows that may contaminate surface waters Generation of dust from drilling activities and ground disturbances Noise nuisance from drilling equipment. Hardening of surfaces when the mud from the drilling site dries up. Loss of soil fertility as topsoil gets covered up by mud from the drilling site. Wild animals and livestock may be trapped by the mud. Disruption of essential services such as access roads when covered by the mud from the drilling site. 		<ul style="list-style-type: none"> Increased surface flows. Health and Safety risks. 	<ul style="list-style-type: none"> Rehabilitation of the site Monitoring of water quality 	<ul style="list-style-type: none"> The drill bits and equipment must be in good working condition to prevent leakages of oils in the underground. The drill holes must be capped when not in use to prevent debris flow of wastes and topsoil The drill holes must also be capped to eliminate health hazards. Access by wild animals and livestock into the site must be limited. The drill site must be regularly watered to prevent dust generation. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. Drilling activities should be conducted during day time to avoid noise during late hours. Storm water channels must be developed which drains water away from erosion prone areas. The muddy water from the drilling activities must be contained on site. Where muddy water has flown over access roads, the mud must be scrapped to prevent slippery road conditions. 	<ul style="list-style-type: none"> Prevent contamination of natural elements Eliminates health hazards 	<ul style="list-style-type: none"> Storm water control channels will be developed Waste management strategies will be implemented An open register for interested and affected parties will be maintained Noise will be limited within accepted threshold. Drilling activities will be conducted within demarcated areas only. 	<p>be continuous thereafter.</p>

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Poor housekeeping could result in littering which could lead to river contamination and health hazards to the cattle. Health and safety hazards to humans, livestock and wild animals. 				<ul style="list-style-type: none"> The flow of muddy water should not be allowed to enter agricultural land as it will affect soil fertility. Use existing track and roads in all instances as far as is practicable. A waste management system should be implemented and sufficient waste bins will be provided for onsite. A fine system will be implemented to further prohibit littering and poor housekeeping practices. 			
Chemical and Fuel storage	Drilling activities	<ul style="list-style-type: none"> Spillages and leaks contaminating water and soil. Spread of pathogens affecting both humans and livestock. Improper sewage removal methods resulting in contamination of soil and water. 	Less than 1 ha	<ul style="list-style-type: none"> Soil Contamination Water contamination Health and Safety risks 	<ul style="list-style-type: none"> Control chemical storage Control chemical spillages and leaks 	<ul style="list-style-type: none"> The fuel stored on site should be placed on a raised bunded wall The chemical toilets must be emptied regularly by a certified company. All hazardous wastes must be disposed of at an appropriate landfill and a certificate of disposal must be filed on site. All general wastes must be disposed of at a registered general waste landfill site and disposal certificate must be filed on site. All chemical storage containers must be clearly marked and material handling sheet be provided. The chemicals should be stored in sealed containers on a bunded surface. 	<ul style="list-style-type: none"> Protect water resources Create a health hazard free environment. 	Fuel and chemicals will be stored according to storage specifications	During drilling activities.

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
						<ul style="list-style-type: none"> • Appropriate Personal Protective Equipment must be provided to staff working with hazardous chemicals. • Spillages must be attended to as soon as they occur. • Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. • The HSE must determine the precise method of treatment of polluted soil. • This could involve the application of soil absorbent materials or oil-digestive powders to the contaminated soil. • If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. • Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal. 			
Transporting equipment out of site	Closure Phase	<ul style="list-style-type: none"> • Soil compaction during movement of heavy trucks. 	Less than 20 ha	<ul style="list-style-type: none"> • Health and Safety Hazards • Soil Compaction 	<ul style="list-style-type: none"> • Site rehabilitation • Pollution Control • Traffic movement control 	<ul style="list-style-type: none"> • Vehicle movement should be properly planned and communicated with other road users. 	<ul style="list-style-type: none"> • Remain within prospecting work programme. • Remain within noise control standards. 	<ul style="list-style-type: none"> • The prospecting work will be completed within a specified period of 5 years. 	During site closure when equipment are shipped out of site.

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT

Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Oil and fuel leaks from heavy trucks transporting drilling equipment. Water contamination from water flowing from contaminated site. Loss of soil fertility. Health hazards during loading of the equipment on transporting trucks. Road accidents with other motorists, or hitting livestock on the access road. Noise nuisance from the movement of heavy trucks 		<ul style="list-style-type: none"> Water Contamination Air Pollution Control traffic movement Site rehabilitation. 	<ul style="list-style-type: none"> Monitoring of implemented control strategies 	<ul style="list-style-type: none"> Local farmers must be alerted of trucks movement The dust roads must be watered prior movement of heavy trucks. Existing access roads must be used. Where large trucks have to pass across a river, it should be ensured that they have no leaks that could potentially contaminate the water. 	<ul style="list-style-type: none"> Remain within pollution control standards 	<ul style="list-style-type: none"> Pollution control measures will be implemented Consultation with affected parties and land owners will remain continuous. 	
Decommissioning of camp site	Site Closure	<ul style="list-style-type: none"> Contamination of stockpiles. Generation of wastes from old and worn out equipment and also empty tins. Noise nuisance from demolition activities. Dust Pollution from demolition activities. Debris flow of general wastes into natural water drainages. 	Less than 1,5 ha	<ul style="list-style-type: none"> Water contamination Air pollution Noise pollution Health and Safety Hazards 	<ul style="list-style-type: none"> General wastes must be collected and stored separately for disposal at a registered landfill. Workers should wear protective clothing when performing demolition activities. Where possible surfaces should be watered to prevent dust prevention. Demolition activities should be communicated with 	<ul style="list-style-type: none"> Control of waste handling Consultation with affected parties Rehabilitation of affected land 	<ul style="list-style-type: none"> Ensure that the site is restored to its original state as far as practicable. Remain within noise control standards Remain with pollution control standards 	<ul style="list-style-type: none"> Measures will be taken to inform affected parties of noisy activities to be undertaken. The site will be restored to its original state as far as practicable. 	

IMPACT ASSESSMENT FOR TAUNG PROSPECTING PROJECT									
Activities	Phase	Potential Impact	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
		<ul style="list-style-type: none"> Health and safety hazards 				directly affected parties to alert them of noisy activities. <ul style="list-style-type: none"> All equipment should be shipped out of site. The temporary structures must be demolished and resulting wastes be removed from 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).	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
Impact management outcomes have been addressed in Table 8 above					

f) Impact Management Actions

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

ACTIVITY (whether listed or not listed)	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Impact management Actions have been addressed in Table 8 above				

(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.

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of existing land capabilities. The primary objectives for rehabilitation include:

- a) The facilitation of the re-establishment of the land use and capability to as close as reasonable to the original conditions.
- b) Removal of all infrastructure and material introduced to site,
- c) Removal of all wastes and their disposal
- d) Promotion of the rapid re-establishment of the natural vegetation and the restoration of the site ecology.

The disturbed areas shall be rehabilitated to ensure that:

- ✓ The biodiversity habitat is encourage the new land use after the prospecting
- ✓ Eliminate any safety risk associated with drill holes and sumps through adequate drill hole capping and backfilling.
- ✓ Environment and resources are not subjected to physical and chemical deterioration,
- ✓ The site is reversed to almost its original state
- ✓ The after-use of the site is beneficial and sustainable in a long term
- ✓ All socio-economic benefits are maximized

The rehabilitation plan shall entail removal of all generated wastes, infrastructure and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages.

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

This Basic Assessment Report and Environmental Management Plan has been made available to all registered stakeholders and IAPs for review and comment. All comments were captured in the issues and response section and included in the Final Report.

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.

As previously mentioned, each phase of the prospecting activities is dependent on the success of the previous. Depending on the outcome of the Phase 1 assessment and airborne/ ground geophysics survey programme will be initiated. Targets that have been prioritized through detailed anomaly will be tested by initial drilling.

The location and extent drill sites can therefore not be determined at this stage. Mapping of the prospecting activities could thus not be undertaken. Due to the nature of the activities, the impacts will be very limited and of short duration. The management plan is provided in such a manner as to ensure concurrent rehabilitation. The areas for drilling purposes will be the main area experiencing impacts. In this event the activities will be temporary in nature, and a detailed management plan has been provided to address potential impacts associated with these activities.

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 chemical toilets.
- Capping the boreholes as per legal requirements (this further described overleaf)
- Ensure that no foreign matter is left behind on the drill site.
- Re-filling 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.

Specific measures with regards to borehole capping and re-vegetation are also included below:

- **Borehole capping**

Drill holes must be permanently capped as soon as is practicable. Figure 7 overleaf provides the prepared procedure for the secure plugging of exploration drill holes.

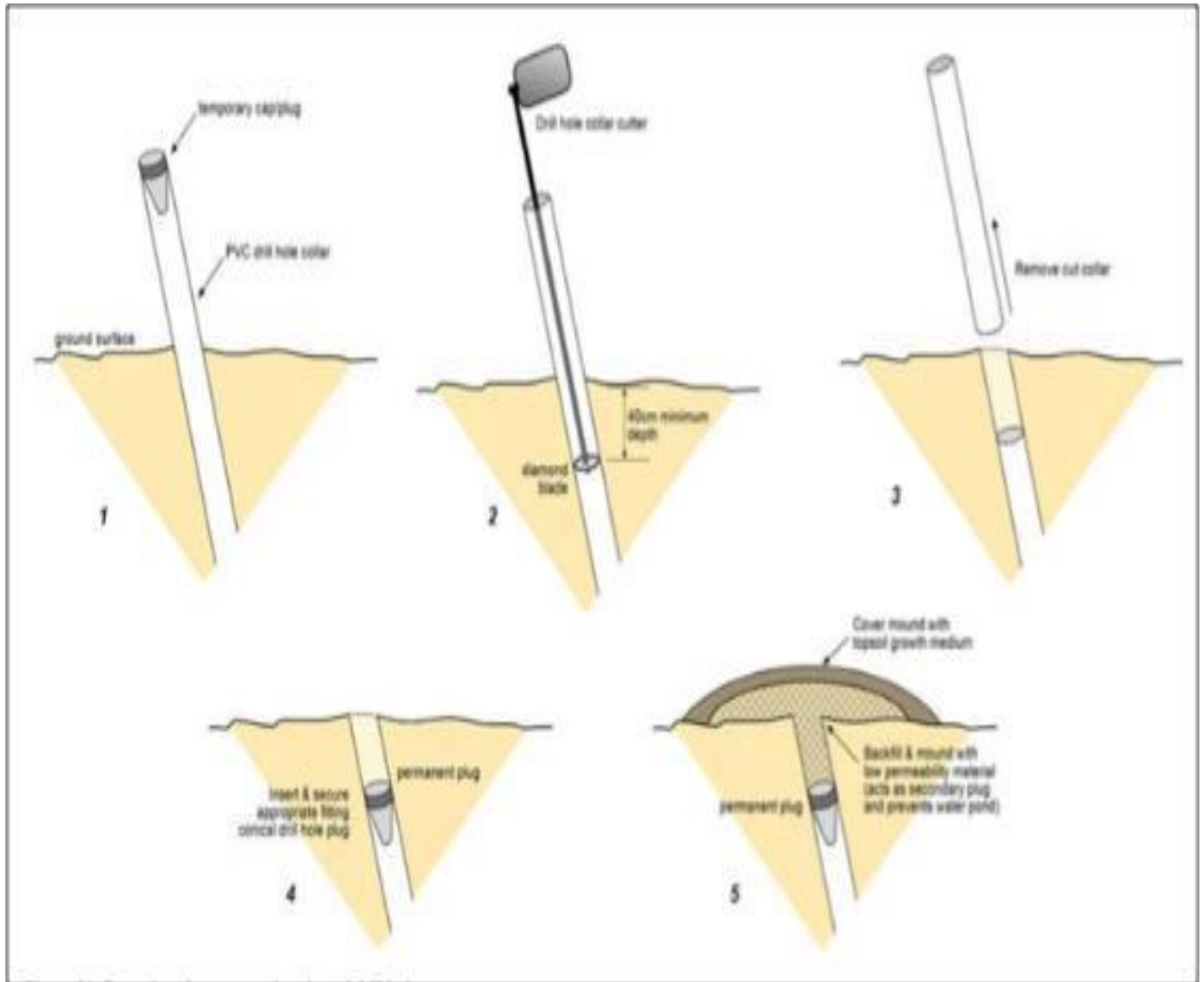


Figure 7: Capping of Boreholes

- **Re-vegetation**

It is recommended that a standard commercial fertilizer high in the standard elements is added to the soil before re-vegetation, at a rate of 10 -20k g/ha (application rate to be confirmed based on input from a suitably qualified specialist). The fertilizer should be added to the soil in a slow

release granular form. A suitably qualified ecologist will be appointed to determine the appropriate veld grass mix for hand seeding.

Re-vegetation efforts will be monitored every second month for a period of six months after initial seeding. An effective vegetation cover of 45% must be achieved. Re-seeding will be undertaken if this cover has not been achieved after six months.

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

Due to the nature of the activities, the impacts will be very limited and of short duration. The management plan is provided in such a manner as to ensure concurrent rehabilitation. The areas for drilling purposes will be the main area experiencing impacts. In this event the activities will be temporary in nature, and a detailed management plan has been provided to address potential impacts associated with these activities.

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

The required amount for financial provision is **R 375 728,00**.

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

Should Prospecting Right be granted, Batlaping Ba Ga Phuduhucwana Tribal Council and the North West Department of Economic, Finance and Enterprise Development will make provision for the estimated closure cost by means of a Bank Guarantee or any other means available and accepted by the Competent Authority.

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

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

Table 9: Compliance Monitoring and Frequency

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
Data Acquisition and Desktop Study	None identified	None	N/A	N/A
Target generation and ground trothing	Noise impacts resulting from site fly-over affecting schools and hospital operation and also affecting livestock.	Landowners and directly affected parties will be informed of the planned dates of the airborne survey and grievance mechanism will be made available.	Prospecting Manager	Once-off upfront consultation with affected parties. As required as grievances are received.

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
Ground Geophysical surveys and Soil Sampling	Access into private properties	<p>As soon as the extent of site activities are known. These must be communicated with directly affected landowners. The following procedures must be developed in conjunction with these landowners:</p> <ul style="list-style-type: none"> ✓ Emergency Preparedness and Response Plan; and ✓ Access control procedures and requirements. 	Prospecting Manager	<ul style="list-style-type: none"> ✓ As soon as the extent of site activities are known, confirmation of the extent of site activities must be sent to Department of Mineral Resource before such activities can be undertaken. ✓ Proof of consultation with directly affected landowners and the outcome of such consultation to be submitted to the Department of Mineral Resources. ✓ Continuous monitoring of compliance with the access control procedure will be under taken.
Exploratory Drilling	Visual inspection of soil erosion and / or compaction	All exposed areas, access roads, the drill pad and soil stockpiles must be monitored for erosion on a regular basis and specifically after rain events.	Prospecting Manager Contractor	Weekly and after rain events

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
Exploratory Drilling	Dust generated will be assessed through visual observation	If dust outfall is excessive and regarded to affect any sensitive receptors a monitoring programme must be initiated based on the input of a suitably qualified air quality specialist.	Contractor	<ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources.
Exploratory Drilling	Visual inspection of biodiversity impacts and the occurrence of invader species	Visual inspection of clearing activities and other possible secondary impact on biodiversity will be undertaken. The introduction of alien invasive vegetation species will be determined.	Prospecting Manager Contractor	<ul style="list-style-type: none"> ✓ Once-off during clearing activities ✓ Weekly inspection of secondary impacts <ol style="list-style-type: none"> 1. Monthly monitoring reports to be signed-off by the Environmental Manager. 2. Corrective action to be confirmed and signed-off by the Environmental Manager.

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
				3. Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources.
Exploratory Drilling	Visual inspection of pollution incidents, the integrity of secondary containment structures and waste management	<ul style="list-style-type: none"> ✓ All secondary containment structure will be inspected on a regular basis to confirm the integrity thereof and to identify potential leaks. ✓ All spill incidents will be identified and corrective action taken in accordance with an established spill response procedure. ✓ Waste management practices will be monitored to prevent contamination and littering. 	Prospecting Manager Contractor	<p>Daily</p> <ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources. ✓ Incident reporting will be undertaken as required in terms of the relevant

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
				<p>legislation including, but not limited to, the:</p> <p>a) Mineral and Petroleum Resources Development Act 28 of 2002; and</p> <p>b) National Water Act 36 of 1998.</p>
Post Closure Monitoring	Follow up inspections and monitoring of rehabilitation	<ul style="list-style-type: none"> ✓ Inspection of all rehabilitated areas to assess whether any soil erosion is occurring and implement corrective action where required. ✓ Confirm that the set target cover for all re-vegetated areas have been achieved after a period of 6 months and re-seed where required. ✓ Identify any areas of subsidence around drill holes and undertake additional backfilling if required 	Prospecting Manager	<p>Monthly for a period of 6 months after rehabilitation activities are concluded.</p> <ul style="list-style-type: none"> ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ Corrective action to be confirmed and signed-off by the Environmental Manager. ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources.

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
				✓ Final impact and risk assessment report for site closure to be submitted to the Department of Mineral Resources for approval.

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

Annual performance assessments must be undertaken on the EMP. These reports must also include the assessment of the financial provision. The reports should be submitted to the DMR.

m) Environmental Awareness Plan

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

An Environmental Awareness and Risk Assessment Schedule have been developed and is outlined below. The purpose of this schedule is to ensure that employees are not only trained but that the principles are continuously re-enforced.

Table 10: Environmental Awareness and Risk Assessment

Frequency	Time Allocation	Objective
Induction (all staff and workers)	1 hour training on environmental awareness training as part of site induction	<ul style="list-style-type: none"> • Develop an understanding of what is meant by the natural environmental and social environment and establish a common language as it relates to environmental, health, safety and community aspects. • Establish a basic knowledge of the environmental legal framework and consequences of non-compliance. • Clarify the content and required actions for the implementation of the Environmental Management Plan. • Confirm the spatial extent of areas regarded as sensitive and clarify restrictions. • Provide a detailed understanding of the definition, the method for identification and required response to emergency incidents.
Monthly Awareness Talks (all staff and workers)	30 minute awareness talks	Based on actual identified risks and incidents (if occurred) reinforce legal requirements, appropriate responses and measures for the adaptation of mitigation and/or management practices.
Risk Assessments (supervisor and workers involved in task)	Daily task based risk assessment	Establish an understanding of the risks associated with a specific task and the required mitigation and management measures on a daily basis as part of daily tool box talks.

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

As prescribed in above table, Task/Issue Based Risk Assessments must be undertaken with all worker involved in the specific task in order to establish an understanding of the risks associated with a specific task and the required mitigation and management measures.

• Environmental Awareness Training Content – Induction Training

The following environmental awareness training will be provided to all staff and workers who will be involved in prospecting activities.

- ✓ Description of the approved prospecting activities and content of the prospecting right;
- ✓ An overview of the applicable legislation and regulations as it relates to environmental, health, safety and community including (but not limited to):
 - ❖ General Environmental Legal Principles and Requirements
 - ❖ Air Quality Management
 - ❖ Water and Wastewater Management
 - ❖ Hazardous Substances
 - ❖ Non-Mining-Related Waste Management
 - ❖ The Appropriate Remediation Strategies & Deteriorated Water Resources
 - ❖ Biodiversity
 - ❖ Weeds and Invader Plants
 - ❖ Rehabilitation
 - ❖ Contractors and Tenants
 - ❖ Energy & Conservation
 - ❖ Heritage Resources
 - ❖ General Health and Safety Matters
 - ❖ Basic Conditions of Employment
 - ❖ Compensation for Occupational Injuries and Diseases
 - ❖ General Mine Health and Safety Matters
 - ❖ Smoking in the Workplace
 - ❖ Noise & Hearing Conservation
 - ❖ Handling, Storage and use of Hazardous Substances
 - ❖ Weapons and Firearms
- ✓ Content and implementation of the approved Environmental Management Plan
 - ❖ AI located responsibilities and functions
 - ❖ Management and Mitigation Measures
 - ❖ Identification of risks and requirements adaptation
- ✓ Sensitive environments and features
 - ❖ Description of environmentally sensitive areas and features
 - ❖ Prohibitions as it relates to activities in or in proximity to such areas

- ✓ Emergency Situations and Remediation
 - ❖ Methodology to identify areas where accidents and emergency situations may occur, communities and individuals that may be impacted
 - ❖ An overview of the response procedures,
 - ❖ Equipment and resources
 - ❖ Designation of responsibilities
 - ❖ Communication, including communication with potentially Affected Communities
 - ❖ Training schedule to ensure effective response.

- **Development of procedures and checklists**

The following procedures will be developed and all staff and workers will be adequately trained on the content and implementation thereof.

- **Emergency Preparedness and Response**

The procedure will be developed to specifically include risk identification, preparedness, response measures and reporting. The procedure will specifically include spill and fire risk, preparedness and response measures. The appropriate emergency control centers (fire department, hospitals) will be identified and the contact numbers obtained and made available on site. The procedure must be developed in consultation with all potentially affected landowners.

In the event that risks are identified which may affect adjacent landowners (or other persons), the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize the impact.

- **Incident Reporting Procedure**

Incident reporting will be undertaken in accordance with an established incident reporting procedure to (including but not limited to):

- ✓ Provide details of the responsible person including any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control when the incident occurred;
- ✓ Provide details of the incident (time, date, location);
- ✓ The details of the cause of the incident;
- ✓ Identify the aspects of the environment impacted;
- ✓ The details of corrective action taken, and
- ✓ The identification of any potential residual or secondary risks that must be monitored and corrected or managed.

- **Environmental and Social Audit Checklist**

An environmental audit checklist will be established to include the environmental and social mitigation and management measures as developed and approved as part of the Environmental Management Plan. Non-conformances will be identified and corrective action taken where required.

(3) Specific information required by the Competent Authority

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

No specific information was required by the Competent Authority.

2. UNDERTAKING

The EAP herewith 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.

Signature of the environmental assessment practitioner:

Tshikovha Environmental and Communication Consulting

Name of company:

Date:

-END-