

Registration Number: 2016 / 330426 / 07

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Mukhadakhomu Environmental Services

**BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE
PROPOSED PROSPECTING OF COAL ON THE FARM WITKLIP 229 IR: 5, 8 & 28, SITUATED IN DELMAS
WITHIN VICTOR KHANYE LOCAL MUNICIPALITY IN MPUMALANGA PROVINCE**

PREPARED BY: MUKHADAKHOMU ENVIRONMENTAL SERVICES

APPLICANT: SANOS 101 (PTY) LTD

SAMRAD FILE REFERENCE NUMBER: MP 30/5/1/1/2/15204PR



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 : **SANOS 101 (PTY) LTD**
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FILE REFERENCE NUMBER SAMRAD : **MP 30/5/1/1/2/15204PR**

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: Mukhadakhomu Environmental Services

Contact person: Sedzani Mulaudzi

Tel No.: 076 560 8193

e-mail address: sedzani@mukhadakhomu.com

ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence).

Bachelor of Science in Environmental and Resource Studies

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

(In carrying out the Environmental Impact Assessment Procedure)

Ms. Sedzani Mulaudzi is a member of IAAsa. With years' working experience in environmental management and the consulting industry and managing various account clients, she understands the South African Regulatory System, and can advise client with due diligence on their environmental regulatory requirements and offer a solution driven service to their project life cycle . She is equipped with exceptional project management and coordination skills, which especially enhances the service she offers clients within the environmental permitting system.

Her key focus is environmental management and compliance with extensive experience in the mining industry. Project Management and Coordination of projects form a critical component of her duties, which include project planning, initiation of projects, client, authority and stakeholder consultation and timeframe management. Her interest lies in a client advisory capacity, being involved during pre-project development and assist the client in adding value to develop the project in and environmental sustainable manner , considering client costs and liabilities, as well as consider the implication of environmental authorisation conditions and requirements on project deliverables. Her involvement in projects has spanned over the project life cycle from Prospecting Right applications, Mining Permit applications, Basic Assessment reporting ,Environmental Management Plans and Authorisations.

b) Location of the overall Activity

Farm Name:	Witklip 229 IR: 5, 8 & 28
Application area (Ha)	200 ha
Magisterial district:	Delmas
Distance and direction from nearest town	Approximately 18km West of Delmas
21 digit Surveyor General Code for each farm portion	T0IR00000000022900005 T0IR00000000022900008 T0IR00000000022900028

c) Locality map

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

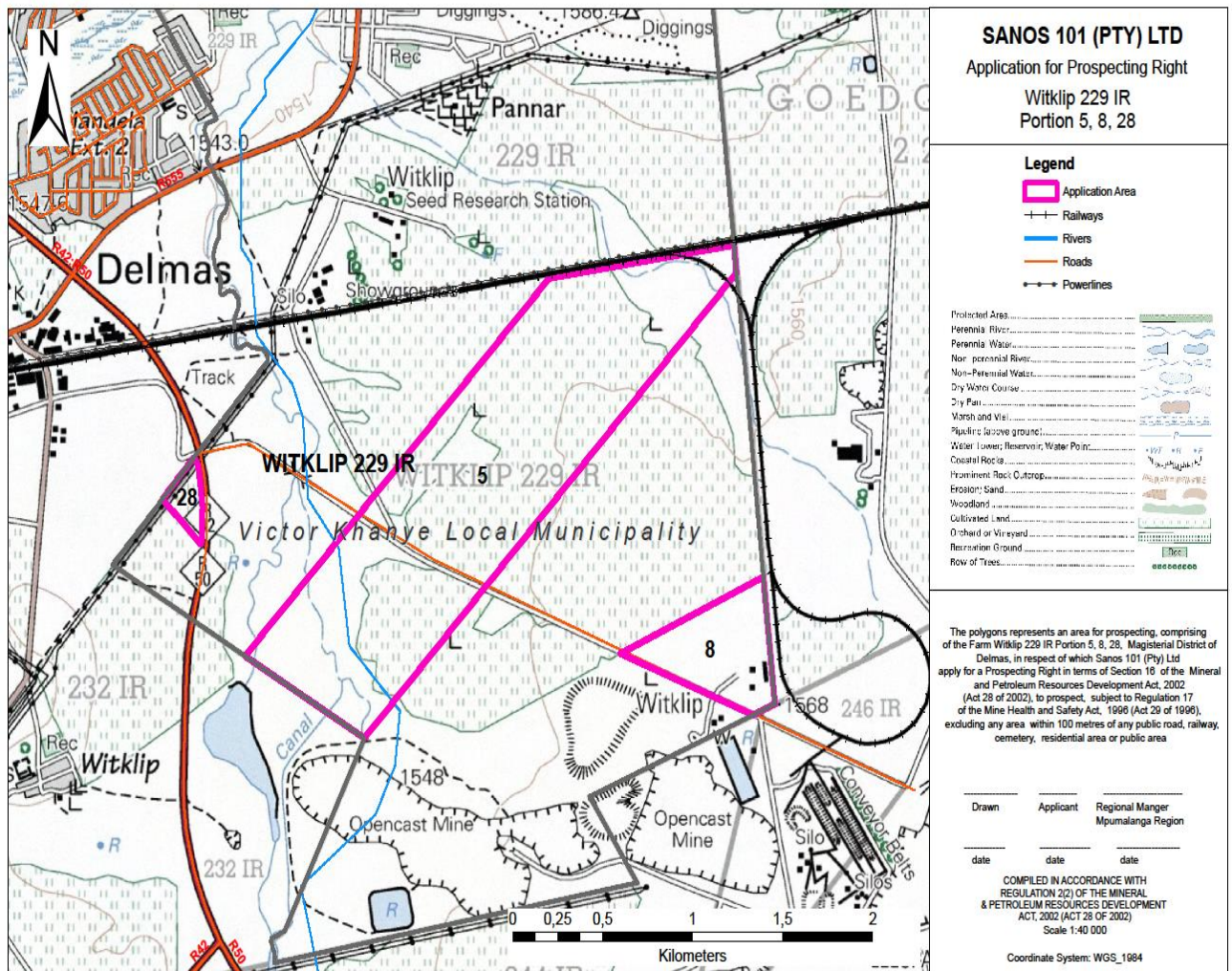


Figure 1: Locality map indicating the proposed prospecting area

d) Description of the scope of the proposed overall activity

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

i) Listed and specified activities

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE
Prospecting activity	200 ha	X	R327:Activity no.20
Drill Site	0.4ha		
Access roads	400m		
Sump	500m ²		
Stockpile	20m ²		

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 proponent is intending to prospect for mineral commodity of Coal. The prospect area is situated in Delmas within Victor Khanye Local Municipality in Mpumalanga Province.

The number of boreholes to be drilled is 10. Prospecting for above-mentioned minerals is a dynamic and result-driven operation which proceeds in phases, the outcome of which cannot be predicted or predetermined. The programme could be stopped at any stage during the prospecting operation if the results are negative or non-

economical. Prospecting activities to be undertaken include non-invasive (e.g. desktop studies and ground geophysical surveys) and invasive (e.g. drilling) techniques.

The size of the areas where prospecting will take place will be limited in order to minimise the surface disturbance per site and the activities carried out will only require the clearing of shrubs and grass. It must be noted that no roots of both grass and shrubs to minimise erosion. Consequently, the site will rapidly recover following completion of exploration activities. The prospecting activities are expected to be concluded in a 5 years period and have been divided into phases:

Description of non-invasive activities:

- **A desktop analysis** using satellite imagery, mapping and a literature review has already been initiated as part of the application.

- **Geophysical survey**

Ground geophysical surveys will involve the systematic measurement of magnetic, gravitational and electromagnetic fields over target areas of interest within the property, using appropriate instruments. The individual survey areas will vary between 500 x 500m to 2 x 2km depending on the inferred size of any target. Magnetic survey lines will be spaced at a maximum of 50m apart and readings will be taken at a minimum of 5m intervals along the lines.

Electromagnetic and gravity survey lines will be spaced at a maximum of 100m apart with readings taken at a maximum of 50m along the lines. After data collection has been completed, data processing and visualization will be carried out to allow the interpretation of the survey.

- **Resource estimation**

The borehole, geophysical survey and analytical data/results are captured into an electronic database. A geological model is then developed that forms the basis for the resource estimate. The purpose of the resource estimate is to obtain an indication of the tonnage and quality of a potential base metal deposit.

The activities listed above (i.e. invasive and non-invasive activities) can be divided into various phases:

Description of invasive activities:

- **Drilling**

Drilling will be the most important method of prospecting. Diamond core drilling method will be used. The rig is mounted on a 4 x 4 truck or trailer. The holes diameter is typically 30mm. The boreholes depths will be at 35m with the total approximately 1050m. An independent and experienced drilling contractor will be used to complete the drilling in accordance with industry best practice and in compliance with the Mine Health and Safety Act. Borehole sites are GPS located and pegged. The site will be inspected and photographed prior to any disturbance. The

removal of vegetation will be within the drill pad area and will be demarcated prior to construction, to ensure that the footprint of the disturbance is limited. Topsoil stripping will be restricted to the footprint of the site under operation as far as possible to minimise soil erosion. Where practicable topsoil will be stripped to a depth of 10cm and stockpiled separately. After each drill hole is complete, logged and sampled, the borehole collar is surveyed by an independent surveyor using a high-accuracy differential GPS. Thereafter the drill sumps will be filled in, the drill area rehabilitated and photographed according to the procedures as stipulated in the Environmental Management Plan. The rehabilitation process will be closely monitored to ensure that standards are not compromised. A drill site will only be considered rehabilitated when done in accordance with applicable legislation and acceptable environmental standards.

- **Sampling and Analyses/Test Work**

The boreholes will be logged and sampled where mineralisation has been identified. Samples will be submitted for analyses to determine the average metal content. Each sample is logged, halved, bagged and numbered in the field by the geologist and field assistants. The bagged samples are then sent for analyses and the other half sample stored for future test work.

The Construction phase

As this activity mainly entails Prospecting, the Construction Phase is not relevant. A small drill camp will be set up on site, Enviro-loo ablution facilities placed in close proximity to it, drill site, access road, equipment storage will be located at an environmentally secure position/s agreed upon by the applicant, the landowner/s and the Environmental Control Officer (ECO) and cannot be determined at this stage of the process. No permanent structures will be erected.

The Prospecting (Operational) phase

In terms of this application, non-invasive prospecting activities would be carried out by the applicant within the prospecting study area once the right has been approved. The identified target areas shall be visited by means of 4x4 vehicles along existing farm access as far as practically possible. Dense/intact land parcels would be accessed by foot. During this phase, it is anticipated that there will be limited site clearance. The equipment which will be used are 4x4 vehicles in the initial phase.

During the invasive drilling stage a drilling rig will be used. The invasive prospecting phase of the project will involve the actual drilling, survey and sampling. Drilling and sampling will increase noise and can create dust. Employees operating the drilling and sampling equipment will use personal protective equipment (PPE) such as ear plugs to minimise exposure to the noise from machinery, dust masks, hard hats, safety boots, etc. Working hours (drilling and sampling) will be limited to between 6am and 6pm. A total of approximately 10 holes will be drilled as part of Phase 2 and 3 respectively (thus per phase) with 30mm diameter, to a depth of 35m with the total approximately

1050m. All activities will be done in accordance with industry best practice and in compliance with the Mine Health and Safety Act.

The Decommission/Rehabilitation phase

Decommissioning phase involve rehabilitation of the area to the state in which it was prior to prospecting and disturbance. All equipment will be removed from the site. All the stockpiled soil will be backfilled into the sumps and boreholes. Any rock cores and any ablation facilities that were erected will be removed. Rehabilitation measures are described in more detail later in this report.

e) Policy and Legislative Context

Table 1: Policy and Legislative Context

<p>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</p>	<p>REFERENCE WHERE APPLIED</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</p>
<p>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></p>	<p>Applied at potential impacts identification as well as mitigation measures and public participation</p>	<p>Rights of all personnel who are directly or indirectly involved in the project has been respected and their concerns attended to during public consultation</p>
<p>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</p>	<p>Impact assessment (best practices)</p>	<p>Mitigation measures and recommendations where provided according to best practice standards.</p>

<p>“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”.</p>		
<p>Mineral and Petroleum Resources Development Act</p>	<p>The prospecting activities requires the permit from the DMR</p>	<p>A prospecting permit has been lodged with the DMR.</p> <p>The appropriate environmental authorisation will be obtained before proceeding with any prospecting activities.</p> <p>No drilling activity will be conducted within a sensitive environment.</p> <p>Measures will be implemented to prevent any pollution occurring during the drilling activities.</p> <p>Once drilling at a drill pad is complete the area will be rehabilitated to its pre-drilling state.</p>

<p>National Environmental Biodiversity Act</p> <p>The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No.10 of 2004), provides for:</p> <p>(i) the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998;</p> <p>(ii) the protection of species and ecosystems that warrant national protection;</p> <p>(iii) the sustainable use of indigenous biological resources;</p> <p>(iv) the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources;</p> <p>(v) the establishment and functions of a South African National Biodiversity Institute;</p>	<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> <p>(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;</p> <p>(b) destroy, damage, excavate or remove from its original position, collect or own any archaeological material or paleontological material or object or meteorite;</p> <p>(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object;</p> <p>(d) Bring onto or use any equipment which assists in the detection or recovery of metals or archaeological and paleontological material or objects.</p>	<p>Impact Assessment</p>	<p>Any area or feature of Heritage importance will be managed and no drilling activities will take place with 200m of any identified heritage resource such as a grave.</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; (c) Impeding or diverting the flow of water in a watercourse; (d) Engaging in a stream flow reduction activity contemplated in section 36; (e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1); (f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; (g) Disposing of waste in a manner which may detrimentally impact on a water resource;</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>

<p>National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA)NEM: WA</p>	<p>Management measures environmental awareness plan</p>	<p>The generation of potential waste will be minimised through ensuring employees of the drilling companies are subjected to the appropriate environmental awareness campaign before commencement of drilling.</p> <p>All waste generated during the drilling activities will be disposed of in a responsible legal manner.</p>
<p>National Environmental Management: Air Quality Act, Act 39 of 2004 (NEMAQA)NEM:AQA</p>	<p>Management measures</p>	<p>Appropriate dust extractions / suppression equipment will be a condition imposed on the drill contractor for the drill rigs.</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).

Sanos 101 (Pty) Ltd has identified coal mining as a key activity in the local economy. The applicant chose to prospect coal in the Delmas area which is known for having coal mineral deposits.

Prospecting activity is therefore needed to:

1. Confirm and obtain additional information concerning potential targets through minimally non-invasive activities (e.g. desktop studies) and invasive (e.g. drilling) activities

2. Assess if the coal can be extracted through future mining in an environmentally, socially and economically viable manner. Should prospecting activity prove that there are feasible mineral to allow mining, a new mine may be developed which would generate extensive employment opportunities.

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 Karoo Super Groups and the area applied for has been listed in historical literature as known sites of coal, pseudocoal and other mineralization.

Activities

- Geophysical surveys – these are 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:

Until such time that the non invasive activities have been completed the exact location of the drill sites can not be confirmed. However the following buffers will be applied to the final site selection;

- No drill site will be positioned within 100m of a structure
- No drill site will be positioned within 100m of a water course
- Where possible existing access roads will be utilised to access the drill sites

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

No location alternative has been considered. 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 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;

Each drill site will require an area of approximately 0.05ha for the duration of the drilling activities. All of the drilling activities will be contained within the 0.05ha demarcated area. There are no alternative design or layout options for the implementation of a drilling programme.

d) The technology to be used in the activity;

No alternative technology has been considered for the prospecting activities.

e) The operational aspects of the activity

The activities will commence with geo-physical survey, which is a non-invasive technique. This manner of survey will ensure that the applicant can clearly delineate areas which are regarded as suitable for further investigation and no unnecessary surface disturbance will be undertaken.

Prospecting activities will occur continuously until such time that drilling at individual sites is completed. However, when reaching an access agreement with the identified impacted property owners, applicant will ensure that the planned invasive (drilling) activities commence and operate at times that minimise disruption and exposure risks, that is, post-harvest period, daylight hours, and school holidays. This will be discussed and agreed upon in consultation with interested and affected parties prior to the implementation of prospecting activities.

f) The option of not implementing the activity

Should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves will be lost. Furthermore, prospecting activities are essential to investigate and confirm the existence/presence of mineral deposits and also required to generate a

SAMREC compliant mineral resources statement or competent persons report (CPR). Furthermore, investment in the mining industry will not transpire without prospecting activities and should the Prospecting Right application be denied, valuable economic and socio-economic opportunities may be lost.

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.

This section describes the process implemented to consult with interested and affected parties

Interested and affected parties were notified through the following means:

Newspaper advertisements:

The advert was placed on Highveld Chronicle

Site notices:

Site notices were erected within the project site.

Delivery of background information documents:

- Background information documents were distributed to the stakeholders and interested and affected parties within the prospecting right area.

Email notifications

- Emails (including a background information document and draft BAR) were sent to all identified interested and affected parties where email addresses were available.

Telephonic conversations

- Where necessary telephonic conversations were held prior to sending out information.

iii) Summary of issues raised by I&Aps-

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

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

Lawful occupier/s of the land			No comment received yet		
Landowners or lawful occupiers on adjacent properties			No comment received yet		
Municipal councillor			No comment received yet		
Municipality	X		No comment received yet		
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e			No comment received yet		

Communities	X		No comment received yet		
Dept. Land Affairs					
FN Mdushani	X	04/10/2018	According to our database, there are land claim on the mentioned farm but the mentioned portions are not affected at this stage	Thank you for the response.	
Traditional Leaders			No comment received yet		
Dept. Environmental Affairs			No comment received yet		
Other Competent Authorities affected			No comment received yet		
<u>OTHER AFFECTED PARTIES</u>			No comment received yet		
<u>INTERESTED PARTIES</u>			No comment received yet		

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).

- **Topography**

The project area has gentle slopes of less than 4°. The topographical model indicates that the elevation of the project area decreases from 1 612 metres above mean sea level (m.a.m.s.l.) in the south, to 1 482 (m.a.m.s.l.) in the north. The slope aspect / direction of the project area is not in any specific direction due to the undulating topography.

- **Climate**

The mean annual temperature of the project area ranges between 16°C in the west to 12°C, with an average of about 15°C for the catchment as a whole. Maximum temperatures are experienced in January and minimum temperatures usually occur in July. Rainfall is strongly seasonal with most rain occurring in the summer period (October to April). The peak rainfall months are December and January.

Rainfall occurs generally as convective thunderstorms and is sometimes accompanied by hail. Frost occurs in winter and there is occasional light snow on high lying areas. The overall feature of mean annual rainfall over the Upper Olifant WMA is that it decreases fairly uniformly westwards from the eastern escarpment regions across the central plateau area.

The mean annual precipitation (MAP) for the watershed ranges from a high of 1000 mm in the east to a low of 500 mm in the west with an average of about 700 mm. Average potential mean annual gross evaporation (as measured by Class A-pan) ranges from 1 600 mm in the east to a high of 2 200 mm in the drier western parts.

The highest Class A-pan monthly evaporation is in January (range 180 mm to 260 mm) and the lowest evaporation is in June (80 mm to 110 mm)

- **Geology and Soil**

The project occurs in an area where the underlying geology is of the Karoo super group.

Sediments of the Karoo super Groups consist of mainly sandstones, mudstones and shales, cover a large portion of the project area. The aquifers are secondary aquifers with water associated with fracturing. Groundwater is often

associated with dolerite intrusions and the yields are very variable between 0.1 – 10 l/s depending on the type and fracturing of the sediments. Yields are normally higher in the Beaufort group than in the Ecca (Barnard, 2000).

Karoo super Groups and some basement rocks represent the major geological groups in the project area and north and central portion of the WMA around Mpumalanga. The most significant aquifer in the region is the Malmani dolomite, which forms part of the

Although this aquifer extent in terms of outcrop region is small, as a resource this is the most important groundwater related body in the area and constitutes one of the most extensive and heavily utilised groundwater resources within South Africa. Although the dolomite has a relatively low primary permeability, the development of karstic features due to the preferential solution along discontinuities such as joints, faults and bedding planes has served to develop the secondary permeability of the rock mass, particularly in chert-rich units such as the Monte Christo and the Eccles Formations. Groundwater movement within the dolomite aquifer in this area is associated with north-south trending joints and faults, which have experienced preferential solution. The occurrence of groundwater in these rocks occurs in compartments with the Natalspruit and Klipriver compartments prominent to the central part of the WMA, south/east of Johannesburg. (DWA: ISP, 2004).

Soil depths of the proposed area are generally moderate to deep with an undulating relief over the entire Upper Olifant WMA.

- **Biodiversity**

The project area consists of a great expanse of grassland. The grassland is largely a product of the climate in the rolling hills, escarpments, and valleys of the high plateau of southeast of the proposed site. Significantly, the grassland biome survives only in South Africa, and accounts for about 16.5 percent of the nation's total land area. Importantly, for both ecological functioning and economic development, the upland grassland is a great collector of rain water for South Africa. The grasslands hold rainwater as ground water, or in the wetlands and seasonal pans. Water is then released slowly throughout the year, including the dry season.

More specifically, the grassland biome which characterise much of the District, largely consist of a number of broad veld types. Using Acocks' Veld Types of South Africa, the broad spatial distribution of the veld types constituting the grassland biome, as well as other veld types occurring within the District.

- **Socio-Economic Environment**

The proposed project is within Victor Khanye Local Municipality.

Victor Khanye economy is one of the biggest economic areas and it is therefore expected that a significant number of employment opportunities are being provided in the area. Mining, trade and manufacturing are the major leading employment drivers in Victor Khanye LM.

The unemployment rate of Victor Khanye decreased slightly from 19.7% in 2011 to 16.4% in 2015 and was the lowest among all the municipal areas of Mpumalanga. Unemployment rate for females 21.8% and that of males 12.9%. Youth unemployment rate according to the 2011 Census figures 27.1% - challenge with especially very high youth unemployment rate of females. The largest employing industries in Victor Khanye are trade (including industries such as tourism), community/government services and mining. High labour intensity in industries such as agriculture, trade and construction.

- **Land Use and Capability**

The dominant agronomic land use in the area is dryland agriculture and logistic businesses. There is a distinct difference between the soil chemical parameters of the soils in these two land use areas. It is very clear from the chemical analysis of the soils that the land users producing crops have regularly ameliorated the soils to maintain productivity.

Although the extent and intensity of this amelioration varies throughout the site (often according to the management approach and practices of the specific land user) most of the soil fertility parameters are within the expected norms for dryland agriculture. The levels on the site represent a significant improvement over the natural background levels of nutrients.

The soils found on the site are considered to be of high agricultural potential. The soils on the site do not exhibit very wide variation in terms of classification categories but do exhibit variation in fertility due to current land use. The overall impacts on agricultural potential, crop production and food security will be low significant because the project will have a minimal impact on a small area. However, soils of high agricultural potential such as those found on the site need to be conserved for future agricultural production and therefore food security but unfortunately the financial yields on the site due to agronomic practises do not compare to the value of the coal that will be found.

- **Fauna**

The proposed site is situated within the Grassland biome and approximately one-third of all mammal species found in South Africa occur in this biome (SOER, 2004). In the past the ungulate fauna of the grasslands occurred in abundance. However due to the area transformation very little natural fauna remains on the proposed project site. Due to the developed nature of the site, no threatened or endangered fauna is anticipated.

- **Flora**

The region is dominated by the Grassland Biome. This biome is species rich and contains many threatened flora and fauna. The study area is situated within the Eastern Highveld Grassland which is characterised by short dense grassland dominated by the usual Highveld grass composition including *Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, and *Tristachya*. The regional vegetation of the area is, however, poorly conserved and has a national conservation status of Endangered. This is because the vegetation is severely under pressure from mining and cultivation, although there are no serious alien invasions reported. (Mucina & Rutherford, 2006; NBI, 2004).

- Surface Water
 - Catchment characteristics

The project area is situated within the Olifant water catchment.

There is no water course or river that run through the project area with the exception of dry drainage channels that flow during rainy periods.

The water users in the area are varied and include agriculture (irrigation), municipal including commercial and domestic.

- Surface water features

The dominant climatic, topographic, soil vegetation factors affecting the hydrology of the catchments are summarized below.

- The study area has a semi-arid climate characterized by short dry winters and longer wet summers. The seasonal variations in precipitation are significant. Temperatures are less variable. Minimum night time temperatures typically fall to 0 degrees in July/August and 15 degrees in December/January. Average day temperatures range between 16 and 26 degrees throughout the year;
- The catchment areas have typical gentle ground slopes of 1 to 4%;
- There is no any water course within the project area.

Vegetation in the area consists primarily of grassland and cultivated areas.

Generally, the predominant land use of the study area is agriculture and logistic businesses.

- Surface water use

Surface water within the proposed site boundary is used primarily for agricultural use.

- Groundwater

A detailed study on ground water was not done.

Based on the geological profile descriptions, the unsaturated zone is composed of soils and colluvium underlain by sandstone, siltstone, shale and coal, followed by diamictite and older basement rocks. The previous investigations conducted in the area, stated that the baseline geohydrological regime in the study area was made up of two aquifer systems. The first being the upper semi-confined aquifer, was said to occur in a weathered zone, which wasn't a reliably or widely used aquifer. The second deeper aquifer was said to be associated with fractures, fissures, joints and other discontinuities within the consolidated Karoo bedrock and associated intrusive, with static water levels between 3 and 15 meters below surface (mbs). The overall ambient groundwater quality is good except for slightly elevated metal (especially iron) concentrations where pH is slightly acidic in the felsic sandstone bedrock. (*Delmas Coal EMPR by Jasper Muller & Associates: 1997*)

- Sites of archaeological and cultural interest

No sites of archaeological or cultural interest occur within close proximity to the proposed prospecting project.

- Air Quality

The air quality in the area is relatively poor due to emissions from the agricultural activities, and traffic. Air pollutants within the region include total suspended particulate (TSP) & PM10, SO₂, NO₂ and greenhouses gasses (CH₄, CO₂), emitted by collieries (fugitive dust, spontaneous combustion), agriculture (fugitive dust), and veld fires. Limited monitoring occurs within the region, mainly of fallout dust, but also PM10, SO₂ and NO_x.

- Noise

The proposed project site is located within an agricultural environment.

Background noise within the proposed prospecting site is thus as a result of:

- Vehicles using the various gravel roads that extend through the site;
- Agricultural and mining activities associated with the various farms on site and the immediate surrounding area;

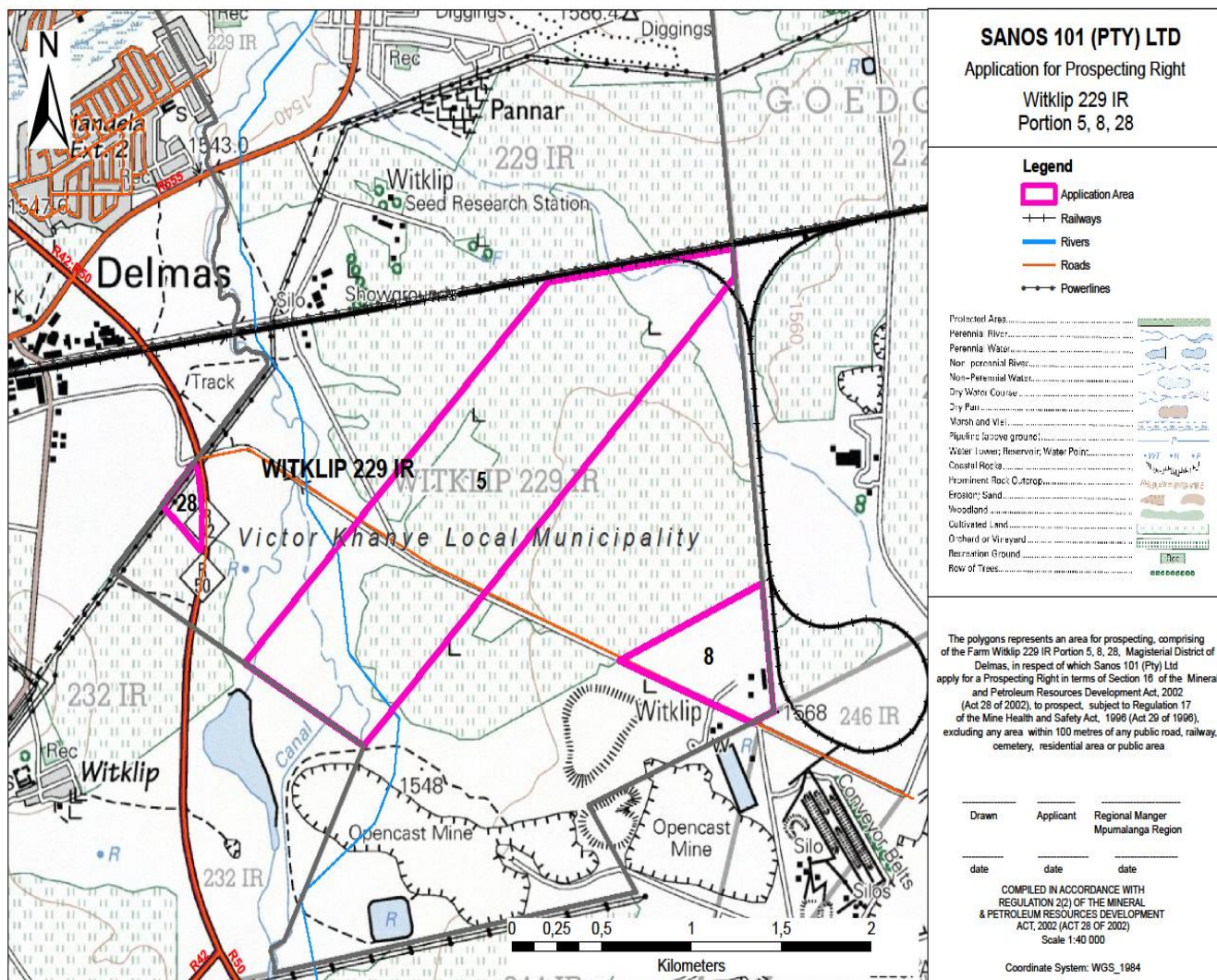
(a) Description of the current land uses.

- The land is currently used for agricultural activities and logistic businesses.

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

There is no any environmental feature on the proposed site. There are some building structures on site which are used for agricultural and logistic purposes.

(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 2: 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
	Conflict with local community	Property Vandalism and Criminality	1	1	1	1	3 Negative	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							
	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
Decommissioning	Soil Contamination	Loss of soil fertility	1	1	1	2	6 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			
	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 3: Criteria Used for Rating of Impacts

CRITERIA	DESCRIPTION			
Extent	National (4)	Regional (3)	Local (2)	Site (1)
	The whole of South Africa	Provincial and parts of neighbouring provinces	Within a radius of 2 km of the construction site	Within the construction site
Duration	Permanent (4)	Long-term (3)	Medium-term (2)	Short-term (1)
	Mitigation either by man or natural	The impact will continue or last for the entire	The impact will last for the period of	The impact will either disappear

	process will not occur in such a way or in such a time span that the impact can be considered transient	operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	the construction phase, where after it will be entirely negated	with mitigation or will be mitigated through natural process in a 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 4: 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)

The majority of the prospecting activities are non-invasive and hence will have limited environmental and social impact. The invasive activities will entail the drilling of approximately four boreholes per drill site will have a minimal environmental and social impact as each drill site will be confined to an area of approximately 0.05 hectares.

Ten (10) drill sites are anticipated with total footprint of 0.4 ha, which need to be viewed in the context of the entire prospecting license area under application which covers 200 hectares.

All of the identified impacts will occur for a limited time and the extent of the impacts will be localised. All of the identified impacts can be suitably mitigated with the residual impact ratings being of low significance. After drilling activities have been completed and the drill pads rehabilitated to pre-drilling status, the impacts will cease to exist.

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 6:00 a.m. to 17:30
- Directly affected, adjacent landowners in proximity to the site will be informed of the planned activities.

Heritage Impact Management

- 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.
- No site camp to be established, employees will be staying out of the site.

Water and Soil Impact Management

- Existing 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, 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.

- 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 right area is targeted as it is known for coal and pseudocoal deposits. The proposed prospecting license area is therefore regarded as the preferred site and alternative site have not been considered.

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 watercourses 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 will be undertaken in a manner 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.
- A site visit was conducted. 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 identification of management measures are 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 5: Impact Assessment

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
Desktop Study	None Identified	N/A	Planning Phase	N/a	No mitigation Proposed	N/a
Site Access (haul road)	Destruction and / or disturbance of on-site fauna and flora.	Fauna and Flora	Construction Phase	Medium	Existing roads will be used as far as is practicable to minimize the potential loss of fauna and flora.	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
	Vehicle noise impact to the site	Fauna	Construction Phase	Medium	Site activities will be conducted during daytime hours 06h00 – 17h30 to avoid night time noise disturbances.	Low
Site establishment: (Vegetation clearing of drill pad area)	Destruction and / or disturbance of onsite fauna and flora.	Fauna and Flora	Construction Phase	Medium	<p>The removal of vegetation will be within the drill pad area and will be demarcated prior to construction, to ensure that the footprint of the disturbance is limited.</p> <p>The drill prospecting activities will take place on an already disturbed area, land where the original and growth had been disturbed through farming activities such as plough activities will regarded as preferential</p>	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					drilling sites. Sensitive grassland, clusters or indigenous and shrubs that may contain threatened and endangered species will be avoided. Care will be taken to avoid adverse impacts on nesting or feeding birds. • Veld fires will be prevented.	
Site establishment: (topsoil stripping of drill pad area)	Soil disturbance and erosion	Soil resources	Construction Phase	Medium	Topsoil stripping will be restricted to the footprint of the site under construction as far as possible to minimise soil erosion. Where practicable topsoil will be stripped to a depth of 10cm and stockpiled separately.	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE <i>if not mitigated</i>	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE <i>if mitigated</i>
	Dust emission from Soil stripping	Air pollution	Construction Phase	Medium	Dust suppression using water will be under taken to manage dust emissions from vehicle movement and other construction activities as and when needed.	Low
Site establishment: (Excavation of drill water sump	Destruction and / or disturbance of onsite fauna and flora.	Fauna and Flora	Construction Phase	Medium	<ul style="list-style-type: none"> • The drill fluid sump will be designed to incorporate effective fauna egress to avoid entrapment. • Clearing of vegetation for the drill water sump will be limited to the area needed for sump construction. • The drill prospecting activities will take place 	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					<p>on an already disturbed area, land where the original and growth had been disturbed through farming activities such as plough activities will be regarded as preferential drilling sites.</p> <ul style="list-style-type: none"> • Sensitive grassland, clusters or indigenous and shrubs that may contain threatened and endangered species will be avoided. • Care will be taken to avoid adverse impacts on nesting or feeding birds. • Veld fires will be prevented. 	

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
Waste generation and Management	Soil/Land pollution from waste that will be generated during construction activities	Soil/Land	Construction Phase	Medium	<ul style="list-style-type: none"> • Waste bins will be provided on site for the storage of waste. • Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general waste, recyclables and hazardous waste). • Wastes will be removed and disposed of at an appropriately licensed Landfill. 	Low
Exploration drilling and core sample collection	Potential water and soil pollution resulting from hydrocarbon spills and drill maintenance activities.	Water and soil resources	Operational Phase	Medium	Vehicle maintenance will be undertaken off -site. In the event that vehicle maintenance is undertaken on-site(i.e. such as breakdown maintenance) , drip trays and / or	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					<p>UPVC sheets will be used to prevent spills and leaks onto the soil.</p> <p>Unused machinery will be completely drained of oil and other hydrocarbons to ensure that leaks do not develop.</p> <p>Regular inspections of all vehicles will be carried out to ensure that all leaks are identified early and rectified.</p> <p>A spill kit will be available on each site where prospecting activities are in progress.</p> <p>Any spillages will be cleaned up immediately; and Drilling muds will contained in lined drill sumps</p>	

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					and this material will be removed from site and disposed in a licensed disposal facility.	
	Dust emissions from drilling and vehicle movements	Air pollution	Operational Phase	Medium	Dust suppression using water will be under taken as and when required to manage dust emissions from drilling by means of pouring some water into the borehole and dust from vehicle movement will be managed by using water cart to spray water over the dusty areas.	Low
	Noise from drilling activity	Fauna and Employee's health	Operational Phase	Medium	<ul style="list-style-type: none"> • Drilling activities will be conducted during daytime hours 06h00 – 17h30 to avoid night time noise disturbances. • Ear plugs will be supplied to all persons 	

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					working in high noise areas.	
	Impact on the ecosystems in the area	Fauna and Flora	Operational Phase	Medium	The drill prospecting activities will take place on an already disturbed area, land where the original and growth had been disturbed through farming activities such as plough activities will regarded as preferential drilling sites. . Sensitive grassland, clusters or indigenous and shrubs that may contain threatened and endangered species will be avoided. Care will be taken to avoid adverse impacts on nesting or feeding birds. • Veld fires will be prevented.	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
Excavation of drill water sump	Water and soil pollution resulting from disposal of drill fluids.	Water and Soil	Operational Phase	Medium	<ul style="list-style-type: none"> • A sump will be constructed with a sufficient capacity to receive drill fluids and allow for evaporation. • The sump will be constructed to divert stormwater away and / or around the sump to avoid clean stormwater inflow. 	Low
Waste generation and Management	Soil/Land pollution from waste that will be generated during operation activities	Soil/Land	Operational phase	Medium	<ul style="list-style-type: none"> • Waste bins will be provided on site for the storage of waste. • Waste separation will be undertaken at source and separate receptacles will be provided (i .e. general waste, recyclables and hazardous waste). 	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					<ul style="list-style-type: none"> Wastes will be removed and disposed of at an appropriately licensed Landfill. 	
Borehole capping	Destruction and / or disturbance of on site fauna.	fauna and flora	Decommissioning	Medium	Drill holes will be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes. Drill holes will be permanently capped as soon as is practicable	Low
Ripping of drill pad	Dust emissions from decommissioning activities	Air pollution	Decommissioning	Medium	Dust suppression using water will be undertaken to manage dust emissions from vehicle movement where water cart will	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site off ice, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
	Potential water and soil pollution resulting from hydrocarbon spills.	Water and soil resources	Decommissioning	Medium	be used to spray water over the dusty areas. <ul style="list-style-type: none"> • Spillages will 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. • Drill holes will be permanently capped as soon as is practicable to eliminate the risk of groundwater contamination. 	Low
Re-vegetation	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established	Soil resources	Decommissioning	Medium	Mechanical erosion control methods will be implemented if required. This may include the use of geotextiles.	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
					<p>Re-vegetation will be conducted through hand seeding exposed areas using indigenous grass species as determined by a suitably qualified ecologist .</p> <p>Re-vegetation efforts will be monitored every second month for a period of six months after initial seeding.</p> <p>An effective vegetation cover of 45% will be achieved. Re-seeding will be under taken if this cover has not been achieved after six month.</p>	
Drill water sump	Ground water pollution resulting from the percolation of water in sump into the ground	Ground water	Decommissioning	Medium	Water will be drained from the sump once drilling is completed and the sump will be closed and the areas will be re-vegetated	Low

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts) (e.g. dust , noise, drainage, surface disturbance, fly rock, surface water contamination,	ASPECTS AFFECTED	PHASE <i>In which impact is anticipated</i> (e.g. Construction, commissioning, operational Decommissioning, closure, post - closure)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control , or stop) through (e.g. noise control measures, storm water control , dust control , rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.	SIGNIFICANCE if mitigated
Waste generation and Management	Soil/Land pollution from waste that will be generated during operation activities	soil	Decommissioning	Medium	<ul style="list-style-type: none"> • Waste bins will be provided on site for the storage of waste. • Waste separation will be undertaken at source and separate receptacles will be provided (i.e. general waste, recyclables and hazardous waste). • Wastes will be removed and disposed of at an appropriately licensed Landfill. 	Low
Access road management	Loss of fertile top soil	Soil	Decommissioning	Medium	<ul style="list-style-type: none"> • Access roads after the operational phase of the project activities will be maintained and rutting will be repaired. 	Low

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

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.
- 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 .

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. 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, 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 proposed prospecting activities should be authorised. In reaching this conclusion the EAP has considered that;

- The exploration program will be developed in a stepwise manner commencing with non-invasive activities to bring refinement to understanding of the geological anomaly;
- Should the exploration program advance to include the need for exploration drilling, the environmental impacts associated with the limited drilling activities are deemed to be minimal provided that the proposed mitigation is implemented;
- The spatial extent of the physical impact is 0.05 hectare per drill site over a prospecting right license area of 200 hectares; a maximum of four drill sites will be established in total throughout the duration of the drilling programme and therefore the maximum anticipated footprint is 0.4 ha;
- With appropriate care and consideration the impacts resulting from drilling can be suitably avoided, minimised or mitigated;
- With implementing the appropriate rehabilitation activities, the impacts associated with the drilling activities can be reversed; and
- Without implementation of prospecting activities the knowledge concerning the potential mineral resource within the prospecting right area will not be confirmed.

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, 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 68 924.00**

(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.

(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, Sanos 101 (Pty) Ltd 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 6: 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 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

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 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**).*

The proposed prospecting activities (including the drilling) requested as part of this authorisation is the only current viable manner in which a mineral resource can be identified and used to generate a SAMREC compliant resource which is a minimum requirement to determine whether it is economically viable to invest in mining activities in the area.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. 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).

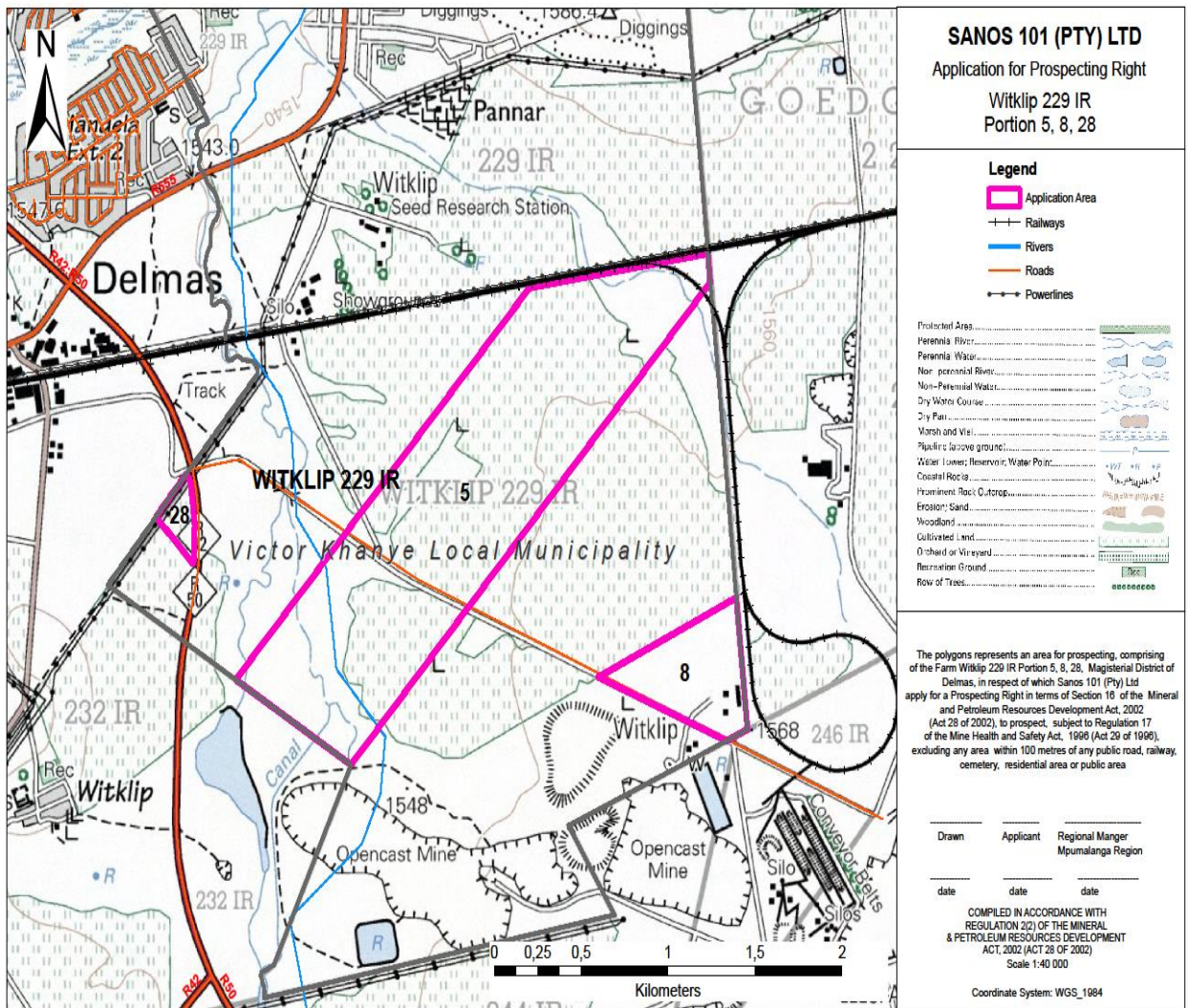
b) Description of the Aspects of the Activity

(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 environmental management programme is already included in PART A, section (1) (h).

c) Composite Map

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



d) Description of Impact management objectives including management statements

i) Determination of closure objectives

(Ensure that the closure objectives are informed by the type of environment described)

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 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.

The drilling activities will use approximately 2000L per day which falls within “small industrial user” where the use is less than twenty cubic metres per day for prospecting. 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 the land owner or local municipality. The department responsible for water resources shall be consulted with regards to any water related agreement with either the land owner or local municipality prior to drilling. 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?

No – Based on the limited water needs of the proposed prospecting activities, water from a legal source will be brought to the drill sites by mobile water tanker as and when required. The department responsible for water resources shall be consulted with regards to any water related agreement with either the land owner or local municipality prior to drilling.

iv) Impacts to be mitigated in their respective phases

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

Table 7: Impacts Mitigation

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	Locate sensitive and protected areas such as rivers, graveyards etc	N/A

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
Geophysical Surveys	Planning	Noise nuisance affecting local farming, forestry and tourism industries	200ha	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 	<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	Locate sensitive and protected areas such as rivers, graveyards etc	Throughout Geophysical Survey Phase

[Blue Header Bar]									
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
					prospecting site.				

Drill Site Establishment	Planning	<ul style="list-style-type: none"> • Loss of Vegetation when clearing for drill site area • Soil contamination from possible chemicals and oil spills. • Soil Compaction from the movement of vehicles into the site • Water contamination when 	0.4ha	<ul style="list-style-type: none"> • Loss of Biodiversity • Soil Contamination • Water Contamination 	<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"> • Drill site must be demarcated before any activity can be undertaken. • Drill site should be located more than 200m away from protected sites. • Vegetation clearing must be limited to demarcated areas only • The drill site must be 	<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 100 metres of any natural rivers. • Protected trees will not be removed. 	Throughout the project.
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		<p>effluents flow from the site into natural water streams</p> <ul style="list-style-type: none"> • Spread of alien vegetation across the proposed site • Loss of fauna during site clearing and vehicle movement. • Restricted fauna movement by the drill site fence. 				<p>located more than 100 m away from any water drainage.</p> <ul style="list-style-type: none"> • Removed topsoil must be stockpiled for rehabilitation purpose. • Search and rescue should be conducted to save fauna • Existing access roads must be used as 			
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		<ul style="list-style-type: none"> • The use of bushes as toilets by employees 				<p>far as possible.</p> <ul style="list-style-type: none"> • Alien vegetation must be given extra care to prevent spread. • Drill site must be established such that it does not impede stormwater flow • Marked waste bins must be provided for safe 			
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						<p>disposal of waste</p> <ul style="list-style-type: none">• Chemical toilets must be provided at a ratio of 1:15 people and should be emptied regularly by certified sewage handling company.			
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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
Drill site Preparation	Drilling Phase	<ul style="list-style-type: none"> Removal of protected and indigenous trees. Contamination of surface water. Generation of dust from clearing activities Soil contamination from spillages of oils and fuel 	0.3 ha	<ul style="list-style-type: none"> Water contamination Soil contamination Air quality deterioration Visual disturbances Health and Safety Loss of vegetation Soil erosion 	<ul style="list-style-type: none"> Water quality monitoring Control of vegetation clearing Controlling access into the site. 	<ul style="list-style-type: none"> Protected areas must be marked 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 	<ul style="list-style-type: none"> Remain within the approved Prospecting Work programme. Protect sensitive areas Prevent contamination of environmental elements. Creates risk and hazards free environment 	<ul style="list-style-type: none"> Protected areas will be clearly marked on a sensitivity map Health and Safety standards will be maintained Spillage kit control will be available on site 	

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"> • 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 		<ul style="list-style-type: none"> • Stream sedimentation 		<ul style="list-style-type: none"> • e possible barricaded areas. • 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 			

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
		<p>sinks on poorly compacted soils.</p> <ul style="list-style-type: none"> • Soil erosion where vegetation has been cleared. 				<p>provided and clearly marked to promote waste separation.</p> <ul style="list-style-type: none"> • The working area must be watered regularly to prevent dust generation. • Stormwater channels must be directed away from erosion prone areas 			

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"> Waste water must be contained in site, treated and released. 			
Drilling activities	Drilling phase	<ul style="list-style-type: none"> Ground water contamination when aquifers are disturbed Liquid waste flowing down the hole to contaminate ground water 	0.3 ha	<ul style="list-style-type: none"> Water contamination. Air Pollution Stream sedimentation Increased surface flows. Health and Safety risks. 	<ul style="list-style-type: none"> Controlling of access to the site Controlling flow of storm water Controlling dust generation Rehabilitation of the site 	<ul style="list-style-type: none"> Geophysical methods should be used to detect positions of aquifers to avoid ground water contamination. The drill bits and 	<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 Storm water control channels 	The mitigation will be implemented before the commencement of drilling activities and be continuous thereafter.

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"> • Soil contamination from drilling effluents • Generation of muddy flows that may contaminate surface waters • Generation of dust from drilling activities and ground disturbances 			<ul style="list-style-type: none"> • Monitoring of water quality 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Prevent contamination of natural elements • Eliminates health hazards 	<ul style="list-style-type: none"> • will be developed • Waste management strategies will be implemented • An open register for interested and affected parties will be maintained • Noise will be limited 	

Environmental Impact Assessment									
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"> 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 				<ul style="list-style-type: none"> The drill holes must also be capped to eliminate health hazards. Access by wild animals into the site must be limited. The drill site must be regularly watered to prevent dust generation. There should be a 		<ul style="list-style-type: none"> within accepted threshold. Drilling activities will be conducted within demarcated areas only. 	

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
		<p>may be trapped by the mud.</p> <ul style="list-style-type: none"> • Disruption of essential services such as access roads when covered by the mud from the drilling site. • Poor housekeeping could result in littering which could lead to river 				<p>periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</p> <ul style="list-style-type: none"> • Drilling activities should be conducted during day time to avoid noise during late hours. • Storm water channels 			

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
		contamination <ul style="list-style-type: none"> Health and safety hazards to humans, and wild animals. 				must be developed which drains water away from erosion prone areas. <ul style="list-style-type: none"> The muddy water from the drilling activities must be contained on site. Where muddy water has flown over access roads, the mud must 			

Environmental Impact Assessment									
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
						<p>be scrapped to prevent slippery road conditions.</p> <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 roads in all instances as far as is practicable. 			

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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"> 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 housekeepi 			

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
						ng practices.			
Chemical and Fuel handling	Drilling activities	<ul style="list-style-type: none"> • Spillages and leaks contaminating water and soil. • Spread of pathogens affecting both humans and animals. • Improper sewage removal methods resulting in 	0.4ha	<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 handling on site should be placed on a bunded surface • The chemical toilets must be emptied regularly by a certified company. • All hazardous wastes must be disposed 	<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.

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
		contamination of soil and water.				<p>of at an appropriate landfill and a certificate of disposal must be filed on site.</p> <ul style="list-style-type: none"> All general wastes must be disposed of at a registered general waste landfill site and disposal certificate must be filed on site. 			

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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"> • 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. • Appropriate Personal 			

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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
						Protective Equipment must be provided to staff working with hazardous chemicals. <ul style="list-style-type: none"> • Spillages must be attended to as soon as they occur. • Depending on the nature and extent of the spill, contaminated soil must 			

Environmental Impact Assessment									
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
						<p>be either excavated or treated on-site.</p> <ul style="list-style-type: none"> • 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 			

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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
						<p>contaminated soil.</p> <ul style="list-style-type: none"> • 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 			

Environmental Impact Assessment									
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
						<p>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.</p>			

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
Transporting equipment out of site	Closure Phase	<ul style="list-style-type: none"> • Soil compaction during movement of heavy trucks. • Oil and fuel leaks from heavy trucks transporting drilling equipment. • Water contamination from water flowing from 	0.4ha	<ul style="list-style-type: none"> • Health and Safety Hazards • Soil Compaction • Water Contamination • Air Pollution • Control traffic movement • Site rehabilitation. 	<ul style="list-style-type: none"> • Site rehabilitation • Pollution Control • Traffic movement control • Monitoring of implemented control strategies 	<ul style="list-style-type: none"> • Vehicle movement should be properly planned and communicated with other road users. • Local farmers must be alerted of trucks movement • The dust roads must be watered prior movement 	<ul style="list-style-type: none"> • Remain within prospecting work programme. • Remain within noise control standards. • Remain within pollution control standards 	<ul style="list-style-type: none"> • The prospecting work will be completed within a specified period of 5 years. • Pollution control measures will be implemented • Consultation with affected parties and land 	During site closure when equipment are shipped out of site.

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
		contaminated site. <ul style="list-style-type: none"> • Loss of soil fertility. • Health hazards during loading of the equipment on transporting trucks. • Road accidents with other motorists. • Noise nuisance from the 				of heavy trucks. <ul style="list-style-type: none"> • Existing access roads must be used. 		owners will remain continuous.	

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
		movement of heavy trucks							
Decommissioning of drill 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. 	0.4 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. 	<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 	

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"> • Dust Pollution from demolition activities. • Debris flow of general wastes into natural water drainages. • Health and safety hazards 			<ul style="list-style-type: none"> • Where possible surfaces should be watered to prevent dust. • Demolition activities should be communicated with directly affected parties to alert them of noisy activities. • All equipment 			practicable.	

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
					<p>should be shipped out of site.</p> <ul style="list-style-type: none"> 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
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Desktop Study	No Impact	None	Planning	None	Protect sensitive site
Geophysical Surveys	Noise nuisance affecting local schools, and livestock farming	Noise Generation	Planning	<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. 	Remain within the Noise Regulation Standards
Drill Site Establishment	<ul style="list-style-type: none"> Loss of Vegetation when clearing for drill site 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 	<ul style="list-style-type: none"> Loss of Biodiversity Soil Contamination Water Contamination 	Planning	<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"> Remain within the approved PWP. Identify and Protect sensitive areas. Maintain communication with affected and Interested parties
	<ul style="list-style-type: none"> Loss of fauna during site clearing and vehicle movement. Restricted fauna movement by the drill site fence. 				

	The use of bushes as toilets by employees				
Drill site Preparation	<ul style="list-style-type: none"> • Removal of protected and indigenous trees. • 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"> • Water contamination • Soil contamination • Air quality deterioration • Visual disturbances • Health and Safety • Loss of vegetation • Soil erosion • Stream sedimentation 	Drilling Phase	<ul style="list-style-type: none"> • Protected trees must be marked • 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 	<ul style="list-style-type: none"> • Remain within the approved Prospecting Work programme. • Protect sensitive areas • Prevent contamination of environmental elements. • Creates risk and hazards free environment

				<ul style="list-style-type: none"> Waste water must be contained in site, treated and released. 	
Drilling activities	<ul style="list-style-type: none"> Ground water contamination when aquifers are disturbed 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"> Water contamination. Air Pollution Stream sedimentation Increased surface flows. Health and Safety risks. 	Drilling phase	<ul style="list-style-type: none"> Controlling of access to the site Controlling flow of storm water Controlling dust generation Rehabilitation of the site Monitoring of water quality 	<ul style="list-style-type: none"> Remain within the Prospecting Work Programme. Protect sensitive areas Maintain consultation with land owners Prevent contamination of natural elements Eliminates health hazards

	<ul style="list-style-type: none"> Poor housekeeping could result in littering which could lead to river contamination and health hazards to the cattle. <p>Health and safety hazards to humans, livestock and wild animals.</p>				
Chemical and Fuel handling	<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. 	<ul style="list-style-type: none"> Soil Contamination Water contamination Health and Safety risks 	Drilling activities	<ul style="list-style-type: none"> Control chemical storage Control chemical spillages and leaks 	<ul style="list-style-type: none"> Protect water resources Create a health hazard free environment
Transporting equipment out of site	<ul style="list-style-type: none"> Soil compaction during movement of heavy trucks. 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. 	<ul style="list-style-type: none"> Health and Safety Hazards Soil Compaction Water Contamination Air Pollution Control traffic movement Site rehabilitation. 	Closure Phase	<ul style="list-style-type: none"> Site rehabilitation Pollution Control Traffic movement control Monitoring of implemented control strategies 	<ul style="list-style-type: none"> Remain within prospecting work programme. Remain within noise control standards. Remain within pollution control standards

	<ul style="list-style-type: none"> • Road accidents with other motorists, or hitting livestock on the access road. • Noise nuisance from the movement of heavy trucks 				
Decommissioning of drill sites	<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. • Health and safety hazards 	<ul style="list-style-type: none"> • Water contamination • Air pollution • Noise pollution • Health and Safety Hazards 	Site Closure	<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. • Demolition activities should be communicated with directly affected parties to alert them of noisy activities. • All equipment should be shipped out of site. • The temporary structures must be demolished and resulting wastes be removed from site. 	<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

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
Desktop Study	No Impact	None	N/A	Locate sensitive and protected areas such as rivers, graveyards and protected areas
Geophysical Surveys	Noise nuisance affecting local schools, hospitals and livestock farming	<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.	Throughout Geophysical Survey Phase	Locate sensitive and protected areas such as rivers, graveyards and protected areas
	Destruction of Heritage and Cultural Resources	<ul style="list-style-type: none"> • 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. • Under no circumstances will archaeological or palaeontological objects or material be destroyed, damaged, excavated, altered, 	Throughout Geophysical Survey Phase	Protection of all heritage resources.

		defaced or otherwise disturbed without the necessary permits (where and if applicable).		
Drill Site Establishment	<ul style="list-style-type: none"> • Loss of Vegetation when clearing for drill site 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 	<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 	Throughout the project.	<ul style="list-style-type: none"> • Identified protected and sensitive areas will be protected. • No activity is to be undertaken within 100 metres of any natural rivers. • Protected trees will not be removed.
Drill site Preparation	<ul style="list-style-type: none"> • Loss of fauna during site clearing and vehicle movement. • Restricted fauna movement by the drill site fence. • The use of bushes as toilets by employees 	<ul style="list-style-type: none"> • Protected trees must be marked • 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. 	Throughout the project.	<ul style="list-style-type: none"> • Protected areas will be clearly marked on a sensitivity map • Health and Safety standards will be maintained • Spillage kit control will be available on site

		<ul style="list-style-type: none"> • 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. 		
Drilling activities	<ul style="list-style-type: none"> • Ground water contamination when aquifers are disturbed • 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. 	<ul style="list-style-type: none"> • Controlling of access to the site • Controlling flow of storm water • Controlling dust generation • Rehabilitation of the site • Monitoring of water quality 	The mitigation will be implemented before the commencement of drilling activities and be continuous thereafter.	<ul style="list-style-type: none"> • Protected trees will be marked by tapes • Sensitive areas will be clearly marked on a scaled map • Storm water control channels will be developed • Waste management strategies will be implemented • An open register for interested and affected parties will be maintained

	<ul style="list-style-type: none"> • 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. • Poor housekeeping could result in littering which could lead to river contamination and health hazards to the cattle. <p>Health and safety hazards to humans, livestock and wild animals.</p>			<ul style="list-style-type: none"> • Noise will be limited within accepted threshold. • Drilling activities will be conducted within demarcated areas only.
	<p>Destruction of Heritage and Cultural Resources</p>	<p>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.</p> <p>Under no circumstances will archaeological or palaeontological objects or material be destroyed, damaged, excavated, altered, defaced or otherwise</p>	<p>The mitigation will be implemented before the commencement of drilling activities and be continuous thereafter.</p>	<p>Protection of all heritage resources</p>

		disturbed without the necessary permits (where and if applicable).		
Chemical and Fuel handling	<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. 	<ul style="list-style-type: none"> • Control chemical storage • Control chemical spillages and leaks 	During drilling activities.	Fuel and chemicals will be stored according to storage specifications
Transporting equipment out of site	<ul style="list-style-type: none"> • Soil compaction during movement of heavy trucks. • 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"> • Site rehabilitation • Pollution Control • Traffic movement control • Monitoring of implemented control strategies 	During site closure when equipment are shipped out of site.	<ul style="list-style-type: none"> • The prospecting work will be completed within a specified period of 5 years. • Pollution control measures will be implemented • Consultation with affected parties and land owners will remain continuous.

Decommissioning of drill site	<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. • 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. • Demolition activities should be communicated with directly affected parties to alert them of noisy activities. • All equipment should be shipped out of site. • The temporary structures must be demolished and resulting wastes be removed from site. 	During decommissioning of drill site	<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.
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(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 was made available to each registered stakeholder for review and comment. All comments were captured in the issues and response section and were included into the 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.

Removing all infrastructures, including the drill rig, the mobile water tank and the chemical toilet.

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.

- **Borehole capping**

Drill holes must be permanently capped as soon as is practicable. Figure 2 below provides the prepared procedure for the secure plugging of exploration drill holes.

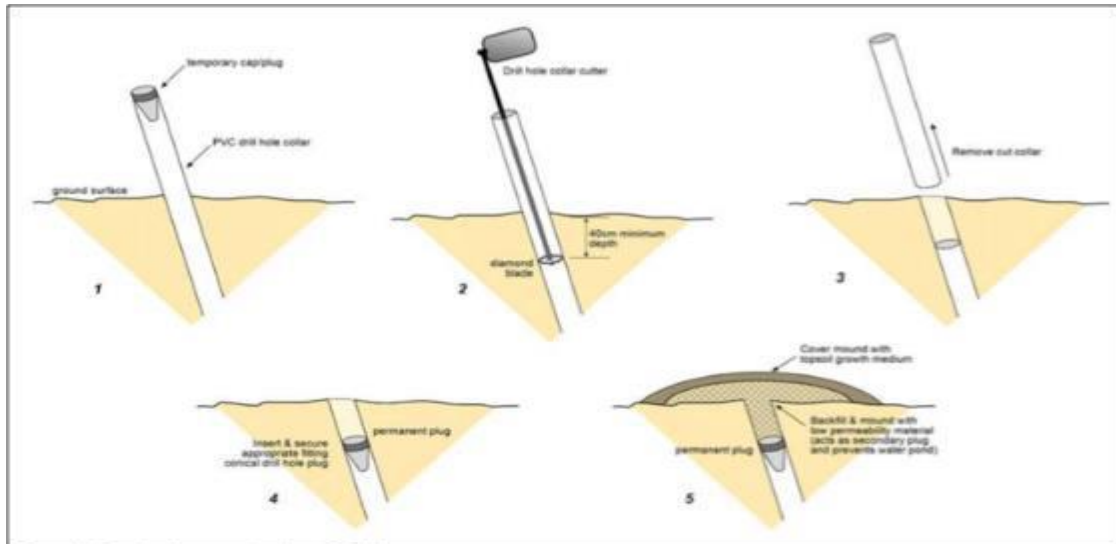


Figure 2: Capping of Boreholes

- **Sump refilling**

Refilling the sump required for the drilling activities. Initially the plastic lining will be removed and disposed of in a registered landfill site and the soil returned to in order to rehabilitate the area.

- **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. 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.

Applicable landowner will be requested to inspect the rehabilitated area.

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

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.

CALCULATION OF THE QUANTUM

Applicant:
Evaluators:

SANOS 101 (PTY) LTD

Ref No.:
Date:

15204PR
Jul-19

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	14,05	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	195,76	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	288,49	1	1	0
3	Rehabilitation of access roads	m2	0	35,03	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	340,01	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	185,46	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	391,53	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	205242,16	1	1	0
7	Sealing of shafts adits and inclines	m3	0	105,09	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	136828,1	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	170416,93	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	494971,55	1	1	0
9	Rehabilitation of subsided areas	ha	0	114572,93	1	1	0
10	General surface rehabilitation	ha	0,4	108390,94	1	1	43356,376
11	River diversions	ha	0	108390,94	1	1	0
12	Fencing	m	0	123,64	1	1	0
13	Water management	ha	0	41213,28	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0,4	14424,65	1	1	5769,86
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							49126,236

1	Preliminary and General	5895,14832	weighting factor 2		5895,14832
			1		
2	Contingencies	4912,6236			4912,6236
Subtotal 2					59934,01
VAT (15%)					8990,10
Grand Total					68924

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

Should Prospecting Right be granted, Sanos 101 (Pty) Ltd 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 8: 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 survey and grievance mechanism will be made available.	Prospecting Manager	Once-off upfront consul tat ion with affected parties. As required as grievances are received.
Ground Geophysical surveys and Soil Sampling	Access into private properties	As soon as the extent of site activities are known. These must be communicated with directly affected landowners. The following	Prospecting Manager	✓ As soon as the extent of site activities are known, confirmation of the extent of site activities must be sent to Department of

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>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. 		<p>Mineral Resource before such activities can be undertaken.</p> <ul style="list-style-type: none"> ✓ 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 undertaken.
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
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.	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

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
				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. 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 	Prospecting Manager Contractor	<ul style="list-style-type: none"> Daily ✓ Monthly monitoring reports to be signed-off by the Environmental Manager. ✓ 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
		<p>with an established spill response procedure.</p> <ul style="list-style-type: none"> ✓ Waste management practices will be monitored to prevent contamination and littering. 		<ul style="list-style-type: none"> ✓ Consolidated monthly monitoring reports (including the corrective action taken) to be submitted to the Department of Mineral Resources. ✓ Incident reporting will be under taken as required in terms of the relevant legislation including, but not limited to, the: <ul style="list-style-type: none"> a) Mineral and Petroleum Resources Development Act 28 of 2002; and b) National Water Act 36 of 1998.
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. 	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

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
		<ul style="list-style-type: none"> ✓ Identify any areas of subsidence around drill holes and undertake additional backfilling if required 		<p>be submitted to the Department of Mineral Resources.</p> <ul style="list-style-type: none"> ✓ 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 9: 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.
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(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 Plan**

Sanos 101 (Pty) Ltd will be conversant with all legislation pertaining to the environment applicable to this contract and will be appropriately trained in environmental management and will possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The company will ensure that adequate environmental training takes place. All employees will have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training will, as a minimum, include the following:

- The importance of conformance with all environmental policies.
- The significant environmental impacts, actual or potential, as a result of their work activities.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures, and with the requirement of Industrial Minerals environmental management systems, including emergency preparedness and response requirements.
- The mitigation measures required to be implemented when carrying out their work activities.
- The importance of not littering.
- The need to use water sparingly.
- Details of, and encouragement to, minimise the production of waste and re-use, recover and recycle waste where possible.

Recommended Basic Environmental Education Material is provided

Environment and health awareness training programmes will be targeted at three distinct levels of employment, i.e. the executive, middle management and labour. Environmental awareness training programmes will contain the following information:

- The names, positions and responsibilities of personnel to be trained.
- The framework for appropriate training plans.
- The summarised content of each training course.
- A schedule for the presentation of the training courses.

The company will ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMP. The training records will verify each of the targeted personnel's training experience. Sanos 101 (Pty) Ltd will monitor the records and listed and undertake regular follow ups.

✓ Content and implementation of the approved Environmental Management Plan

- ❖ Allocated 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

✓ **Environmental Related Emergencies and Remediation**

The Company will operate on the principle that “prevention is better than cure” and so will institute procedures to reduce the risk of emergencies taking place. These will include ensuring that all contracts specify that the contractor is required to comply with all the environmental measures specified in this EMP, environmental awareness training, on-going risk assessment and emergency preparedness.

Emergency telephone numbers

All employees will have the telephone numbers of emergency services, including the local ambulance and fire fighting service. All employees will be made aware of procedures to be followed during the environmental awareness training course.

Fire

The Company will ensure that there is basic fire fighting equipment available on Site at all times. This will include at least two rubber beaters and at least two fire extinguisher which will be used during fire incidents. The Company will advise the relevant authority of a fire as soon as one starts and will not wait until the fire is out of control.

Hydrocarbon spills

The Company will ensure that all employees are aware of the procedures to be followed for dealing with hydrocarbon spills. The Company will ensure that the necessary materials and equipment for dealing with hydrocarbon spills and leaks is available on Site at all times. The Company will ensure that there is always a supply of absorbent material readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials will be able to handle a minimum of 200 litres of hydrocarbon liquid spill. There are a number of different products on the market, which can be used as absorbents and encapsulators of hydrocarbons. The following are examples of these products which will be used:

- Spill-Sorb
- Drizzit
- Enretech
- Peat Moss

In the event of a significant hydrocarbon spill, the following procedure is required:

- The source of the spillage will be isolated
- The spillage will be contained using sand berms, sandbags, pre-made booms, sawdust or absorbent materials.
- The area will be cordoned off, secured and made safe.
- If a serious spill has occurred in a sensitive environment, then the Department of Environmental Affairs and Development Planning: Directorate Pollution & Waste Management will be notified.

Treatment and remediation of spill areas will be undertaken to the satisfaction of the Project Manager. Remediation may include in-situ bioremediation using appropriate products (e.g. Enretech-1 and / or the removal of the spillage together with the contaminated soil and the disposal at a recognised facility.

- **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.

- **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 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:

Mukhadakhomu Environmental Services

Name of company:

Date:

-END-