



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: Alpha Energy Ventures (Pty) Ltd

TEL NO: 012 534 4350

FAX NO: NA

POSTAL ADDRESS: 6th floor, Park Lane West, 180-197 Amarand Avenue,
Waterkloof Glen, Pretoria, 0010

PHYSICAL ADDRESS: 6th floor, Park Lane West, 180-197 Amarand Avenue,
Waterkloof Glen, Pretoria, 0010

FILE REFERENCE NUMBER SAMRAD: NP 30/5/1/1/2/13300 PR

1. IMPORTANT NOTICE

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

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

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

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

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

2. Objective of the basic assessment process

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural

sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on 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.

PART A
SCOPE OF ASSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner: Masala Mahumela

Tel No.: +27 73 504 3122

Fax No. : NA

e-mail address: masala.mahumela@eaglesage.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP

Mrs. Mahumela is the Managing Director of Eaglesage (Pty) Ltd. which is an environmental consulting company that was established in 2015. She has more than 13 years of experience in the environmental consulting field which she gained while working for other organisations and Eaglesage. Ms. Mahumela has been competently involved in many projects which include the construction of gas, water and sewerage pipelines; the construction of a steel manufacturing plant, power lines, substations and a power station; the construction eco estate houses; construction of wind energy facilities, applications for borrow pit and water use licenses. In addition she has undertaken various environmental studies for mining projects.

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

(In carrying out the Environmental Impact Assessment Procedure)

The following Project examples are provided:

Environmental compliance audits during the construction and operational phases of the Fortune Steel's steel manufacturing plant in Nigel, Gauteng Province since 2015 – 2020. Eaglesage performs annual audits for the construction and operation of the plant where we check Fortune Steels compliance against the conditions of the Environmental Authorisation, Water Use Licence, Waste Management Licence and Air Emissions Licence issued for the project. For each audit undertaken, a Compliance Audit Report is prepared and submitted to the Gauteng Department of Agriculture and Rural Development.

External Environmental audit for Fifth Seasons Investments' Opgoedenhoop Colliery in Hendria, Mpumalanga Province – May 2020.

Eaglesage performed an annual Water Use Licence (WUL) audit for the construction activities of facilities related to the Opgoedehoop Colliery. The WUL issued authorised Fifth Seasons Investments for National Water Act No 36 of 1998 for Sections 21 a, c, g and j. An independent external audit report was prepared and submitted to the client.

Environmental monitoring during the construction of Fortune Steel's steel manufacturing plant in Nigel, Gauteng Province since 2015 – November 2019. During this period Ms Mahumela monitored construction activities against the approved Construction Environmental Management Programme, Environmental Authorisation, Water Use Licence, Waste Management Licence, and Air Emissions Licence issued for the project. For each monitoring event, a report was prepared detailing the status of the developer's compliance.

Basic Assessment Process for a development of a fuel station in Hammanskraal, within the City of Tshwane Metropolitan Municipality in the Gauteng Province. January 2021 – Date.

Eaglesage is undertaking a Basic Assessment process for a fuel station in Hammanskraal. The project is underway.

External review of Wetland Assessment Report for the proposed expansion of the British American Tobacco South Africa Operation – 2017.

External review of the Agricultural Potential Assessment Report for the proposed expansion of the British American Tobacco South Africa Operation – 2017.

External review of Biodiversity Assessment Report for the proposed expansion of the British American Tobacco South Africa Operation – 2017.

b) Location of the overall Activity.

Farm Name:	RE of the farm Lehating 741
Application area (Ha)	Extent of application area = 427.5658 hectares
Magisterial district:	Kuruman Magisterial District
Distance and direction from nearest town	The application area lies +-10km northwest of Kathu and ~15km north of Sishen in the Northern Cape Province.
21 digit Surveyor General Code for each farm portion	T0IR0741000000000000

c) Locality map

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

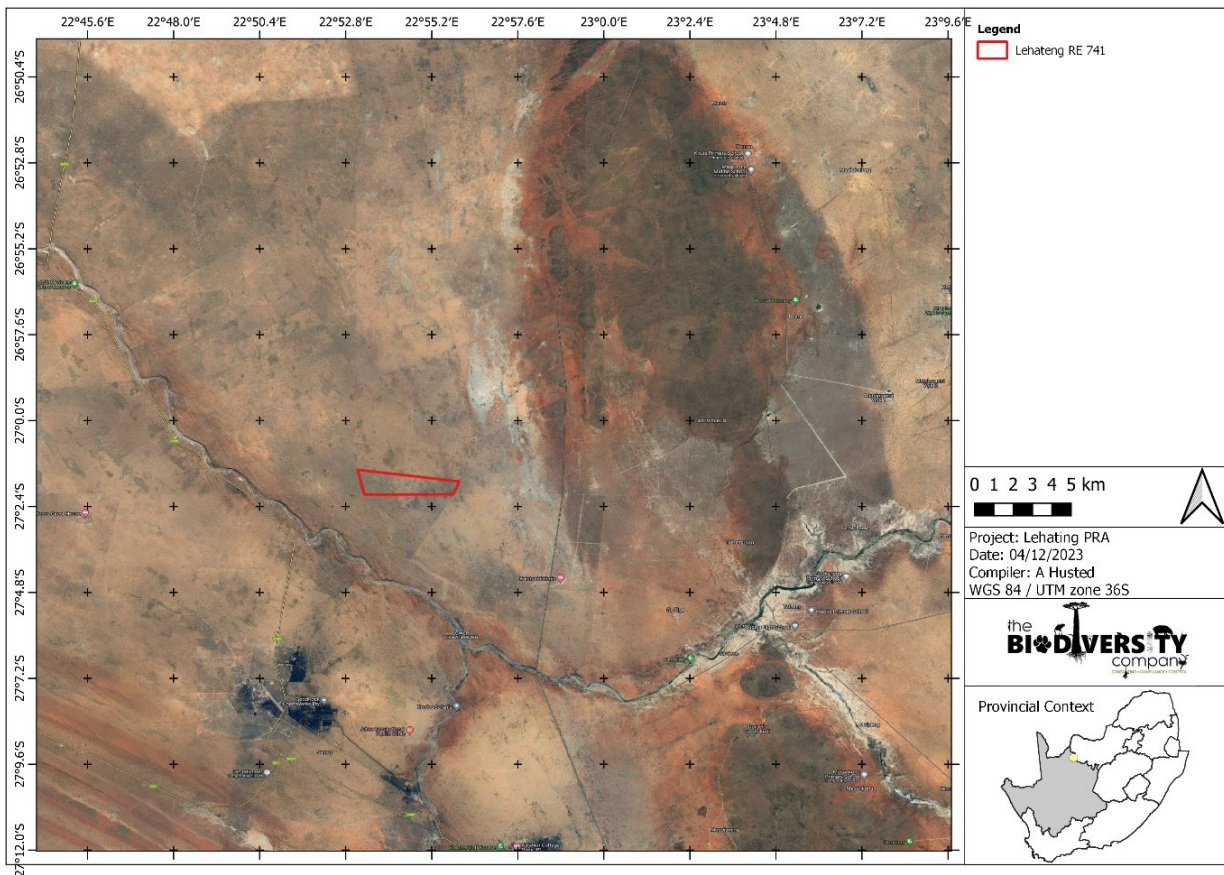


Figure 1: Prospecting Right Application area Locality Plan

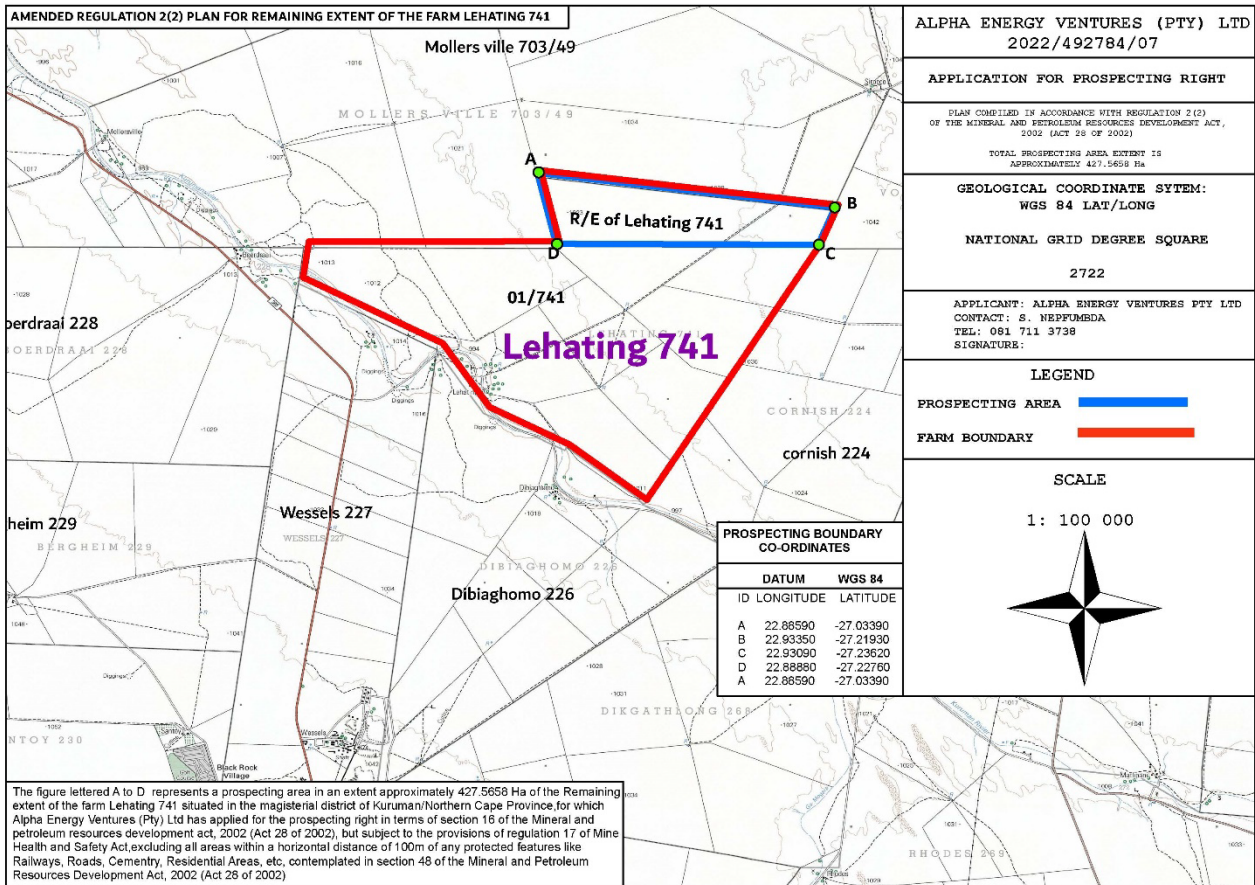


Figure 2: Regulation 2.2 plan indicating prospecting application area.

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

Alpha Energy Ventures (Pty) Ltd applied for a prospecting right for manganese and iron ore over the RE of the farm Lehating 741 in Kuruman which is owned by your company Waltwyk CC. Figure 3 below illustrates the application area relative to the property boundary as well as the initial 40 bore hole positions. Later infill bore holes will be sited in accordance with resource results.

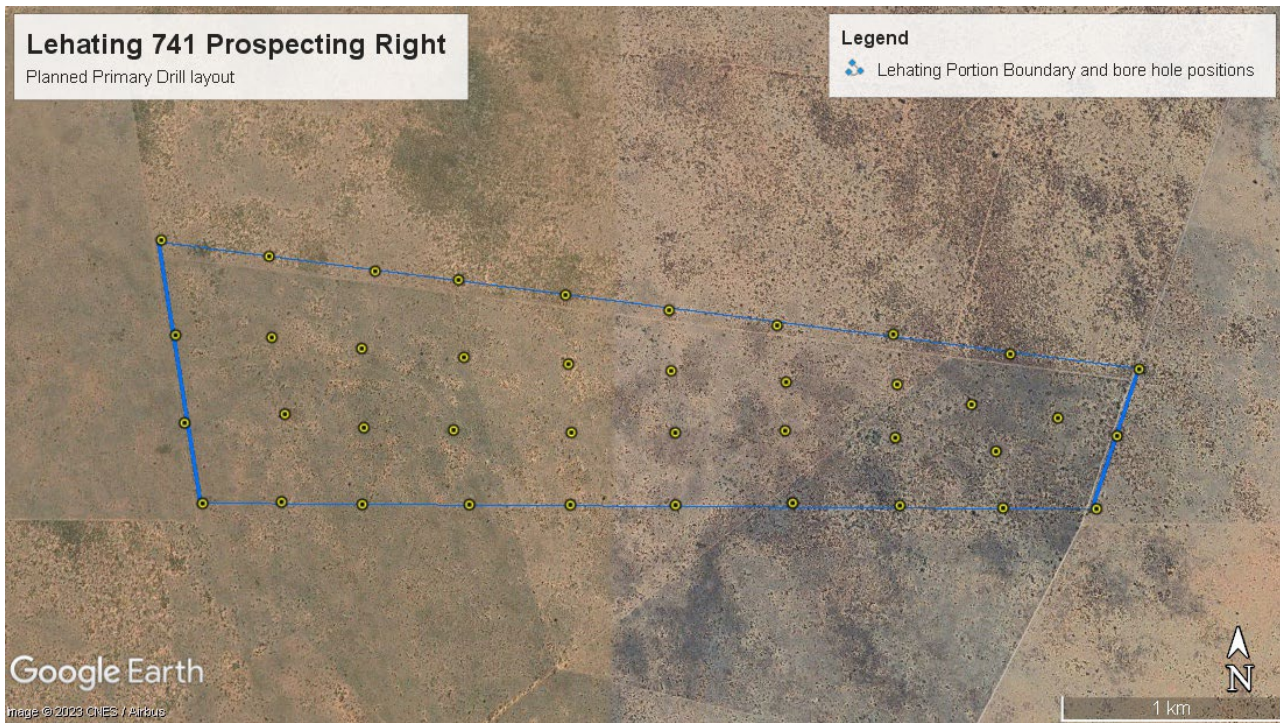


Figure 3. Positions of initial bore hole locations.

(i) Listed and specified activities

NAME OF ACTIVITY (All activities including activities not listed) (E.g. For Prospecting: drill sites, site camp, ablation facilities, accommodation, equipment storage, sample storage, site office, access route, etc...etc...etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)/NOT LISTED
<p><u>Prospecting:</u> An initial 40 diamond core drill holes NQ47 (47,4mm diameter) with one deflection (NQ60.3mm) are planned within the prospecting application area. These will be drilled to an approximate depth of 150mbs. A diamond drill rig and its associated infrastructure (i.e. sump) require approximately 115m² at each drill site. In-fill drilling will be conducted based on the PWP and results of initial drilling.</p>	<p>427.5658 hectares</p>	<p>X Activity 20</p>	<p>GN R327</p>
<p><u>Ancillary Activities:</u> Site office: this will be off-site Sample/core storage: this will be off-site Equipment Storage: this will be off-site.</p>	<p>Off-site</p>	<p>NA</p>	<p>NA</p>
<p><u>Ablution Facilities:</u> A single chemical toilet will be made available for the drilling team at the drill rig.</p>	<p>Within the 115m² drill pad area.</p>	<p>NA</p>	<p>NA</p>
<p><u>Site Access:</u> No road access development is planned. The best practical route from the farm entrance to each bore hole site will be discussed with each landowner. Due to the short duration of drilling no road development/clearing will be required.</p>	<p>This will be agreed with the landowner within the total 427.5658 hectares</p>	<p>NA</p>	<p>NA</p>

<u>Clearance of Vegetation:</u> Clearance of vegetation will be limited to the drill pad area and will be done in consultation with the landowner.	Within the 115m ² drill pad area.	NA	NA
---	--	----	----

(ii) Description of the activities to be undertaken

- Non-Invasive Prospecting: digital desktop map work
- Invasive Prospecting: Diamond core drilling and core logging and evaluation
- Bore Hole rehabilitation: Capping of bore hole with a suitable stone/slab/cover which will not allow the topsoil cover to subside.
Scarification of final drill footprint topsoil.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Environmental Management Act (Act 107 of 1998)	Chapter 6 of GNR 982 promulgated under NEMA	Environmental Authorisation has been applied for prospecting. No prospecting will take place without an approved prospecting right and environmental authorization.
Additional Applicable Legislation considered by the EAP and Specialists:		
Constitution of the Republic of South Africa (Act No. 108 of 1996)		
The National Environmental Management Act (NEMA) (Act No. 107 of 1998)		
The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)		

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004), Threatened or Protected Species Regulations
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 320 of Government Gazette 43310 (March 2020)
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 1150 of Government Gazette 43855 (October 2020)
The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);
The Environment Conservation Act (Act No. 73 of 1989)
Natural Scientific Professions Act (Act No. 27 of 2003)
National Biodiversity Framework (NBF, 2009)
National Forest Act (Act No. 84 of 1998)
National Veld and Forest Fire Act (101 of 1998)
National Water Act (NWA) (Act No. 36 of 1998)
World Heritage Convention Act (Act No. 49 of 1999)
Municipal Systems Act (Act No. 32 of 2000)
Alien and Invasive Species Regulations and, Alien and Invasive Species List 2014/2020, published under NEMBA
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)
Northern Cape Planning and Development Act no. 7 of 1998
Northern Cape Nature Conservation act no. 9 of 2009

f) Need and desirability of the proposed activities.

When assessing the need and desirability of this prospecting right application, the following needs to be considered:

- The intended purpose of a prospecting right application for manganese and iron ore is to pursue a mining right application should the resource justify this and all the legislated requirements be met.
- International demand for manganese and iron ore remains strong.
- The project application area is ideally located within the Northern Cape Manganese and Iron ore zone with significant local infrastructure and services available to support this development.
- The need for foreign revenue remains high within South Africa.

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

The availability and geographic location of the mineral resource that the applicant wishes to prospect dictates the preferred location to a large degree. The location of the bore holes are determined by the anticipated location

of the mineral resource. Although the location of the minerals cannot be altered, the impact of the prospecting footprint associated with drilling has been assessed in this BAR.

Key criteria for consideration when identifying need, alternatives and preferred location include practicability, feasibility, relevance, reasonability and viability. Alpha Energy Ventures propose to follow the most pragmatic prospecting method to determine and evaluate the mineral resource while minimizing surface disturbance.

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

Since no site infrastructure is planned for this prospecting right application, no site alternatives have been considered. The positions of the initial bore holes (which constitutes site activities) as indicated in Figure 3 above were sited by the project Geologist based on the Prospecting Work Programme and the initial desktop resource determination drilling. The final actual location of each bore hole will be finalised through liaison with the landowner where applicable.

i) Details of the development footprint alternatives considered.

The only alternative/s that can be considered for this prospecting application are the locations of bore hole positions. This is because no other infrastructure is planned on site. All other infrastructure such as offices/core storage/equipment storage/vehicle over-night parking will be off-site.

The final location/siting of bore holes will be done in consultation with the landowners and/or land occupier to ensure that impact/s on existing plot infrastructure is minimized.

ii) Details of the Public Participation Process Followed

Site Notices:

Site notices were placed on the boundary of the application area on 14 April 2023. A copy of these site notices and evidence of their erection with coordinates will be provided in Appendix 3.

News Paper Advert:

A newspaper advert was placed in the Kathu Gazette and published on 15 April 2023. A copy of the advert proof as well as the newspaper tear page is provided in Appendix 3.

Background Information Document:

The Background Information Document (BID) included the following information:

- Proposed Activities
- Location Map
- Initial bore hole description
- NEMA Listed Activity
- DMRE Reference number
- Size of the application area
- Contact details of the EAP
- Invitation to comment on the Draft BAR
- A description of the anticipated scale of the impact of prospecting drilling
- Notification of the 30 day comment period
- An IAP Registration and Comment sheet
- Mechanism for providing comment either in hard copy (i.e. handed back to the EAP during one-on-one consultation or scanned and emailed or photographed and sent via WhatsApp).

A Background Information Document was prepared and distributed by hand to all landowners/occupiers where such persons were available on their properties. Each person who received the BID were requested to sign for receipt. Where no person was available the BID was emailed to those where email addresses were available. Where only postal addresses were available the BID was set via registered mail.

Public Meeting:

A public meeting opportunity was provided for those interested in such (on request). No request for a public meeting was received.

iii) Summary of issues raised by I&Aps

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

Interested and Affected Parties		Date	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Comments Received			
<u>AFFECTED PARTIES</u>					
Landowner/s	X		Please see the Issues and Response Report included in Appendix 3 where all comments and responses have been captured.		
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties	X				

Municipal councillor	X				
Municipality	X				
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Communities					
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					

OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

iv) The Environmental attributes associated with the alternatives.

(1) Baseline Environment

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

Note: References to section numbers, table and figure numbers are directly referenced from the specialist study for ease of cross-reference.

Terrestrial Ecology

Desktop Spatial Assessment

Ecologically Important Landscape Features

The GIS analysis pertaining to the relevance of the proposed project to ecologically important landscape features is summarised in Table Error! No text of specified style in document.-1.

Table Error! No text of specified style in document.-1 Summary of relevance of the proposed project to ecologically important landscape features.

Desktop Information Considered	Relevant/Irrelevant	Section
Ecosystem Threat Status	Relevant – Overlaps with an EN Ecosystem.	4.1.1
Ecosystem Protection Level	Relevant – Overlaps with a Poorly Protected Ecosystem.	4.1.2
Critical Biodiversity Area	Relevant – The project area overlaps with several CBA1, CBA2, ESA1s and ESA2s.	4.1.3
Protected Areas	Irrelevant – The project area is not located in a protected area.	-
National Protected Areas Expansion Strategy	Irrelevant – The project area is not located in an expansion area.	-
Important Bird and Biodiversity Areas	Irrelevant – The project area is not located (or near) an IBA.	-
South African Inventory of Inland Aquatic Ecosystems	Irrelevant – No systems are located within 500 m of the PRA.	-
National Freshwater Priority Area	Irrelevant – No systems are located within 500 m of the PRA.	-
Strategic Water Source Areas	Irrelevant – The project area does not overlap with any SWSAs.	-

Ecosystem Threat Status

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed PRA overlaps a LC ecosystem (Figure 4).

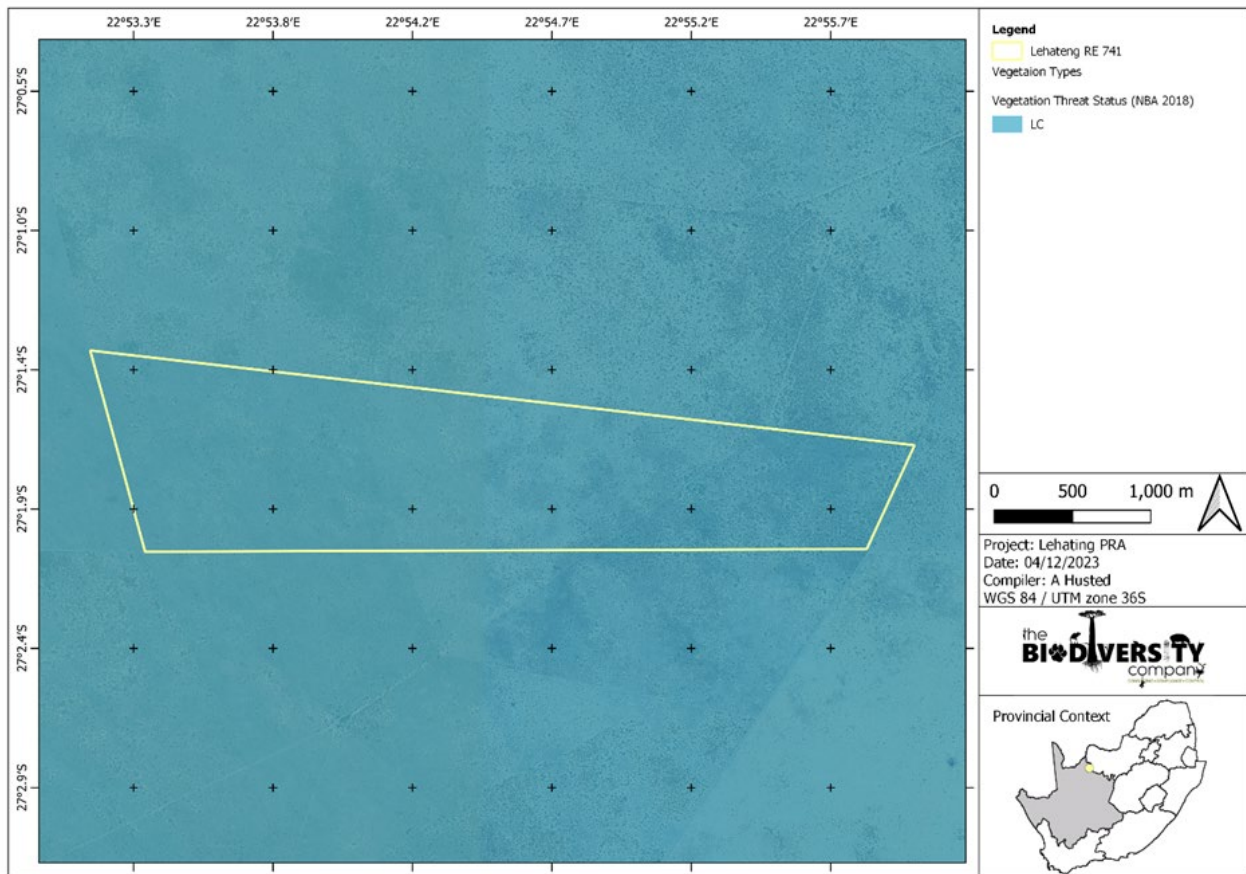


Figure 4: Map illustrating the ecosystem threat status associated with the PRA area.

Ecosystem Protection Level

This is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The proposed PRA overlaps with a PP ecosystem (Figure 5).

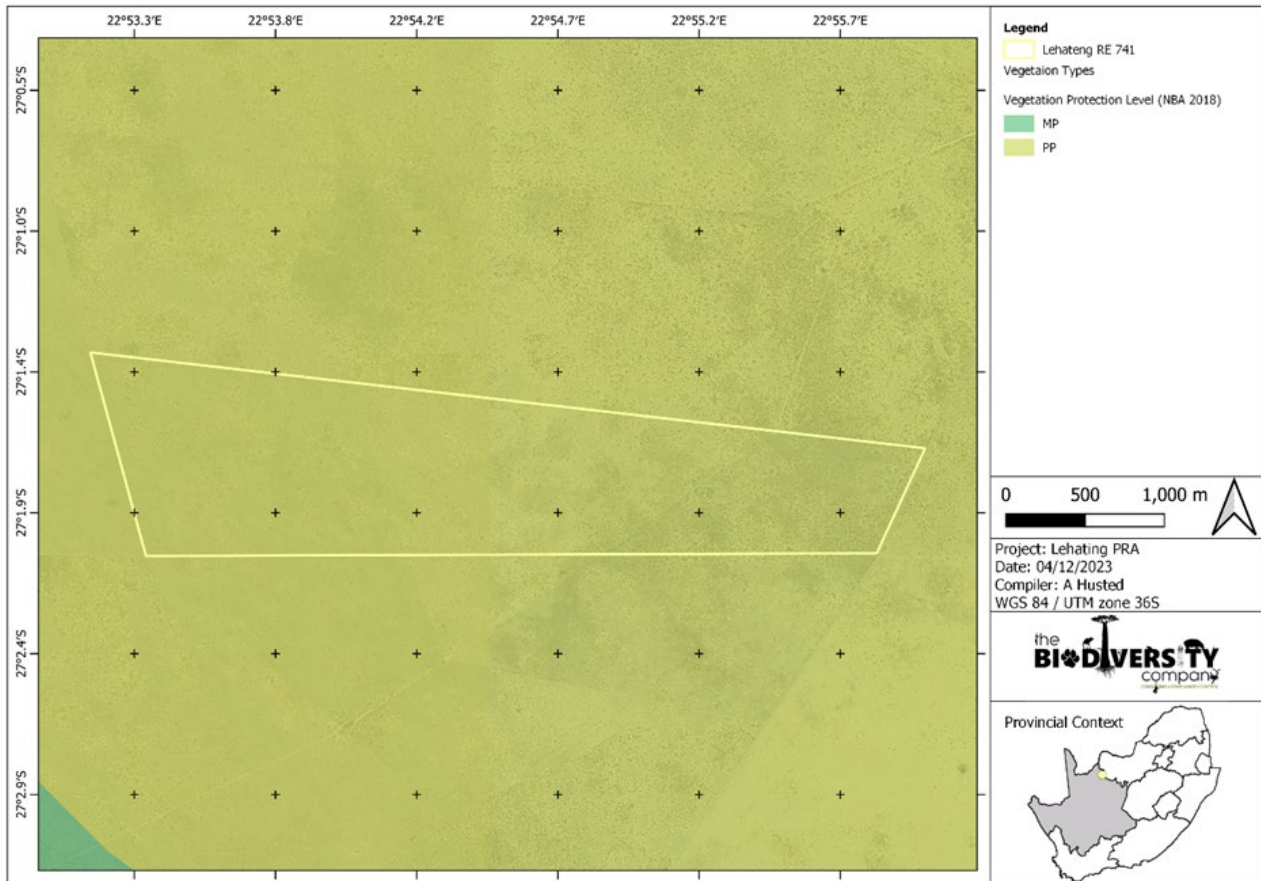


Figure 5: Map illustrating the ecosystem protection level associated with the PRA area.

Critical Biodiversity Areas and Ecological Support Areas

The Critical Biodiversity Areas of the Northern Cape database classifies areas within the province on the basis of their contributions to reaching the associated conservation targets within the province. These areas are primarily classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types & species, as well as the long-term ecological functioning of the landscape as a whole.

CBAs are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and healthy functioning of important species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then provincial biodiversity targets cannot be met (SANBI, 2017).

ESAs are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017).

Figure 6 shows the PRA superimposed on the CBA maps. The project area overlaps with an Other Natural Area (Figure 6).

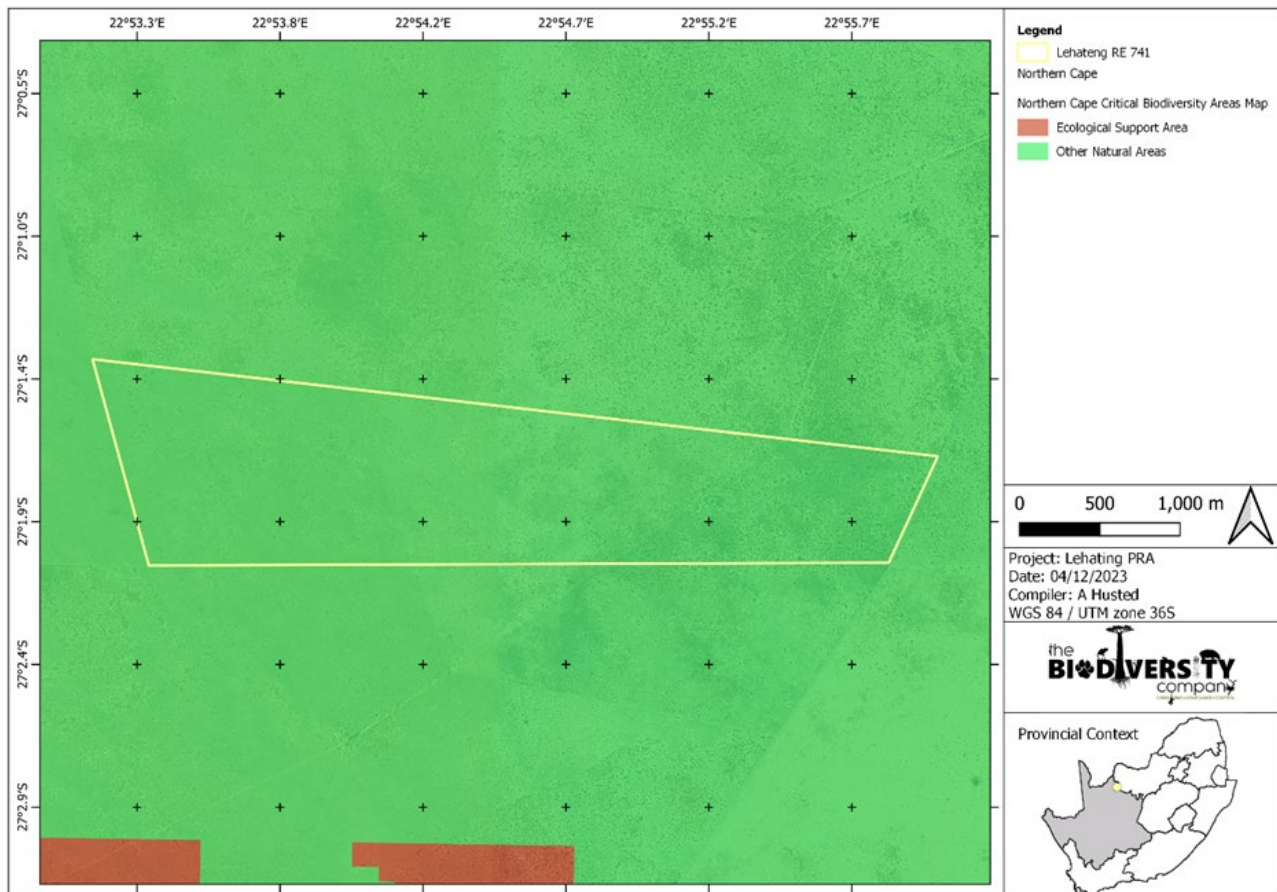


Figure 6. Map illustrating the PRA relative to the CBA Map.

Land Capability

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which ten potential land capability classes are located within the proposed project areas, including;

- Land Capability 1 to 5 (Very low, Very low/Low to Low Sensitivity);
- Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity); and
- Land Capability 9 to 10 (Moderate to High).

The sensitivities as per the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) national raster file indicated that the land capabilities range from low to medium across the PRA area (Figure 7).

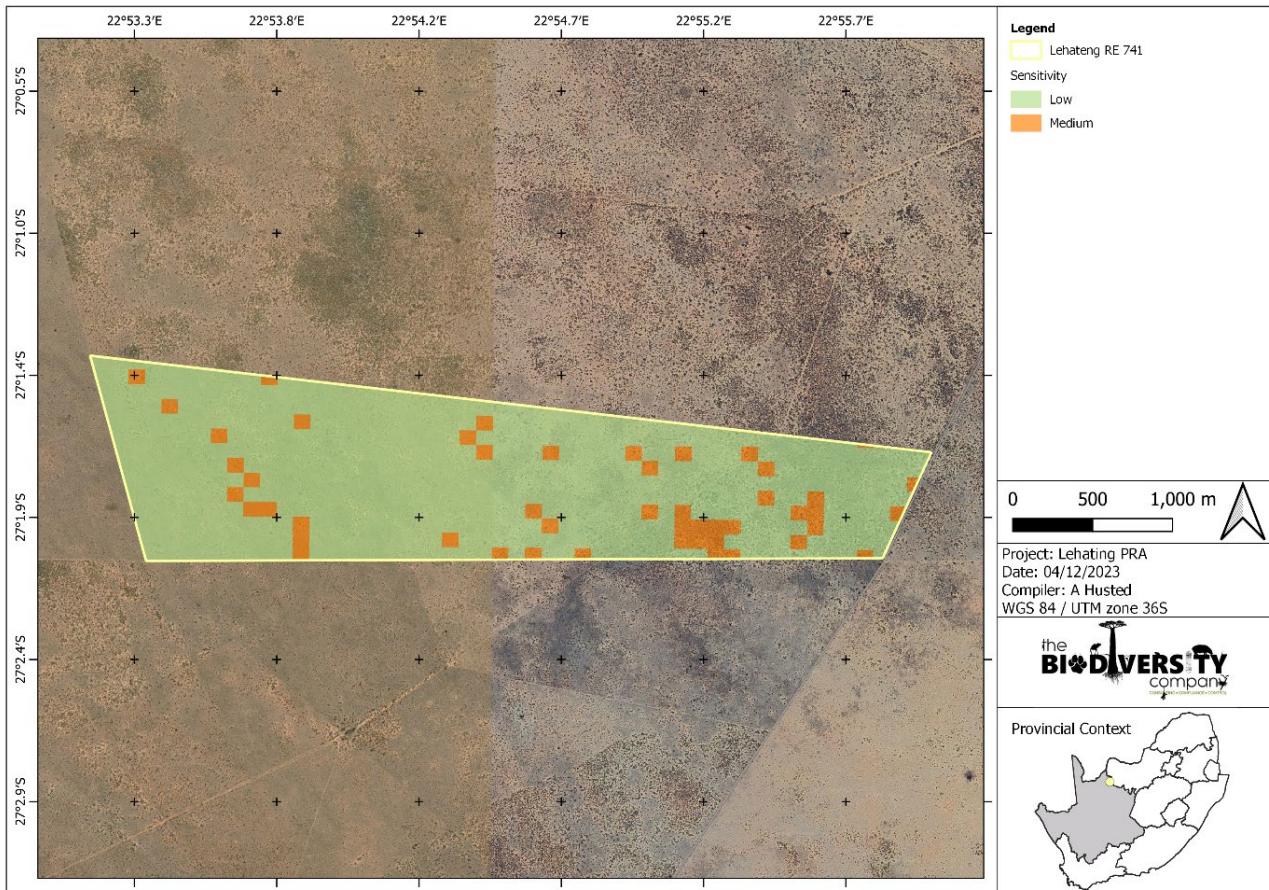


Figure 7: Land Capability Sensitivity (DAFF, 2017).

Climate

This region is characterised by summer and autumn rainfall with very dry winters. The mean annual precipitation is approximately 220 to 380 mm with frost frequently occurring during winter months. The mean minimum and maximum temperatures for Sishen is 2.2 °C and 37 °C for July and December respectively (see below).

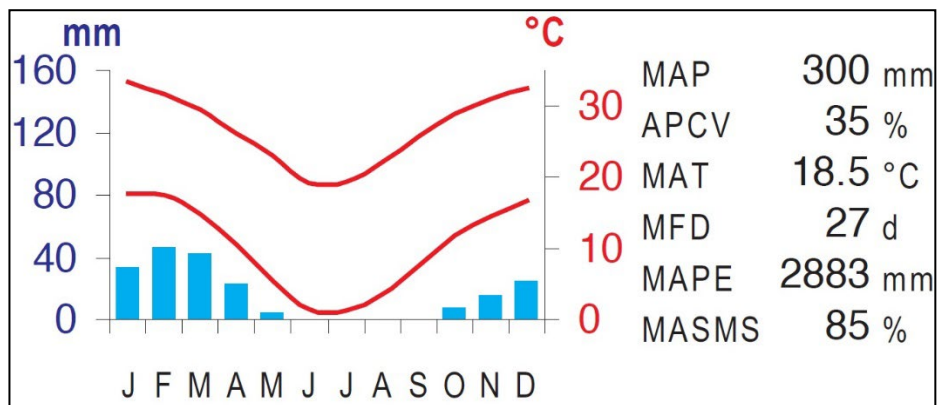


Figure 8: Climate for the project area (Mucina and Rutherford, 2006).

Geology and Soil

As part of the desktop assessment, soil information was obtained using published South African Land Type Data. Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 - 2006). The land type data is presented at

a scale of 1:250 000 and comprises of the division of land into land types. According to the land type database (Land Type Survey Staff, 1972 – 2006) the development falls within the following land type: Ah5. The terrain unit for the land type and expected soils are illustrated in Figure 9 and Table 4-2 respectively.

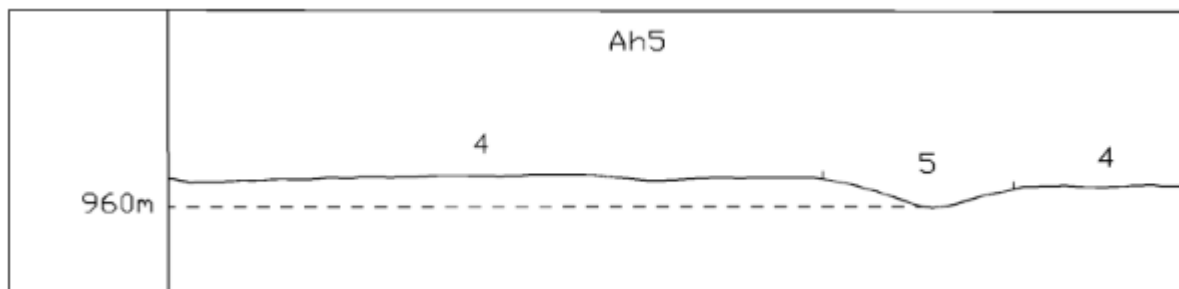


Figure 9: Illustrations of the land type terrain unit (Land Type Survey Staff, 1972 – 2006)

Table 4-2: Soils expected at the respective terrain unit within the land type (Land Type Survey Staff, 1972 - 2006)

Db 298 Terrain units			
4 (95%)		5 (5%)	
Clovelly	68%	Clovelly	64.6%
Hutton	30%	Hutton	28.9%
Fernwood	1%	Fernwood	2.5%
Mispah	1%	Mispah	3.5%
Pans	-	Pans	0.5%

Flora Assessment

This section is divided into a description of the local vegetation type that would be expected under natural conditions, and the expected flora species.

(a) Vegetation Type

The PAOI is situated within the savanna biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Savanna biome include:

- Seasonal precipitation; and
- A (Sub) tropical thermal regime with no or usually a low incidence of frost (Mucina & Rutherford, 2006).

The savanna biome is the largest biome in South Africa, extending throughout the eastern and north-eastern areas of the country. Savannas are characterised by dominant grass layers, over-topped by a discontinuous, but distinct woody plant layer. At a structural level, Africa’s savannas can be broadly categorised as either fine-leaved (microphyllous) savannas or broad-leaved savannas. Fine-leaved savannas typically occur on nutrient rich soils and are dominated by microphyllous woody plants of the Mimosaceae family (Common genera include *Vachellia* and *Albizia*) and a generally dense herbaceous layer.

The savanna biome is comprised of 6 parent bioregions and a total of 87 different vegetation types. The project area is predominantly located within the Kathu Bushveld (SVk 12) vegetation type. This vegetation type is

located in the Northern Cape Province, specifically throughout the plains of Kathu and Dibeng in the south, the vicinity of the Frylinckspan, through Hotazel and towards the Botswana border (Mucina and Rutherford, 2006). This vegetation type is characterised by a medium tall tree layer with *Acacia erioloba* in places and predominantly includes the *Boscia albitrunca* as tree species. The dominant shrubs within this vegetation type is *A. mellifera*, *Lycium hirsutum* and *Diospyros lycioides* (Mucina and Rutherford, 2006).

The conservation status of the SVk 12 vegetation type is least threatened with a target percentage of 16. This vegetation type is not conserved in any conservation areas and is characterised by a loss of 1% due to mining activities (Mucina and Rutherford, 2006).

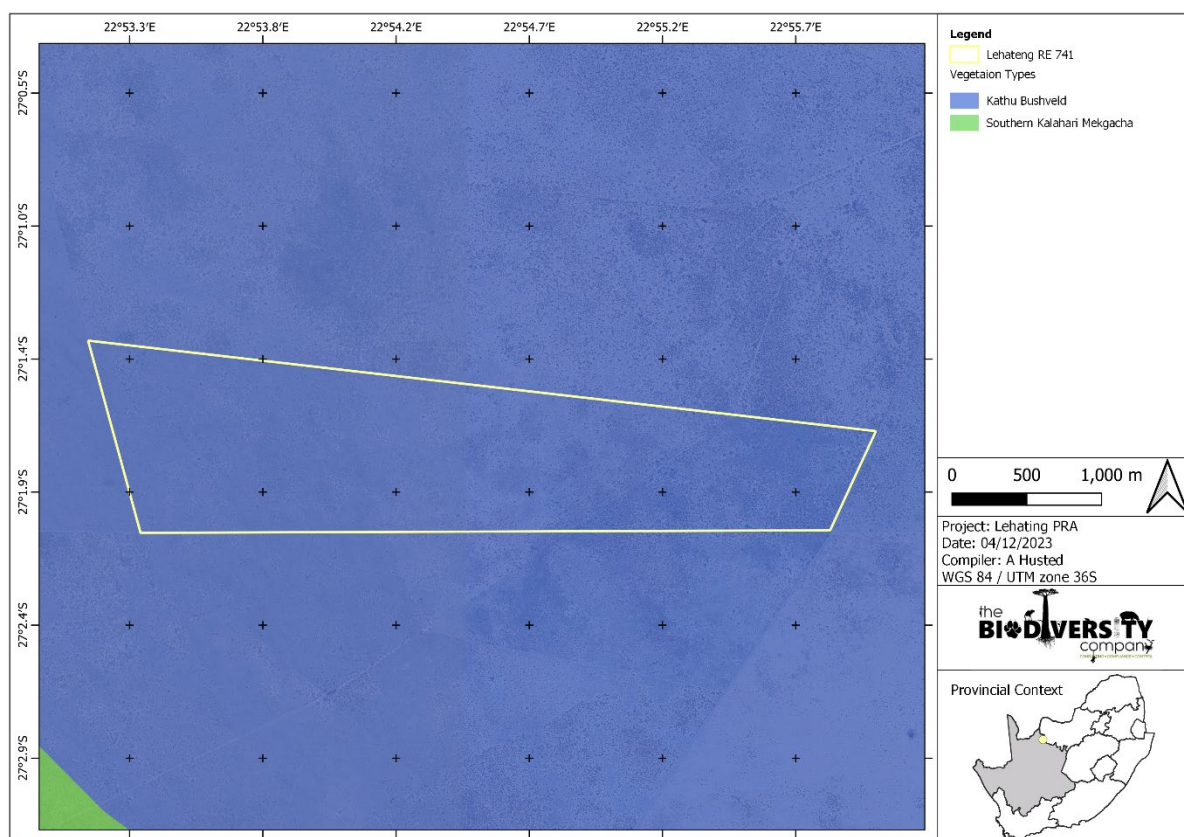


Figure 10: Map illustrating the vegetation types associated with the PRA area

Conservation Status

According to Mucina & Rutherford (2006), the vegetation type is classified as Least Threatened. More than 1% of the Kathu Bushveld vegetation type has already been transformed, including the iron ore mining locality at Sishen, one of the biggest open-cast mines in the world.

DEA Screening Tool

According to the Screening Tool Report generated (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended), the following sensitivity classifications were gathered from the National Web-based Environmental Screening Tool (Figure to Figure):

- Terrestrial Biodiversity Theme sensitivity is Very High for the PRA, with FEPA Subcatchments being present;
- Plant Species Theme sensitivity is Low for the PRA;

- Animal Species Theme sensitivity is Low for the PRA;
- Aquatic Biodiversity Theme sensitivity is Very High for the PRA, with Freshwater ecosystem priority area quinary catchments being present; and
- Agricultural Theme sensitivity is Low to Medium for the PRA, with no possibility of annual crop production and planted pastures rotation being present.

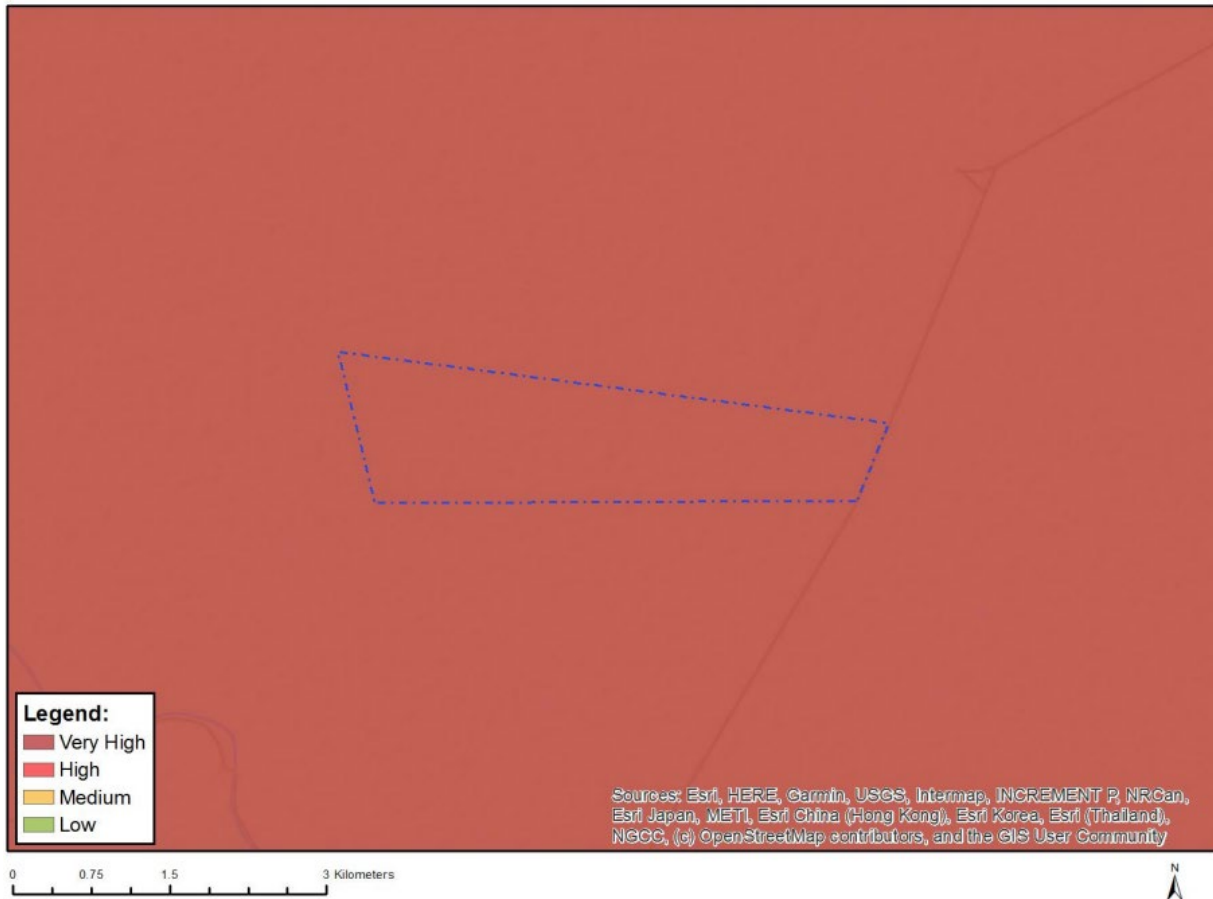


Figure 11: Relative terrestrial biodiversity theme sensitivity for the PRA area.

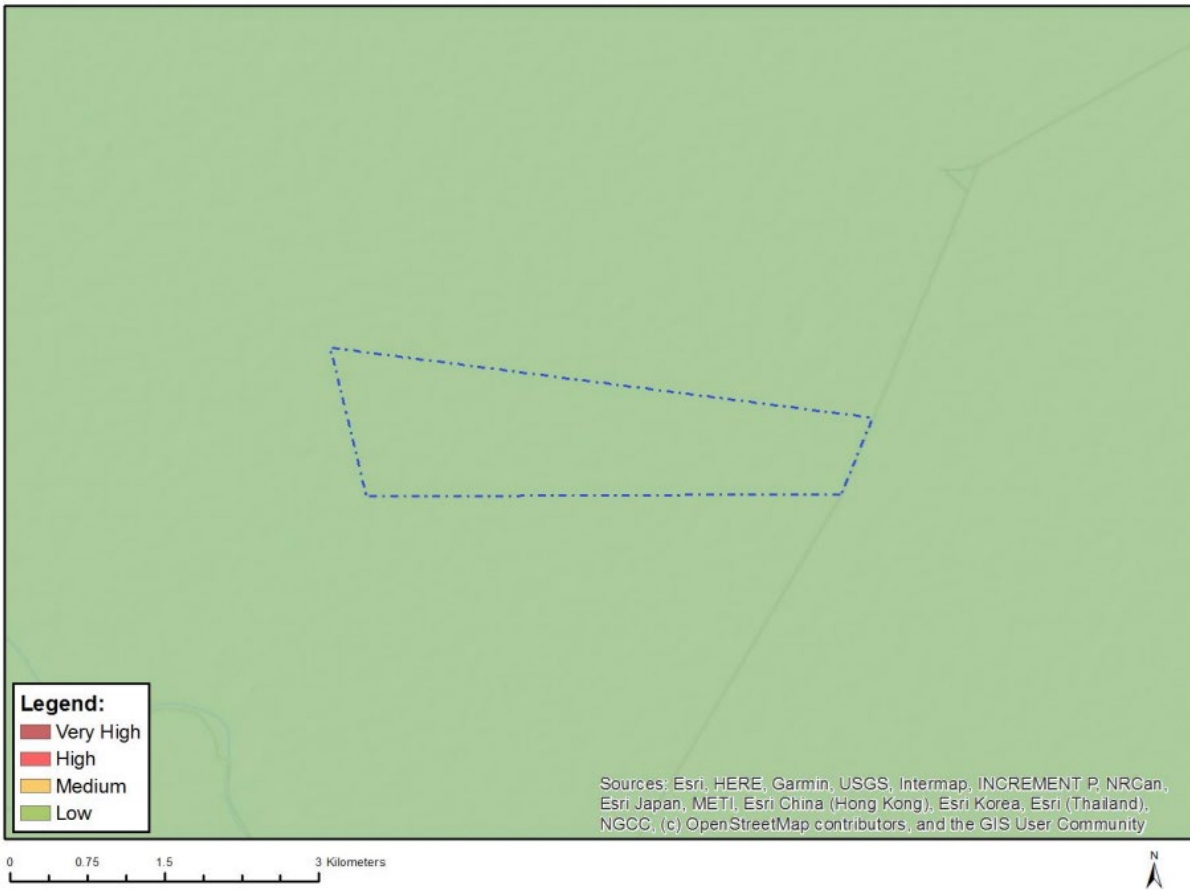


Figure 12: Relative plant species theme sensitivity for the PRA area.

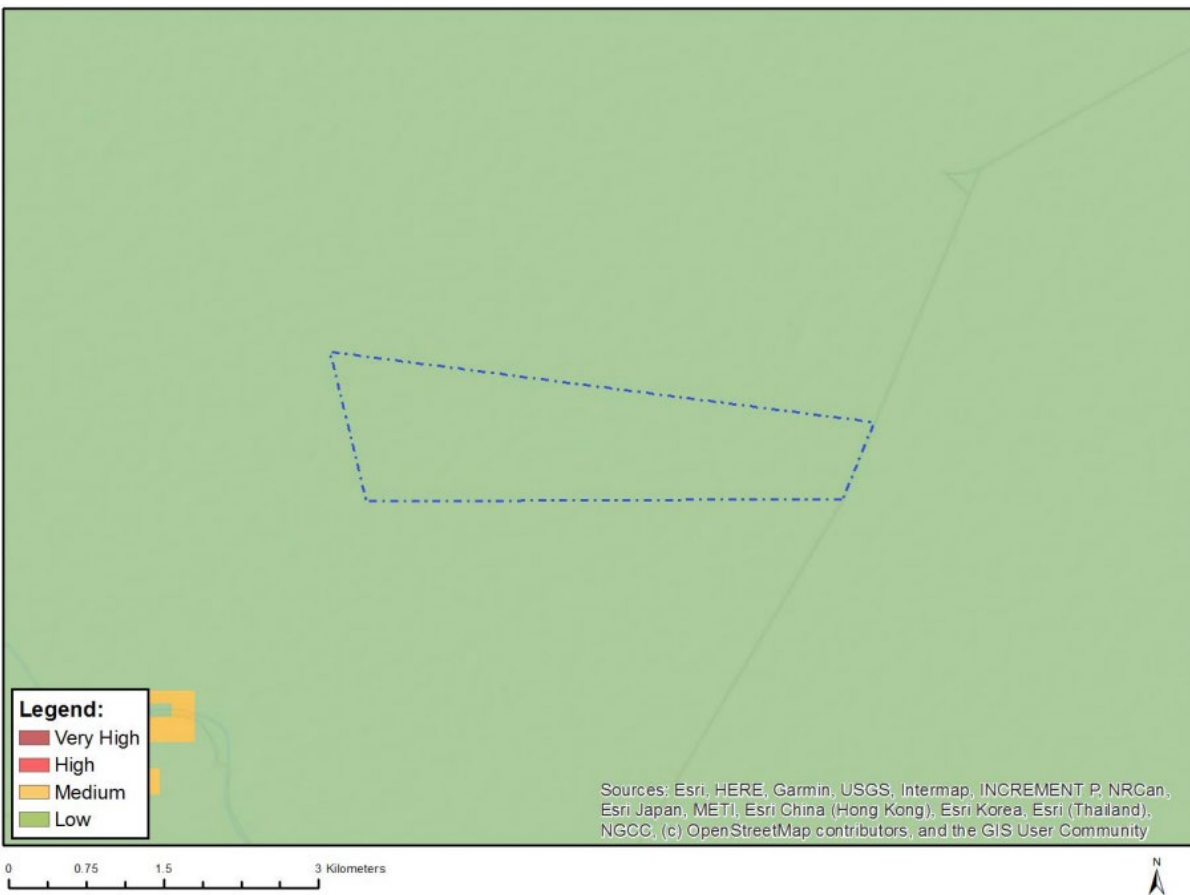


Figure 13: Relative animal species theme sensitivity for the PRA area.

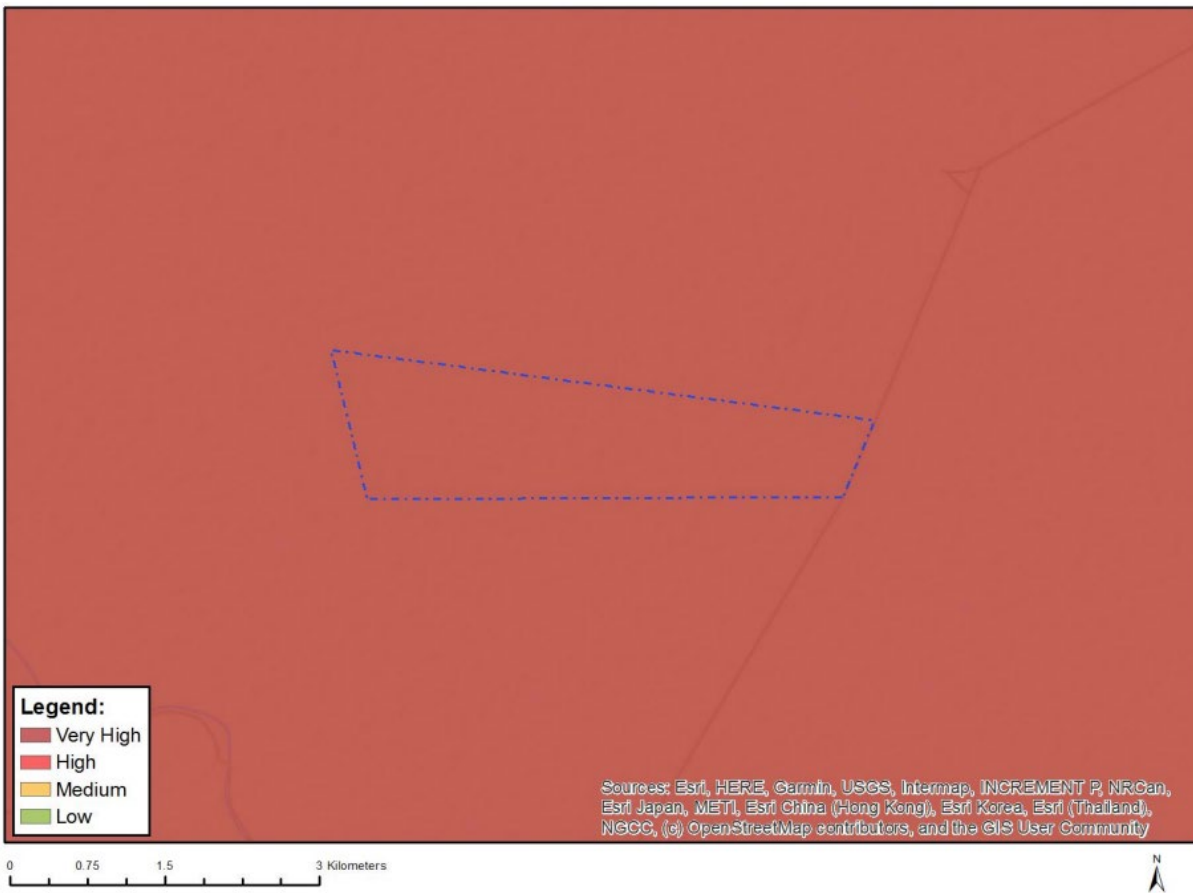


Figure 14: Relative aquatic biodiversity theme sensitivity for the PRA area.

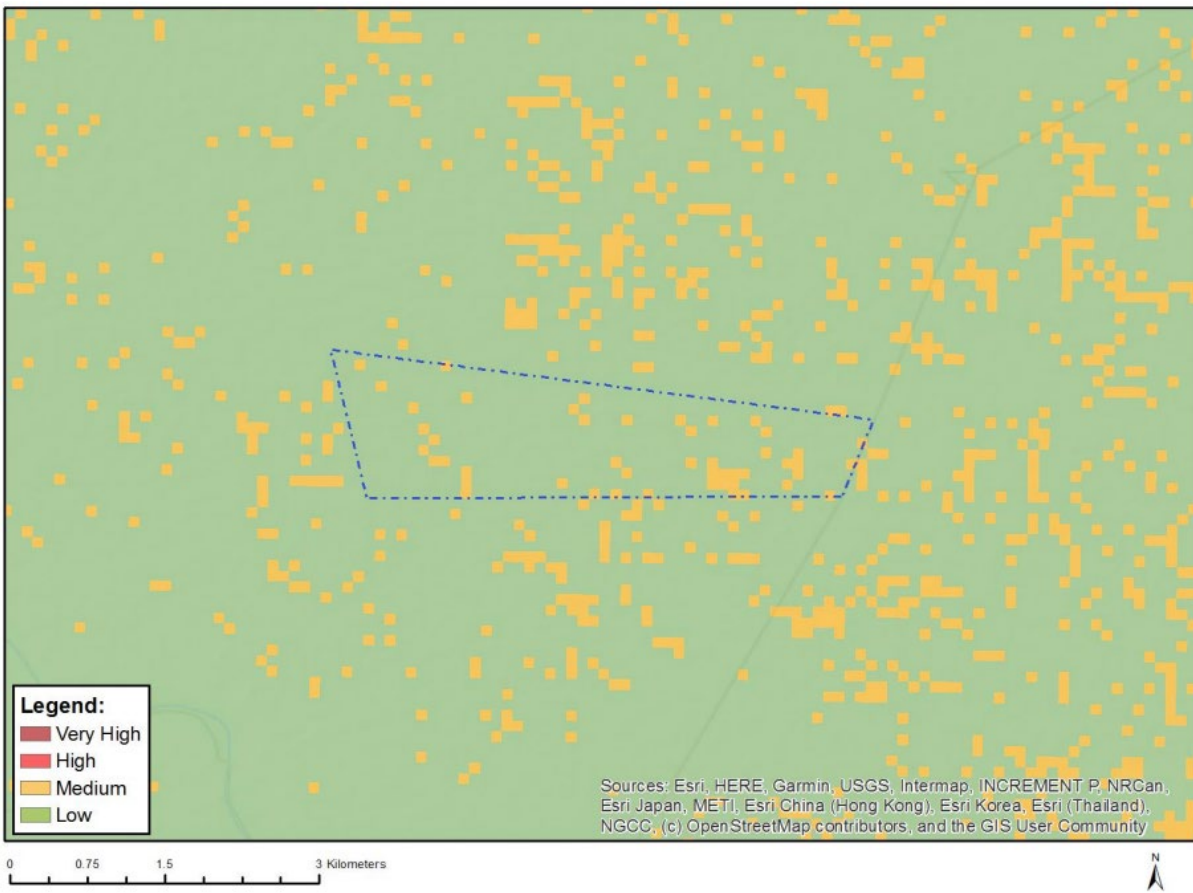


Figure 15: Relative agriculture theme sensitivity for the PRA area.

Heritage Baseline Data

The desktop study focussed on the previous research conducted in the area contained in reports, published material, aerial photographs, remote sensing data.

Heritage Reports

Heritage reports on the SAHRIS database was consulted for other archaeological finds. Previous impact assessments conducted in the approximated 10km radius vicinity of the project area.

Thirty reports were consulted which bear direct relevance to this study. Full biographic details are provided under the References section. The reports are:

- Coetzee, 2021
- De Jong, 2010
- Fourie, 2010, 2013a, 2013b, 2015, 2018, 2020a, 2020b, 2020c, 2021
- Fourie & Van der Walt, 2005
- Kruger, 2015, 2019
- Kusel et al., 2009
- Matenga, 2022
- Mlilo, 2019
- Morris, 2005
- Naude, 2022
- Paleo Field Services, 2023
- Pelsler, 2019a, 2019b
- Pelsler & Van Vollenhoven, 2011
- Pistorius, 2008
- Van Ryneveld, 2010
- Van Schalkwyk, 2015
- C. Van Vollenhoven, 2012, 2022
- C. Van Vollenhoven et al., 2022
- C. Van Vollenhoven & Smit, 2019, 2021
- Van Vollenhoven & Smit, 2019
- Van Vollenhoven, A.C., 2022
- Webley & Tusenius, 2021.

Map data

Historical and current topographical maps were consulted as sources of information on potential areas of significance. These were georeferenced in ArcGIS and Google earth with the project area superimposed.

Remote Sensing Data

Historical and modern aerial and satellite imagery of the project area was studied to identify any heritage sites. Historical aerial imagery from the National Geo-spatial Information database from 1959 and recent Google Earth imagery between 2003 and 2023 were inspected.

Published Research

Publication repositories and archives were consulted for any published research that pertains to the project.

Archival data

The database of the National Archives of South African was searched any relevant data that pertains to the project area.

DESKTOP ASSESMENT RESULTS

The larger area around Hotazel has been the subject of several HIA studies as mining operations and prospecting have intensified in the area. These include studies on the bordering properties Lehating 741 Portion 1 (Fourie 2013) and Wessels 228 (Fourie and Van der Walt 2005).

Stone Age

Stone Age remains are the most abundant in the study area and several reports have recorded this layer on the culture-historical landscape. These are however all recorded as small artefact scatters (e.g. De Jong 2010; Fourie and Van der Walt 2005; Fourie 2010; 2013; 2013; 2015; 2018; Morris 2005; Van Schalkwyk 2015). In all cases, the recorded artefacts are dated to the Middle Stone Age or Later Stone Age periods. Earlier Stone Age sites and tools have are much rarer in the Hotazel study area though isolated cases have been recorded of isolated finds (e.g. Pelsler 2019b). Important Earlier Stone Age sites are recorded in the larger Kuruman region at sites such as Kathu Pan and Wonderwerk Cave.

Stone Age remains in the area tend to be recorded along river banks, pan edges and where surface rocks used as raw material for tools are available.

Iron Age

None of the HIA reports consulted in this study recorded any Iron Age remains of significance. Finds include isolated ceramic sherds (e.g. Fourie 2020; Pelsler 2019a). Despite the scarcity of finds, an Iron Age presence does exist on the larger landscape, however. This particularly relates to the history of Tswana-speaking groups such as the Tlharo and Tlhaping from the 17th century onwards. For example, the town of Tsineng, located approximately 20km southeast of the project area is a historical Tlharo settlement. Settlement in the general area increased from the mid-1800's with the establishment of the Lower Kuruman Native Reserve whose western boundary was approximately 5km east of the project area (Fourie 2020).

Given the very low density of Iron Age remains recorded by heritage surveys and the relatively harsh climate, it is taken that the project area and its immediate vicinity would have been only sparsely and/or sporadically occupied by African Iron Age farming communities.

Historical period

The Kuruman River which flows approximately 4km south of the project area has historically served as an important route for early European explorers into the interior. These include the journey by PJ Truter's and William Somerville's journey of 1801, Hinrich Lichtenstein in 1805 and Andrew Smith in 1835. Both these explorers made important historical observations about indigenous communities of the study area. Smith in particular placed a community of Tswana farmers at springs around Tsineng (Fourie 2013: 32).

Research by Fourie (2013) indicates that the white farmers settlement in the area from the late 1800s. Increasing during the early parts of the twentieth century. Impact assessments of the immediate study area have located several historical farmsteads, buildings and infrastructure related to this period which are older than 60 years and therefore protected (Coetzee 2021; Naude 2022; Pelser and Van Vollenhoven 2011; Fourie 2020). Historical aerial imagery for the area is limited with the earliest images on file dating to 1959. No historical structures or features are visible on these images.

Graves

Survey of the heritage reports indicate limited instances of graves being found in the Hotazel area (Kusel, Van der Ryst, and Kusel 2009). One was large cemetery for mine workers and a smaller isolated cemetery with three graves directly associated with the Black Rock mine close to Hotazel. Other instances are associated with historical farmsteads of the area (e.g. Van Vollenhoven 2012; Pelser 2019b).

CONCLUSIONS OF DESKTOP ASSESMENT

Numerous impact assessments have been conducted in the immediate vicinity of the proposed project area which means that a fair degree of confidence in regional patterns of heritage remains can be identified. These studies indicate that Stone Age finds in the area are comparatively common. These are however largely limited to areas where there are raw material and close to rivers and pans. Given that the proposed prospecting area is entirely in flat sandy areas at least 5km away from the Kuruman river, there is a LOW probability of Stone Age remains of any significance existing in the project area.

Studies in the region have failed to identify any significant Iron Age remains or sites. Although there is an Iron Age presence on the landscape, settlements from this period are likely developed into present-day settlements such as Tsineng. Combined with the dearth of Iron Age remains in the immediate area, there is a LOW probability of finding Iron Age remains in the project area.

Several historical structures relating to the later 19th and early twentieth century have been identified in the region. These are typically highly visible features. Since no such features were visible on historical aerial imagery and historical maps. Therefore, there is a LOW probability of such features existing in the project area. The absence of any nearby farmhouses, mines and other archaeological settlements suggests that there is a LOW probability of finding graves in the proposed prospecting area.

(b) Description of the current land uses.

The land is not cultivated and no grazing animals were noted. Some animal dung indicated the possible presence of some free roaming game animals.

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

There is no infrastructure of any kind on site.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

The land capability normally dictates the land use in an area. The land capability is predominantly low with small patches of medium. No cultivation occurs on the property and the dominant potential land use would be low concentration grazing.

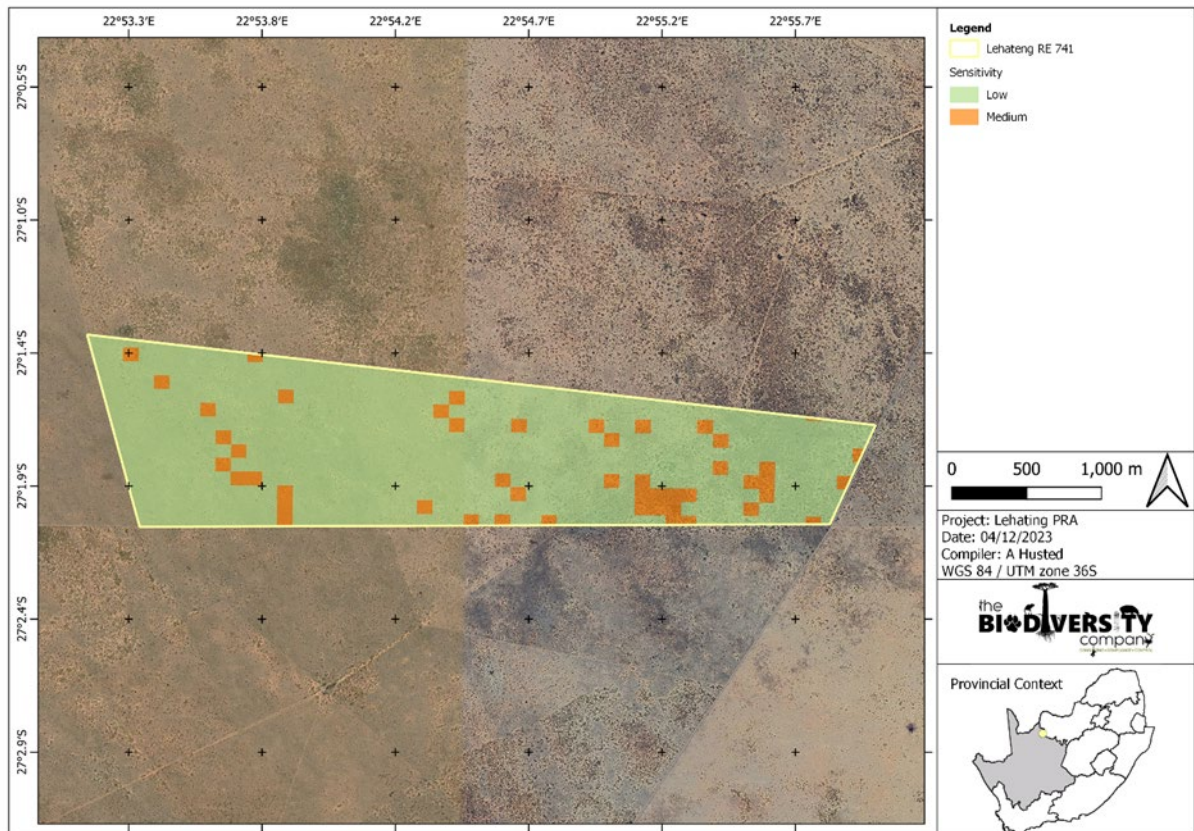


Figure 16: Land capability dictating land use.

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

Planning Phase

The impacts in the planning phase are minimal as it would be mainly initial site surveys. Only one possible impact was considered:

Temporary disturbance of wildlife due to increased human presence and possible use of machinery and/or vehicles.

Construction Phase

The following potential impacts on the biodiversity were considered for the construction phase of the proposed prospecting. This phase refers to the period when the drill and associated infrastructure will be set up. This phase is considered to have the largest direct impact on biodiversity. The following potential impacts to terrestrial biodiversity were considered:

- Destruction of, and fragmentation of, portions of the vegetation communities classified as EN;
- Loss of poorly protected and VU ecosystem;
- Displacement of faunal community due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities; and
- Encroachment by alien invasive species.

These impacts were combined for each drill site to evaluate the impact on the relevant features of each.

Operational Phase

The following potential impacts were considered on biodiversity (fauna and flora) during operational phase:

- Continued encroachment and displacement of the vegetation communities (EN) and due to alien invasive plant species;
- Further loss of poorly protected and VU ecosystems;
- Continued displacement and fragmentation of the faunal community (including SCCs) due to ongoing anthropogenic disturbances (noise, traffic and dust); and
- Potential leaks from the water collections and portable toilets into the surrounding environment.

A combination of the impacts relevant to each site was assessed.

Decommissioning and Rehab Phase

The following potential impacts were considered on terrestrial fauna and vegetation communities:

- Continued encroachment and displacement of an EN vegetation community by alien invasive plant species and erosion;
- Continued displacement of the faunal community (including threatened or protected species) due to ongoing anthropogenic disturbances and habitat degradation (litter, road mortalities and/or poaching).

The impacts were envisioned to be similar for the drill sites and as such they were assessed collectively.

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

Potential impacts were evaluated against the data captured during the desktop assessment to identify relevance to the project area. The relevant impacts were then subjected to a prescribed impact assessment methodology. The details of this methodology can be provided on request.

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.

Terrestrial Impact Assessment

Anthropogenic activities drive habitat destruction causing displacement of fauna and flora and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area.

The majority of terrestrial habitat expected in the project area consists of Kathu Bushveld (Least Threatened), species of conservation concern also expected for the PRA. The PRA does not overlap with any water resources. Based on the desktop assessment information it can be said that the sensitivity rating of the project area will be medium to high. However, the actual state of the project area must be confirmed by a field assessment.

Table Error! No text of specified style in document.-2: Scoping evaluation table summarising the impacts identified to terrestrial biodiversity

Impact			
Biodiversity loss/disturbance			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Destruction, fragmentation and degradation of habitats and ecosystems	<u>Direct impacts:</u>		
	» Disturbance / degradation / loss to vegetation and habitats		
	» Ecological corridors are disrupted		
	» Habitat fragmentation	Local	None identified at this stage
	<u>Indirect impacts:</u>		
	» Erosion risk increases		
	» Fire risk increases		
	» Increase in invasive alien species		
Spread and/or establishment of alien and/or invasive species	<u>Direct impacts:</u>		
	» Loss of vegetation and habitat due to increase in alien species		
	<u>Indirect impacts:</u>		
	» Creation of infrastructure suitable for breeding activities of alien and/or invasive species	Local	None identified at this stage
	» Spreading of potentially dangerous diseases due to invasive and pest species		
Direct mortality of fauna	<u>Direct impacts:</u>		
	» Loss of SCC species		
	» Loss of fauna diversity		
	<u>Indirect impacts:</u>		
	» Loss of diversity and species composition in the area.	Local	None identified at this stage
	» Possible impact on the food chain		

Reduced dispersal/migration of fauna	<u>Direct impacts:</u> » Loss of genetic diversity » Isolation of species and groups leading to inbreeding <u>Indirect impacts:</u> » Reduced seed dispersal » Loss of ecosystem services	National/ Local	None identified at this stage
Environmental pollution due to water runoff, spills from vehicles and erosion	<u>Direct impacts:</u> » Pollution in waterbodies and the surrounding environment » Faunal mortality (direct and indirectly) <u>Indirect impacts:</u> » Ground water pollution » Loss of ecosystem services	Regional/ Local	None identified at this stage
Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution.	<u>Direct impacts:</u> » Disruption/alteration of ecological life cycles due to noise » Reduced pollination and growth of vegetation due to dust » Faunal mortality due to light pollution (nocturnal species becoming more visible to predators) » Heat radiation could lead to the displacement of species <u>Indirect impacts:</u> » Loss of ecosystem services	Local	None identified at this stage
Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	<u>Direct impacts:</u> » Loss of SCCs or TOPS species <u>Indirect impacts:</u> » Loss of ecosystem service » Loss of genetic diversity	Local	None identified at this stage

Description of expected significance of impact

The development of the area could result in the loss or degradation of the habitat and vegetation which is expected to support a number of flora and fauna SCC species. The PRA activities could also lead to the displacement/mortalities of the fauna and more specifically SCC fauna species. The PRA activities could also result in the disruption of ecological life cycles. This could be as a result of a number of things, but mainly due to dust, noise and light pollution. The disturbance of the soil/vegetation layer will allow for the establishment of flora alien invasive species. In turn, the disturbances could provide refuge for invasive/feral fauna species. Erosion is another possible impact that could result from the disturbance of the topsoil and vegetation cover. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the activities. Leaks, spillages or breakages from any of these could result in contamination of the area. Contaminated areas are likely to have an effect on the associated biota. The significance of these impacts will be determined after a field assessment has been conducted.

Gaps in knowledge & recommendations for further study

- This is completed at a desktop level only.
- Identification and descriptions of habitats.
- Identification of the Site Ecological Importance.

- Location and identification of SCCs as well as in the case of fauna their location of the nests/dens.
- Determine a suitable buffer width for the identified features.

Recommendations with regards to general field surveys

- Field surveys to prioritise the development areas, but also consider the regulated zone.
- Fieldwork to be undertaken during the wet season period.

Wetland Impact Assessment

No water resources are located within the PRA, nor within the 500 m regulation zone. Despite the absence of these resources from the area, some general impacts and accompanying mitigation measures have been presented to ensure best practices are implemented for the project. A Zone of Regulation (ZoR) of 500 m is applicable for any wetland system that is present beyond the project boundary.

Table Error! No text of specified style in document.-3 Scoping evaluation table summarising the impacts identified to wetlands

Impact			
Wetland disturbance			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Disturbance / degradation to wetland soils or vegetation due to the construction of the facility and associated infrastructure, such as crossings	<u>Direct impacts:</u>	Local	None identified at this stage
	» Disturbance / degradation to wetland soils or vegetation		
	<u>Indirect impacts:</u>	Local	None identified at this stage
	» Loss of ecosystem services		
Increased erosion and sedimentation & contamination of resources	<u>Direct impacts:</u>	Local	None identified at this stage
	» Erosion and structural changes to the systems		
	<u>Indirect impacts:</u>	Local	None identified at this stage
	» Sedimentation & contamination of downstream reaches		

Description of expected significance of impact

The development of the area will not result in the encroachment into water resources. The PRA posed some unlikely indirect risks to the water resources in the larger / surrounding area. These disturbances could result in the infestation and establishment of alien vegetation which would affect the functioning of the systems. Earthworks will expose and mobilise earth materials which could result in sedimentation of the receiving systems. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources, albeit unlikely. Contaminated water resources are likely to influence the associated biota. The reporting of surface run-off to the systems could also result in the contamination of the systems, transporting (in addition to sediment) diesel, hydrocarbons and soil from the PRA areas. The significance of these impacts will be determined after a field assessment has been conducted.

Gaps in knowledge & recommendations for further study

- This is completed at a desktop level only.
- Identification, delineation and characterisation of water resources.

- Undertake a functional assessment of systems where applicable.
- Determine a suitable buffer width for the resources.

Recommendations with regards to general field surveys

- Field surveys to prioritise the development areas, but also consider the 500 m regulated zone.
- Beneficial to undertake fieldwork during the wet season period.

Soil Impact Assessment

Various soil forms are expected throughout the PRA, of which some are commonly associated with higher land capabilities. Even though the soil depth, texture and permeability of these soils ensure higher land capability, the climatic capability of an area often reduces the land potential. The overall agricultural sensitivity of the area is expected to range from low to medium.

Table Error! No text of specified style in document.-4 Scoping evaluation table summarising the impacts identified to soils

Impact			
Loss of land capability			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Compaction/soil stripping/transformation of land use which leads to loss of land capability	<u>Direct impacts:</u> » Loss of soil / land capability	Local	None identified at this stage
	<u>Indirect impacts:</u> » Loss of land capability		
Erosion	<u>Direct impacts:</u> » Loss of topsoil	Site/Local	None identified at this stage
	<u>Indirect impacts:</u> » Loss of land capability		

Description of expected significance of impact

The development of the area could result in the encroachment into areas characterised by high land potential properties, which can ultimately result in the loss of land capability. These disturbances could also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. Earthworks will expose and mobilise earth materials which could result in compaction and/or erosion. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the project. Leaks, spillages or breakages from any of these could result in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants. During the project phases, the impacts associated with the PRA will be easily managed by best “housekeeping” practices. The significance of these impacts will be determined after a field assessment has been conducted.

Gaps in knowledge & recommendations for further study

- » This is completed at a desktop level only.
- » Identification and delineation of soil forms.
- » Determine of soil sensitivity.

Recommendations with regards to general field surveys

- » Field surveys to prioritise the PRA.

Heritage Impact Assessment

FIELD SURVEY CONTEXT

Access

Entry to the property was gained via farm roads from the adjacent farm Vorstershoop 706 which borders the project area to the east.

Visibility and terrain

The project area is wholly contained on very flat-lying terrain between 1020 - 1040m masl. It is entirely wooded grassland, on Kalahari (Cenozoic) sands. Surface visibility was fair but impacted by grass cover and dense tree stands in places. Animal burrows occur throughout which allowed for inspection of subsurface deposits.

Field assessment results

The field assessment did not identify any archaeological or heritage sites within the proposed prospecting area.

Conclusion of field survey

No sites were identified during the field survey. This could be explained by the fact that the area is located a distance away from any surface water exposures or landscape features which would have attracted human activity such as surface exposures of raw material for stone tools. In general, site density is much lower away from rivers and significant landscape features.

Conclusions

The field survey did not find any remains of heritage significance. This is supplemented by the desktop study which indicates a relatively LOW probability of significant sites in the project area.

Numerous impact assessments have been conducted in the immediate vicinity of the proposed project area which means that a fair degree of confidence in the spatial patterning of heritage remains. While Stone Age finds do occur in the area, these are however largely limited to areas where there are raw material, and in close proximity to rivers and pans. Given that the proposed prospecting area is entirely in flat sandy areas at least 5km away from the Kuruman river, there is a LOW probability of Stone Age remains of any significance existing in the project area.

Studies in the region have failed to identify any significant Iron Age remains or sites. Although there is an Iron Age presence on the landscape, archaeological sites from this period likely developed into present-day settlements such as Tsineng. Combined with the dearth of Iron Age remains in the immediate area, there is a LOW probability of finding Iron Age remains in the project area.

Several historical structures relating to the later 19th and early twentieth century have been identified in the region. These are typically highly visible features. Since no such features were visible on historical aerial imagery, historical maps or during the survey, there is a LOW probability of such features existing in the project area.

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

Biodiversity Mitigation Measure

The focus of mitigation measures should be to reduce the significance of potential impacts associated with the prospecting and thereby to:

- Prevent the unnecessary destruction of, and fragmentation, of the vegetation community (including areas classified as ONA and sections classed as highest biodiversity importance);
- Prevent the loss of the faunal community (including potentially occurring SCCs) associated with these vegetation communities; and
- Limiting the construction area to the defined prospecting areas and only impacting those areas where it is unavoidable to do so otherwise.

General Measures

More in detail mitigations can be supplied after a field visit has been conducted.

- Site establishment shall take place in an orderly manner and all amenities shall be installed before the onset of exploration;
- A method statement is required from the Contractor(s) that includes the layout of the prospecting camp, management of facilities and wastewater management during prospecting;
- A site plan of the camp must be provided indicating domestic waste areas, chemical storage areas, fuel storage area, site offices and placement of ablution facilities;
- The planning and design for the camp must ensure that there is a minimum impact on the environment;
- The Contractor should inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities;
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility;
- Where a registered disposal facility is not available close to the prospecting area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site;
- Refuse bins will be emptied and secured;
- Temporary storage of domestic waste shall be in covered waste skips;
- Maximum domestic waste storage period will be 10 days;
- Any possible contamination of topsoil by hydrocarbons, concrete or concrete water must be avoided;
- Materials must be stored in leak-proof, sealable containers or packaging;
- No permanent structures will be permitted at the camp;
- Buildings should preferably be pre-fabricated or constructed of re-usable/recyclable materials;
- All structure footprints to be rehabilitated and landscaped after prospecting is complete;
- A minimum of one toilet must be provided per 10 persons;
- No storage of vehicles or equipment will be allowed outside of the designated prospecting area;
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use;

- No servicing of equipment on site unless absolutely necessary;
- Leaking equipment shall be repaired immediately or be removed from site to facilitate repair;
- The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site;
- All vehicles and equipment must be well maintained to ensure that there are no oil or fuel leakages;
- All contaminated soil / yard stone shall be treated *in situ* or removed and be placed in containers;
- A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site;
- All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the prospecting area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements;
- Prospecting site footprints should be kept to a minimum;
- Schedule prospecting activities and operations during least sensitive periods, in order to avoid migration, nesting and breeding seasons of SCC;
- Clearing of vegetation should be minimized and avoided where possible. Maintain small patches of natural vegetation within the prospecting site to accelerate restoration and succession of cleared patches;
- When vegetation is cleared, hand cutting techniques should be used as far possible in order to avoid the use of heavy machinery;
- During decommissioning, compacted surfaces should be broken-up and covered with brush, leaf litter or reseeded with site specific grass species;
- Restoration success should be monitored through a follow-up site visit during the next growing season in order to identify remedial actions;
- Outside lighting should be designed to minimize impacts on fauna. All outside lighting should be directed away from Very high and high sensitive areas. Fluorescent and mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible;
- Construction vehicles must be restricted to existing roads and new pathways must be restricted;
- Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery;
- Herpetofauna observed while rock sampling, should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified environmental control officer (ECO) trained in the handling and relocation of animals;
- An experienced (> 5 years) ECO must be on site when prospecting begins to identify species that will be directly disturbed and to relocate fauna/flora that are found during the prospecting areas;
- Dust reducing mitigation measures must be put in place and must be strictly adhered to; this will be very important during the construction phase, seeing that the area is prone to gusts of winds;
- No trapping, killing or poisoning of any wildlife is to be allowed on site, including snakes, birds, lizards, frogs, insects or mammals;

- Rehabilitation of the disturbed areas existing in the prospecting area must be made a priority. Top soils must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type; and
- The boreholes needs to be sealed to ensure that no fauna species can fall in the drill hole.

Heritage Mitigation Measures

Desktop assessment and field of the prospecting footprint of Lehating 741 R/E did not locate any heritage resources. However, the possibility of subsurface finds cannot be excluded. It is accepted that the prospecting action will have an acceptably low risk of impacting any heritage resources if the following management actions are implemented:

- Monitoring by an ECO is recommended during the planning and prospection phases of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during prospecting or ancillary activities, all activities should be suspended, and the archaeological specialist should be notified immediately.
- Existing farm roads and access routes be used as far as possible to limit the chance of exposing subsurface archaeological remains not identified in the survey.

ix) Motivation where no alternative sites were considered.

No site alternative has been considered as no infrastructure is planned and the option of re-siting bore hole positions will have negligible effect on the impact ratings.

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

This is not applicable as no site development alternatives have been considered. The initial drill site locations have been selected by the project geologist but final siting will be done in liaison with property owners and or occupiers where applicable.

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.

The following process was undertaken to identify and describe the potential environmental risks associated with the proposed prospecting right:

- Desktop description of the baseline receiving environment specific to the field of expertise (general surrounding area as well as site specific environment);
- Identification and description of any sensitive receptors in terms of relevant specialist disciplines (biodiversity) that occur in the project area, and the manner in which these sensitive receptors may be affected by the activity;
- Identify 'significant' ecological, botanical and faunal features within the proposed development areas;
- Identification of conservation significant habitats around the project area which might be impacted by the proposed development;
- Screening to identify any critical issues (potential fatal flaws) that may result in project delays or rejection of the application; and
- Suggest possible impacts, mitigation and rehabilitation measures to prevent or reduce the possible impacts.

j) Assessment of each identified potentially significant impact and risk

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p>	<p>(Including the potential impacts for cumulative impacts)</p>					
<p>E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>		<p>(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)</p>		<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..</p>	
<p>See Impact Assessment Tables in Section VII above.</p>						

k) Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Ecological Assessment for the proposed Lehating Prospecting Right Application Project – The Biodiversity Company April 2023	Based on the desktop ecological review with site photographic verification, the habitat is still regarded to be in a largely natural condition (with overall medium to high sensitivity) and will provide habitat for a number of faunal species, including some potentially threatened species. A number of species of conservation concern (SCC) can be expected to occur in the area. The overall agricultural theme sensitivity is expected to range from low to medium. The proposed prospecting activities may proceed but the subsequent mitigation measures and recommendations must be considered by the issuing authority.	X	Section 6 on Page 23 of the specialist Report
Heritage impact assessment report: Prospecting right application without bulk sampling on the remaining extent of lehating 741, near hotazel in the northern cape province. April 2023	The field survey did not find any remains of heritage significance. This is supplemented by the desktop study which indicates a relatively LOW probability of significant sites in the project area. Numerous impact assessments have been conducted in the immediate vicinity of the proposed project area which means that a fair degree of confidence in the spatial patterning of heritage remains. While Stone Age finds do occur in the area, these are however largely limited to areas where there are raw material, and in close proximity to rivers and pans. Given that the proposed prospecting area is entirely in flat sandy areas at least 5km	X	Section 7 on page 21 of the specialist Report

	<p>away from the Kuruman river, there is a LOW probability of Stone Age remains of any significance existing in the project area.</p> <p>Studies in the region have failed to identify any significant Iron Age remains or sites. Although there is an Iron Age presence on the landscape, archaeological sites from this period likely developed into present-day settlements such as Tsineng. Combined with the dearth of Iron Age remains in the immediate area, there is a LOW probability of finding Iron Age remains in the project area.</p> <p>Several historical structures relating to the later 19th and early twentieth century have been identified in the region. These are typically highly visible features. Since no such features were visible on historical aerial imagery, historical maps or during the survey, there is a LOW probability of such features existing in the project area.</p>		
--	--	--	--

Attach copies of Specialist Reports as appendices: See Appendix 4.

I) Environmental impact statement

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

Terrestrial Ecology

Based on the desktop ecological review with site photographic verification, the habitat is still regarded to be in a largely natural condition (with overall medium to high sensitivity) and will provide habitat for a number of faunal species, including some potentially threatened species. A number of species of conservation concern (SCC) can be expected to occur in the area. The overall agricultural theme sensitivity is expected to range from low to medium. The proposed prospecting activities may proceed but the subsequent mitigation measures and recommendations must be considered by the issuing authority.

Heritage

The field survey did not find any remains of heritage significance. This is supplemented by the desktop study which indicates a relatively LOW probability of significant sites in the project area.

Numerous impact assessments have been conducted in the immediate vicinity of the proposed project area which means that a fair degree of confidence in the spatial patterning of heritage remains. While Stone Age finds do occur in the area, these are however largely limited to areas where there are raw material, and in close proximity to rivers and pans. Given that the proposed prospecting area is entirely in flat sandy areas at least 5km away from the Kuruman river, there is a LOW probability of Stone Age remains of any significance existing in the project area.

Studies in the region have failed to identify any significant Iron Age remains or sites. Although there is an Iron Age presence on the landscape, archaeological sites from this period likely developed into present-day settlements such as Tsineng. Combined with the dearth of Iron Age remains in the immediate area, there is a LOW probability of finding Iron Age remains in the project area.

Several historical structures relating to the later 19th and early twentieth century have been identified in the region. These are typically highly visible features. Since no such features were visible on historical aerial imagery, historical maps or during the survey, there is a LOW probability of such features existing in the project area.

From a heritage point of view, the proposed prospecting activities on Lehating 741 R/E will be low and can be allowed to proceed pending SAHRA comments.

(ii) Final Site Map

The final site layout includes only bore hole positions as no infrastructure is planned to be placed in site.

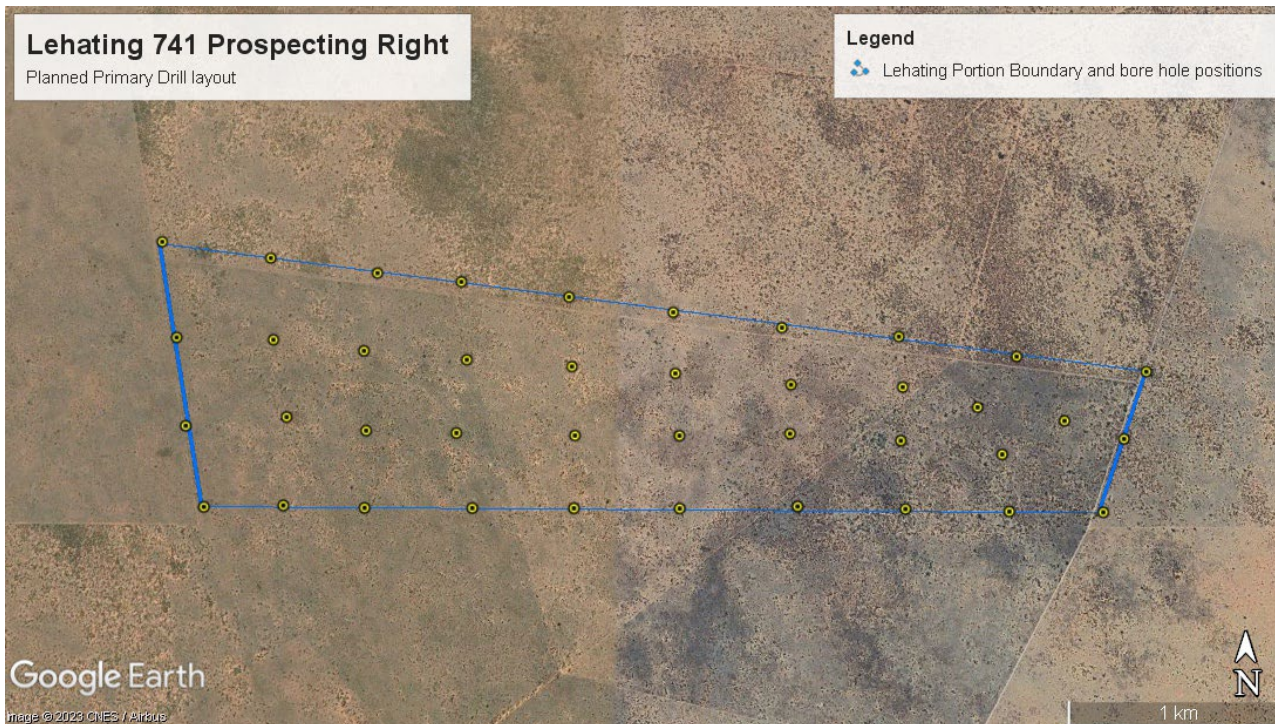


Figure 17. Final Site Plan with positions of initial bore hole locations.

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

Positive Impacts:

Positive Socio-economic impacts are limited to the job-creation during the prospecting process.

No Positive Environmental Impacts have been identified.

Negative Impacts:

Potential negative impacts identified during the impact assessment process include the following:

- Destruction, fragmentation and degradation of habitats and ecosystems
- Spread and/or establishment of alien and/or invasive species
- Direct mortality of fauna
- Reduced dispersal/migration of fauna
- Environmental pollution due to water runoff, spills from vehicles and erosion
- Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution.
- Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals
- Disturbance / degradation to wetland soils or vegetation due to the construction of the facility and associated infrastructure, such as crossings

- Increased erosion and sedimentation & contamination of resources

Identified Alternatives:

No site alternative has been considered as no infrastructure is planned and the option of re-siting bore hole positions will have negligible effect on the impact ratings.

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

The management objective associated with this impact assessment and its associated EMPr include the following:

- Implementation of all mitigation measures
- Rehabilitation of bore hole sites including the capping and/or plugging of each bore hole.
- Drill site rehabilitation to pre-prospecting status.

n) Aspects for inclusion as conditions of Authorisation.

It is recommended that the following be included as conditions of authorisation:

- Drilling sites must be located in already disturbed areas;
- Drill sites must be rehabilitated to the pre-drill land use and condition;
- Selected drilling sites should also be adjacent to existing access routes to avoid the construction of new routes. Alternatively, in the event new routes are required these should be established in already disturbed areas and kept to an absolute minimum with regards to width and length;
- The Contractor should inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities;
- The Contractor must supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility;
- Where a registered disposal facility is not available close to the project area, the Contractor must provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site;
- Refuse bins must be emptied and secured;
- Temporary storage of domestic waste must be in covered waste skips;
- Maximum domestic waste storage period will be 10 days;
- The areas where exploration is to take place must be specifically demarcated so that only the demarcated areas be impacted upon and preventing movement of workers into surrounding environments;
- Areas that are denuded need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species;

- No materials may not be stored for extended periods of time and must be removed from the site once the construction/closure phase has been concluded;
- The area must be walk through prior to construction to chase up any animals that could be hiding in burrows or under vegetation. Should burrows be identified, the ECO must ensured that the animals have moved out of it, as they will most likely be hiding out due to the noise, before construction can begin;
- A qualified environmental control officer must be on site when construction begins to identify species that will be directly disturbed and to relocate fauna that is found during construction (including all reptiles and amphibians);
- Dust reducing mitigation measures must be put in place and must be strictly adhered to, during the construction and operational phase of the project;
- A storm water management plan must be put in place and implemented to reduce the likelihood of erosion;
- Leaking equipment must be repaired immediately or be removed from the site to facilitate repair;
- The Contractor must be in possession of an emergency spill kit that must be complete and available at all times on site;
- All vehicles and equipment must be well maintained to ensure that there are no oil or fuel leakages;
- All contaminated soil / yard stone must be treated *in situ* or removed and be placed in containers;
- All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements;
- A temporary fence must be placed around the drill sites to ensure no animals can fall into the hole while the process is still ongoing;
- Drilling at night must be prohibited in order to reduce the impact on faunal species;
- An alien invasive plant management plan needs to be compiled and implemented post construction to control current invaded areas and prevent the growth of invasives on cleared areas, monitoring must be done on a monthly basis by the ECO for the duration of the project and then as stated in the management plan;
- A spill management plan must be put in place to ensure that should the water spill out into the surrounding area during the drilling process this does not result in erosion;
- Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type; and
- The sites must be rehabilitated after they have been refilled and sealed, the sites must be rehabilitated progressively as the process moves from one site to the other.

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

Although not known at this stage, there is a possibility that some site sensitivity may exist. The drilling team must liaise with the landowner and/or occupier to ensure any selected drilling sites do not impact on any identified sensitive sites.

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

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

The specialist assessment as well as the EAP have not identified any fatal flaws with regard to the proposed prospecting activity.

ii) Conditions that must be included in the authorisation

See Section N above.

q) Period for which the Environmental Authorisation is required.

The Applicant is applying for Environmental Authorisation for five (5) Years

r) Undertaking

The applicant confirms 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.

s) Financial Provision

The financial provision associated with the rehabilitation of bore holes is a relatively simple assessment. The post closure target is to leave a drill site where no risk to persons/animals exist due to a collapsed bore hole collar/cap and where the topsoil is left in a state where natural re-growing of the grass cover is possible. The financial provision required is as follows:

DMRE Ref No	Farm Name	Farm Number	Portions	Recommended Financial Provisioning
(NC) 13300PR	Lehating	741	Re	40 bore holes R66,000.00

i) Explain how the aforesaid amount was derived.

The Financial Provision calculation is based on real on-site experience of bore hole and drill site rehabilitation which is incorporated into the table below.

Task	Rate
Supervisor	R550.00/hr – rehabilitation = 2hrs/bore hole
Land Surveyor	Not Required
Back-actor (topsoil replacement & re-shaping of roads and tracks)	The drill footprint area will not require a Back-actor (TLB).
Tractor & scarifier (access tracks)	The access route will not require scarifying
Equipment Transport	No heavy equipment will be required for bore hole site rehabilitation
Bore hole Capping	R275.00/hole
Fertilizer	No fertilizing will be required due to the short duration the drill rig will be on site.
Seeding	No seeding is anticipated due to the short duration that drill rig will be on site.
Rehabilitation Monitoring	R550.00/hr – monitoring = 0,5hrs/bore hole
Rehabilitation Cost per bore hole	R1650.00/bore hole

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

This rehabilitation cost (R1650/bore hole) forms part of the operational cost estimate as illustrated in Table 3 of the Prospecting Work Programme.

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.

The process of prospecting through diamond core drilling processes will not impact on the socio-economic conditions of the landowners and/or occupiers. The Applicant's drilling team must liaise with each landowner and/or occupier regarding the final position of the bore hole as well as access to the position.

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

The field survey did not find any remains of heritage significance. This is supplemented by the desktop study which indicates a relatively LOW probability of significant sites in the project area.

Numerous impact assessments have been conducted in the immediate vicinity of the proposed project area which means that a fair degree of confidence in the spatial patterning of heritage remains. While Stone Age finds do occur in the area, these are however largely limited to areas where there are raw material, and in close proximity to rivers and pans. Given that the proposed prospecting area is entirely in flat sandy areas at least 5km away from the Kuruman river, there is a LOW probability of Stone Age remains of any significance existing in the project area.

Studies in the region have failed to identify any significant Iron Age remains or sites. Although there is an Iron Age presence on the landscape, archaeological sites from this period likely developed into present-day settlements such as Tsineng. Combined with the dearth of Iron Age remains in the immediate area, there is a LOW probability of finding Iron Age remains in the project area.

Several historical structures relating to the later 19th and early twentieth century have been identified in the region. These are typically highly visible features. Since no such features were visible on historical aerial imagery, historical maps or during the survey, there is a LOW probability of such features existing in the project area.

From a heritage point of view, the proposed prospecting activities on Lehating 741 R/E will be low and can be allowed to proceed pending SAHRA comments.

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

No site alternative has been considered as no infrastructure is planned on site and the option of re-siting bore hole positions will have negligible effect on the impact ratings.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

Please see Part A of this BAR.

b) **Description of the Aspects of the Activity**

This is already included in Part A of this BAR.

c) **Composite Map**

See Appendix 2

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

i) **Determination of closure objectives.**

The management objective associated with this impact assessment and its associated EMPr include the following:

- Implementation of all mitigation measures
- Rehabilitation of bore hole sites including the capping and/or plugging of each bore hole.
- Drill site rehabilitation to pre-prospecting status.

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

Potable Water:

The drilling team will provide their own potable water on site sourced from off-site.

Ablution Facilities:

Chemical toilets will be used on site requiring no additional water source.

Drilling Water Needs:

Diamond Core drilling required a limited amount of water per bore hole. An average of 5kl of water will be used per bore hole. This water will be sourced by the drilling contractor prior to drilling and not from the prospecting holes being drilled.

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

No Section 21 water uses are triggered by the proposed prospecting activities therefore no water use license is required.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc	PHASE (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	SIZE AND SCALE of disturbance	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
All prospecting	Planning and Design and pre-constructio n	0 ha disturbed	None Required	NA	NA
Drill site access	Planning and Design and pre-constructio n	Applicable to each drill site individual	Selected drilling sites should also be adjacent to existing access routes (wherever possible) to avoid the construction of new routes. Alternatively, in the event new	Duty of care in terms of the NEMA	Throughout preparation of drill sites, during drilling operations, closure and rehabilitation of drill sites.

		access route	routes are required these should be established in already disturbed areas and kept to an absolute minimum with regards to width and length;		
Drill Site	Construction and operational Phases	Approx. 115m ²	<p>Drilling sites must be located in already disturbed areas;</p> <p>Areas stripped must be revegetated to restrict erosion;</p> <p>Prioritise prospecting during the dry season (May to August) to avoid erosion of bare areas caused by run-off;</p> <p>Ensure proper storm water management designs are in place;</p> <p>Compacted areas are to be ripped to loosen the soil structure;</p> <p>Prevent any spills from occurring. Machines must be parked within hard park areas and must be checked daily for fluid leaks;</p> <p>Leaking vehicles will have drip trays place under them where the leak is occurring; and</p> <p>Only the designated access routes are to be used to reduce any unnecessary compaction.</p>	Duty of care in terms of the NEMA	Throughout preparation of drill sites, during drilling operations, closure and rehabilitation of drill sites.

On-Site Chemical Toilet	Construction and operational Phases	Approx 2m ²	The Contractor should inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities;	Duty of care in terms of the NEMA	Throughout preparation of drill sites, during drilling operations, closure and rehabilitation of drill sites.
Waste Management	Construction, operational and closure phases	All 88 ha	<p>The Contractor must supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility;</p> <p>Where a registered disposal facility is not available close to the project area, the Contractor must provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site;</p> <p>Refuse bins must be emptied and secured;</p> <p>Temporary storage of domestic waste must be in covered waste skips;</p> <p>Maximum domestic waste storage period will be 10 days;</p>	Duty of care in terms of the NEMA	Throughout preparation of drill sites, during drilling operations, closure and rehabilitation of drill sites.

e) Impact Management Outcomes

Terrestrial Biodiversity Impacts for all phases:

Impact			
Biodiversity loss/disturbance			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Destruction, fragmentation and degradation of habitats and ecosystems	<u>Direct impacts:</u> » Disturbance / degradation / loss to vegetation and habitats » Ecological corridors are disrupted » Habitat fragmentation	Local	None identified at this stage
	<u>Indirect impacts:</u> » Erosion risk increases » Fire risk increases » Increase in invasive alien species		
Spread and/or establishment of alien and/or invasive species	<u>Direct impacts:</u> » Loss of vegetation and habitat due to increase in alien species <u>Indirect impacts:</u> » Creation of infrastructure suitable for breeding activities of alien and/or invasive species » Spreading of potentially dangerous diseases due to invasive and pest species	Local	None identified at this stage
Direct mortality of fauna	<u>Direct impacts:</u> » Loss of SCC species » Loss of fauna diversity <u>Indirect impacts:</u> » Loss of diversity and species composition in the area. » Possible impact on the food chain	Local	None identified at this stage
Reduced dispersal/migration of fauna	<u>Direct impacts:</u> » Loss of genetic diversity » Isolation of species and groups leading to inbreeding <u>Indirect impacts:</u> » Reduced seed dispersal	National/ Local	None identified at this stage

	» Loss of ecosystem services		
Environmental pollution due to water runoff, spills from vehicles and erosion	<u>Direct impacts:</u>		
	» Pollution in waterbodies and the surrounding environment » Faunal mortality (direct and indirectly)	Regional/ Local	None identified at this stage
	<u>Indirect impacts:</u>		
Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution.	» Ground water pollution		
	» Loss of ecosystem services		
	<u>Direct impacts:</u>		
	» Disruption/alteration of ecological life cycles due to noise » Reduced pollination and growth of vegetation due to dust » Faunal mortality due to light pollution (nocturnal species becoming more visible to predators) » Heat radiation could lead to the displacement of species	Local	None identified at this stage
	<u>Indirect impacts:</u>		
Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	» Loss of ecosystem services		
	<u>Direct impacts:</u>		
	» Loss of SCCs or TOPS species	Local	None identified at this stage
	<u>Indirect impacts:</u>		
	» Loss of ecosystem service » Loss of genetic diversity		

Description of expected significance of impact

The development of the area could result in the loss or degradation of the habitat and vegetation which is expected to support a number of flora and fauna SCC species. The PRA activities could also lead to the displacement/mortalities of the fauna and more specifically SCC fauna species. The PRA activities could also result in the disruption of ecological life cycles. This could be as a result of a number of things, but mainly due to dust, noise and light pollution. The disturbance of the soil/vegetation layer will allow for the establishment of flora alien invasive species. In turn, the disturbances could provide refuge for invasive/feral fauna species. Erosion is another possible impact that could result from the disturbance of the topsoil and vegetation cover. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the activities. Leaks, spillages or breakages from any of these could result in contamination of the area. Contaminated areas are likely to have an effect on the associated biota. The significance of these impacts will be determined after a field assessment has been conducted.

Wetland impacts for all phases:

Impact			
Wetland disturbance			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Disturbance / degradation to wetland soils or vegetation due to the construction of the facility and associated infrastructure, such as crossings	<u>Direct impacts:</u>		
	» Disturbance / degradation to wetland soils or vegetation	Local	None identified at this stage
Increased erosion and sedimentation & contamination of resources	<u>Indirect impacts:</u>		
	» Loss of ecosystem services		
	<u>Direct impacts:</u>		
	» Erosion and structural changes to the systems	Local	None identified at this stage
	<u>Indirect impacts:</u>		
	» Sedimentation & contamination of downstream reaches		

Description of expected significance of impact

The development of the area will not result in the encroachment into water resources. The PRA posed some unlikely indirect risks to the water resources in the larger / surrounding area. These disturbances could result in the infestation and establishment of alien vegetation which would affect the functioning of the systems. Earthworks will expose and mobilise earth materials which could result in sedimentation of the receiving systems. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources, albeit unlikely. Contaminated water resources are likely to influence the associated biota. The reporting of surface run-off to the systems could also result in the contamination of the systems, transporting (in addition to sediment) diesel, hydrocarbons and soil from the PRA areas. The significance of these impacts will be determined after a field assessment has been conducted.

Soil Impacts for all phases:

Impact			
Loss of land capability			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Compaction/soil stripping/transformation of land use which leads to loss of land capability	<u>Direct impacts:</u> » Loss of soil / land capability	Local	None identified at this stage
	<u>Indirect impacts:</u> » Loss of land capability		
Erosion	<u>Direct impacts:</u> » Loss of topsoil	Site/Local	None identified at this stage
	<u>Indirect impacts:</u> » Loss of land capability		

Description of expected significance of impact

The development of the area could result in the encroachment into areas characterised by high land potential properties, which can ultimately result in the loss of land capability. These disturbances could also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. Earthworks will expose and mobilise earth materials which could result in compaction and/or erosion. A number of machines, vehicles and equipment will be required, aided by chemicals and mixes for the project. Leaks, spillages or breakages from any of these could result in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants. During the project phases, the impacts associated with the PRA will be easily managed by best “housekeeping” practices. The significance of these impacts will be determined after a field assessment has been conducted.

Heritage Impacts for all Phases:

No sites were identified during the field survey. This could be explained by the fact that the area is located a distance away from any surface water exposures or landscape features which would have attracted human activity such as surface exposures of raw material for stone tools. In general, site density is much lower away from rivers and significant landscape features.

f) Impact Management Actions

ACTIVITY whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Drill site preparation	Surface disturbance	Minimise surface area disturbance by demarcating the drill site area	Implementation during pre-construction and operational phase. Rehabilitation immediately upon cessation of drilling	NEMA Duty of Care
Drill site access road for drill rig and LDV's	Surface disturbance and topsoil compaction	Selection of least impact route through liaison with land owner.	Implementation during pre-construction and operational phase. Rehabilitation immediately upon cessation of drilling	NEMA Duty of Care
Drilling Operations	Waste Management	Ensure waste management related mitigation measures are implemented on site	Implementation during pre-construction and operational phase. Rehabilitation immediately upon cessation of drilling	NEMA Duty of Care
Drilling Operations	Spillage or leaking of any HCS	Ensure site is equipped with a drip tray and spill kit.	Implementation during pre-construction and operational phase. Rehabilitation immediately upon cessation of drilling	NEMA Duty of Care

Drill Site Rehabilitation	Increased and unnecessary surface disturbance	Conduct as much rehabilitation work on foot or with only LDV access. Ensure all solid waste is removed from site and disposed of correctly.	Implementation during the Rehabilitation Phase	NEMA Duty of Care
Drill site access	Dust emissions and road degradation	Inspection of access roads and implementation of dust suppression with a water bowser if required	Full period of on-site prospecting	NEMA Duty of Care

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The closure objective associated with this impact assessment and its associated EMPr include the following:

- Implementation of all mitigation measures during all applicable phases in order to support the closure objectives of this site.
- Rehabilitation of bore hole sites including the capping and/or plugging of each bore hole.
- Drill site rehabilitation to pre-prospecting status.

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

These closure objectives have been included in the draft Basic Assessment Report (this report) for public consultation will all registered IAP's.

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

This is not applicable to this prospecting right application since the only invasive aspect of this prospecting right application is the drilling of bore holes. Implementation of the rehabilitation of bore holes as described in the mitigation

measures will ensure that no residual prospecting areas will remain at the time of closure.

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

The closure objectives have been described in conjunction with the rehabilitation plan and cannot function independently. The rehabilitation plan seeks to meet each closure objective in order to satisfy the DMRE that closure has been reached while achieving a pre-prospecting status.

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

The financial provision associated with the rehabilitation of bore holes is a relatively simple assessment. The post closure target is to leave a drill site where no risk to persons/animals exist due to a collapsed bore hole collar/cap and where the topsoil is left in a state where natural re-growing of the grass cover is possible. The financial provision required is as follows:

DMRE Ref No	Farm Name	Farm Number	Portions	Recommended Financial Provisioning
(NC) 13300PR	Lehating	741	Re	40 bore holes R66,000.00

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

The applicant has committed to the financial provision as determined in this BAR within the operational budget of the prospecting programme.

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

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

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Construction and Operational phase	Surface disturbance Spillages Ablution facilities Waste management Drilling water	Site inspection by ECO	Physical on-site inspection and written report on findings.	Monthly during construction and operational phases
Closure and Decommissioning Phase	Drill footprint state Evidence of any residue Any remaining drill related waste on site Bore hole capping/plugging Rehabilitation of drill footprint	Site inspection by ECO	Physical on-site inspection and written report on findings.	Monthly during construction and operational phases

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

An annual Performance Assessment Reports will be submitted to the DMRE.

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.

Induction Programme: An Induction Programme, which will include the environmental awareness programme, will be established for the prospecting area in question. During the training sessions various topics will be discussed such as, but not limited to: Water Pollution Prevention, Good Environmental Housekeeping, spill protection and clean up etc. Through the Induction Programme, the mine manager safety officer, or any other responsible appointed person shall ensure that all staff receives training in:

- Administrative requirements and procedures, which will include the Environmental Emergency Procedures.
- Resource conservation, environmental reporting and general environmental awareness for mine related environmental issues.

All employees (including contractor employees) will undergo induction. This induction includes training and awareness on environmental issues within the prospecting area and is compulsory for all new employees. The induction programme will as mentioned above, have an environmental management component. On an annual basis, the environmental section of the induction will be updated to ensure all prospecting components adhere to applicable environmental legislation. Consideration should be given to:

- Significant environmental impacts as identified in the BAR & EMP;
- Environmental awareness and emergency procedures
- Trends in incidents;
- Trends in audit findings;

Trainee needs: The identification of environmental training and environmental awareness needs are derived from an analysis of the different roles that employees play at the mine. The following categories are considered:

- Senior Management
- Middle management (Environmental Officers)
- Supervisors
- Operators
- Visitors and contractors

Each of these categories has different responsibilities and therefore has different knowledge requirements and environmental awareness training needs to obtain that knowledge.

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

The contractor on site is responsible for the ultimate implementation of all mitigation measures as described in this EMP. For this reason communication of these objectives and mitigation measures should be clear and regular. Site inspections by the project ECO must determine compliance with these mitigation measures as well as effectiveness of such.

n) Specific information required by the Competent Authority

The applicant confirms that the Financial Provision will be reviewed annually and submitted to the DMRE.

2) UNDERTAKING

The EAP herewith confirms

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

Masala Mahumela:

Signature of the environmental assessment practitioner:

Amber Earth Pty Ltd

Name of company:

April 2023

Date:

-END-

The following Appendices are provided:

Appendix 1: EAP CV

Appendix 2: Regulation 2.2 Plan and Site Plan

Appendix 3: Public Consultation Report

Appendix 4: Specialist Studies

Appendix 1:
EAP CV

CURRICULUM VITAE OF JOHANA MASALA MUGWAGWA

1. PERSONAL DETAILS

First Names	Johana Masala
Surname	Mugwagwa
Years of Experience	13
Nationality	South African
Ethnic Group	Black
Date of Birth	12 September 1984
Gender	Female
Marital Status	Married
Criminal Record	None
Contact Details	073 504 3122 or 076 712 3209 masala1209@hotmail.com
Residential Address:	3 Fouriesburg Street, Emerald Gardens, Rooihuiskraal North, Centurion, 0157
Postal Address	P.O. Box 5264, The Reeds, 0158
Driver's License:	Code 10 (C1)

2. LANGUAGE PROFICIENCY

	Tshivenda	English	Setswana
Speak	Good	Good	Fair
Read	Good	Good	Fair
Write	Good	Good	Fair

3. EDUCATION/QUALIFICATIONS

University of South Africa	2012	B.Sc. Honours Environmental Management
University of Pretoria	2008	B.Sc. Environmental Sciences
Mbilwi Secondary School	2003	Matric Senior Certificate

3.1. Career Enhancing Short Courses and Trainings

African Management Institute	February – July 2020	<ul style="list-style-type: none">• Performance Management• Building a Great Team• Communication• Personal Productivity• Problem Solving• Influencing others
University of Stellenbosch	May 19 – 24 May 2014	Renewable Energy Policy

Green Gain Consulting
Rhodes University

28 August 2012
May 2008

Environmental Legislation Training
Introduction to Environmental Impact
Assessment Procedures

4. WORK EXPERIENCE

Employer	Post Held	From	To	Reason for Leaving
Nsovo Environmental Consulting	Environmental Assessment Practitioner	March 2013	Current	Still employed at Nsovo Environmental Consulting.
Aurecon South Africa	Junior Environmental Assessment Practitioner	March 2008	February 2013	Obtained a new appointment at Nsovo Environmental Consulting.

5. PROFESSIONAL REGISTRATION

- Registered with the South African Council for Natural Scientific Professions (SACNASP) – No. 400536/14
- Environmental Assessment Practitioners Association of South Africa (EAPASA) registration underway

6. ROLES AND RESPONSIBILITIES

The roles and responsibilities undertaken include but not limited to the following:

- Managing projects from inception to completion;
- Team leader and team player. Understanding the project scope, leading the team and ensuring deliverables are met to client/recipient's expectation;
- Liaison/Communication with clients, Authorities and Interested and Affected Parties;
- Undertaking Public Participation process;
- Undertaking Audits (Water Use License (WUL), Environmental Authorisation (EA), Environmental Management Programme (EMPr), Waste Management License (WUL);
- Environmental Monitoring of compliance to permits issued to clients;
- Compilation of Audit Reports;
- Undertaking Environmental Impact Assessment (EIA) Processes/Basic Assessment (BA)Process;
- Compilation of EIA, BA, EMPr Reports;
- Record Management;
- Review of specialist reports.

7. SKILLS / EXPERTISE

- Project Management;
- Strategic thinker;
- Report Compilation;
- Environmental Compliance Monitoring;
- Environmental Auditing;
- Conducting EIAs and BAs;
- Applications for Environmental Authorisation Amendment;
- Compiling EMPs;
- Application for WULs;
- Application for Tree Removal Permits
- Land Owner/Stakeholder Liaison;
- Conducting Public Participation Process;
- Authority and Client Liaison;
- Ability to review environmental assessment and Management procedures and methods;
- Marketing;
- Preparing proposals/Quotations;
- Problem solving skills.
- Basic knowledge of Windows and the MicroSoft Office suite (Word, Excel and Power Point
- Basic Knowledge of Microsoft Projects

8. PROJECTS UNDERTAKEN

Environmental Compliance Audits and Monitoring

- Assessment of compliance to Anglo American's Minimum Permitting Requirements at the Kumba Sishen and Kolomela mines in the Northern Cape Province.
- Water Use License Audit Wescoal Mine Road in the Mpumalanga Province.
- Environmental Monitoring during the expansion of a waste disposal facility and development of a return water dam for Bushveld Vanchem Mine in the Mpumalanga Province.
- Environmental Management Programme performance audit for United Manganese of Kalahari (UMK) mine in the Northern Cape Province.
- Water Use License audit for the Kudumane Manganese Resources mine located within the jurisdiction of the Joe Morolong Local Municipality in the Northern Cape Province.
- Water Use License audit for Bushveld Vametco Alloys located in the North West Province.
- Provision of Environmental Officer Services for the United Manganese of Kalahari (UMK) mine in the Northern Cape Province.
- Environmental Compliance Audit for Environmental Authorisation and Integrated Water Use License for the Provincial Road on Portion 38 of the Farm Elandspruit, Wescoal Mine, in the Mpumalanga Province.
- Environmental Compliance Audit for construction of ACWA Power's Khanyisa Coal – Fired Power Station (LNTP 1) in Emalahleni Local Municipality, Mpumalanga Province.
- Environmental Monitoring during the implementation of a Compliance Notice issued by the GDARD to Henk Van Wyk Vervoer due to commencement of unlawful activities in his Randfontein Property.
- Environmental Control Officer for the construction of the Kusile Power Station in the Mpumalanga Province.
- Environmental Control Officer for construction of the Ankerlig Transmission Koeberg Second Supply in the Western Cape Province.

- Environmental Control Officer for the conversion of Gourikwa power station from open cycle gas turbine to close cycle gas turbine within the jurisdiction of Mossel Bay Municipality in the Western Cape Province.
- Environmental Control Officer for the conversion of Ankerlig power station from open cycle gas turbine to close cycle gas turbine within the jurisdiction of City of Cape Town Metropolitan Municipality in the Western Cape Province.
- Environmental Control Officer for construction of the Nieuwehoop substation and a 400kV transmission line in the Northern Cape Province.
- Environmental Monitoring of construction of power lines joining at the Kusile Power Station. These power lines were 2 x 400kV loop – in and out Kendal – Apollo and Duvha – Minerva power lines into Bravo Power station (Bravo integration project phase 2) in the Emalahleni Local Municipality, Mpumalanga Province, South Africa.
- Environmental Control Officer for construction of a 132kV power line and the Umtu substation in the Northern Cape Province, South Africa.
- External Audit for Water Use License for Rand Water's O6 Pipeline from Palmiet Pumping Station to Klipfontein Reservoir in the Gauteng Province.

EIA and Basic Assessment, EMPr compilation, undertaking of public participation process, Water Use Licence Applications, Tree Permit Applications, Waste Management Licence

- Environmental Impact Assessment for expansion of Exxaro Belfast mine within Emakhazeni Local Municipality in the Mpumalanga Province.
- Basic Assessment for the Vaal River water pipeline for AngloGold Ashanti Mine's Vaal River Operations in the North West Province.
- Environmental Impact Assessment for Shongweni substation, Hector – Shongweni 400kV powerline and associated infrastructure within the jurisdiction of EThekweni Metropolitan in the Kwazulu Natal Province.
- Environmental Impact Assessment for the proposed Sunshine gas-to-power facility and associated infrastructure in Saldanha Bay, Western Cape Province.
- Environmental Impact Assessment for Inyaninga substation, Inyaninga – Mbewu 400KV powerline and associated infrastructure within the jurisdiction of EThekweni Metropolitan, Ilembe and Uthungulu District Municipalities in the Kwazulu Natal Province.
- Environmental Authorisation Amendment for the proposed construction of Foskor – Merensky powerline from 275kV to 400kV and associated substation works in the Limpopo Province.
- Environmental Authorisation Amendment for Eskom's Kudu Integration Project: 400kV Powerline traversing the Northern and Western Cape Provinces.
- Tree permit applications for Eskom's Kudu Integration Project: 400kV powerline traversing the Northern and Western Cape Provinces.
- Basic Assessment, Waste Management License Application and Water Use License Application for the proposed upgrade of Storm Water Systems in the Port of Saldanha, Port of Saldanha, Western Cape Province.
- Basic Assessment process for the proposed construction of approximately 5.7km 50kV power line from Eskom Juno substation to the proposed new Transnet Juno traction feeder substation within the jurisdiction of Matzikama local municipality, Western Cape Province.

- Basic Assessment process for the proposed construction of the new 50kV Transnet Juno traction feeder substation within the jurisdiction of Matzikama local municipality, Western Cape Province.
- Water Use Licence Application for the Ekangala 10ML Waste Water Treatment Works in Ekangala within the City of Tshwane metropolitan Municipality, Gauteng Province.
- Basic Assessment process and Water Use License Application for the demolishing of the Ekangala old oxidation ponds on behalf of the City of Tshwane Metropolitan Municipality within the City of Tshwane Metropolitan municipality, Gauteng Province.
- Environmental Impact Assessment for The proposed Tubatse Strengthening Phase 1 – Senakangwedi B integration in Greater Tubatse Local Municipality in the Limpopo Province.
- Water Use License Application for the proposed construction of Simmerpan Main Transformer Substation and refurbishment of Jupiter - Simmerpan power line, within Ekurhuleni Metropolitan Municipality, Gauteng Province.
- Basic Assessment for decommissioning of Verwoedsburg 275kV substation and 2x 275kV Verwoedsburg Apollo power lines within the City of Tshwane Metropolitan Municipality.
- Basic Assessment for the Construction of the new Meteor substation and associated 88kV overhead power lines in Emfuleni Municipality, Gauteng Province.
- Construction Environmental Management Plan and Water Use Licence Application for the proposed upgrade of Firgrove Main Transformer Substation and construction of Palmiet Stikland loop-in and loop-out power lines, (Firgrove, Western Cape Province).
- Stakeholder Liaison Officer for the Construction of the Aries-Niewehoop 400kV transmission line in the Northern Cape Province.
- Environmental Management Plans for the Flag Boshielo to Mokopane water pipeline (Mpumalanga and Limpopo Provinces).
- Environmental Management Plans for the construction of a bulk water pipeline from De Hoop Dam to Steelpoort Pump Station (Mpumalanga and Limpopo Provinces).
- Environmental Management Plans for the construction of a bulk water pipeline from Steelpoort Pump Station to the Groothoek Reservoir (Limpopo Province).
- Environmental Impact Assessment for Eskom's Isundu-Mbewu 400kV transmission powerlines in KwaZulu-Natal (KwaZulu-Natal Province).
- Basic Assessment for AngloGold Ashanti's Mponeng South return water dams and pipeline (Gauteng Province).
- Basic Assessment for AngloGold Shanti's West Wits Tau Tona pipeline in Carletonville (Gauteng Province).
- Environmental Impact Assessment for the Sunderland Ridge Wastewater Treatment Works (Gauteng Province)
- Environmental Impact Assessment for the realignment of the Sasol Gas pipeline in Tembisa (Gauteng Province).
- Environmental Impact Assessment for the Ekangala 10ML Wastewater Treatment Works (Gauteng Province).
- Environmental Impact Assessment for the Orange-Riet Canal: Balancing dam S1 and reject canal in Jacobsdal (Free State Province).
- Environmental Impact Assessment for the deviation of the Sasol Gas pipelines in Dalview, Elspark, Verword Park, Burton Park and Mindalore (Gauteng Province).

- Preparation of Environmental Management Plan for the deviation of the Sasol Gas pipeline, due to the upgrading of an alignment of National Road 17 (N17) between Springs and Ermelo (Gauteng and Mpumalanga Provinces).
- Environmental Impact Assessment for the upgrading of the White River Wastewater Treatment Works in White River, Mbombela, Mpumalanga Province.
- Environmental Impact Assessment for the Development of Klipkopje Eco-estate houses (Mpumalanga Province).
- Environmental Impact Assessment for the development of Shallcross Eco-estate houses in Schoemanskloof (Mpumalanga Province).
- Environmental Impact Assessment for the development of St Paul's Eco-estate houses in Schoemanskloof (Mpumalanga Province).
- Basic Assessment for the Mbombela Multi-Purpose Stadium sewage pipeline in the Mpumalanga Province.
- Basic Assessment for the Mbombela Multi-Purpose Stadium water pipeline in the Mpumalanga Province.

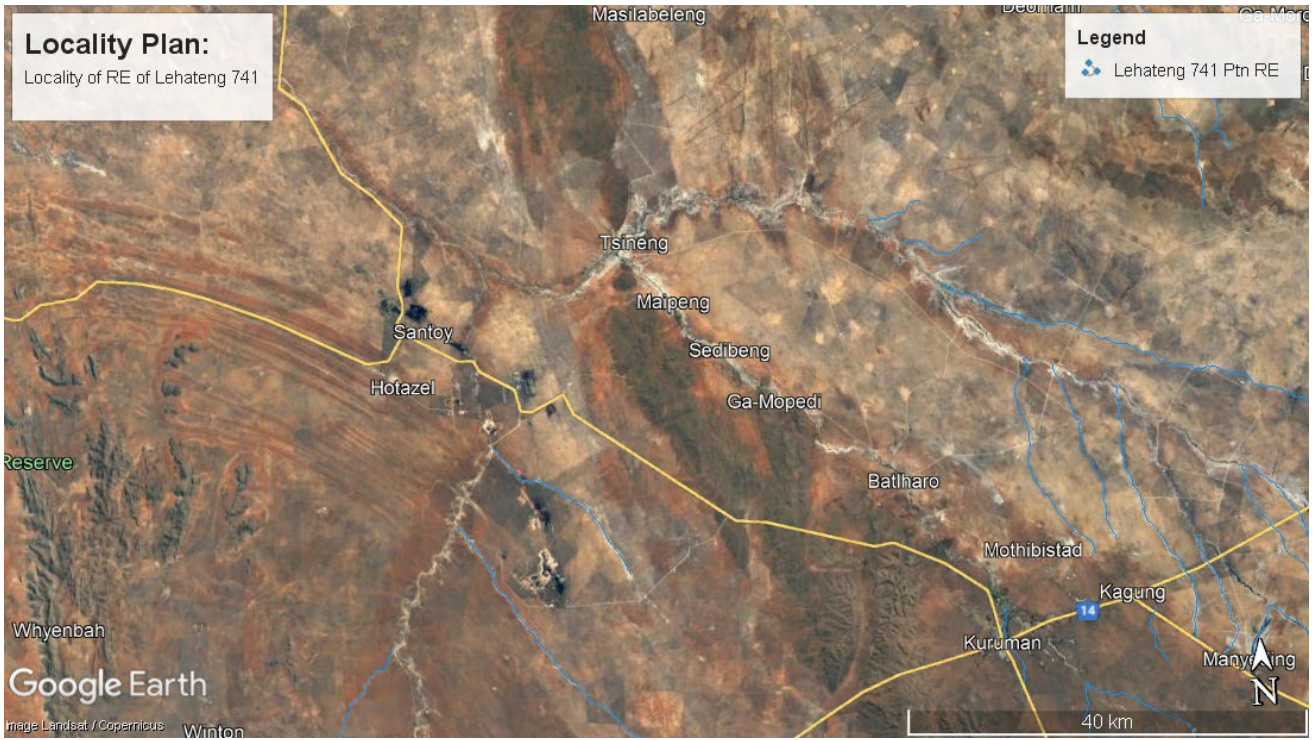
9. RESEARCH PROJECT

Mahumela J.M., 2011. "Comparative Analysis of Phosphate Levels on the Trophic Status of the Roodeplaat Dam between 1998 and 2010". The project was undertaken as part of the Honours degree and it focused on determining if the predictions made in 1998 regarding the phosphate levels at the Roodeplaat Dam came true through a comparative analysis of phosphate levels between 1998 and 2010.

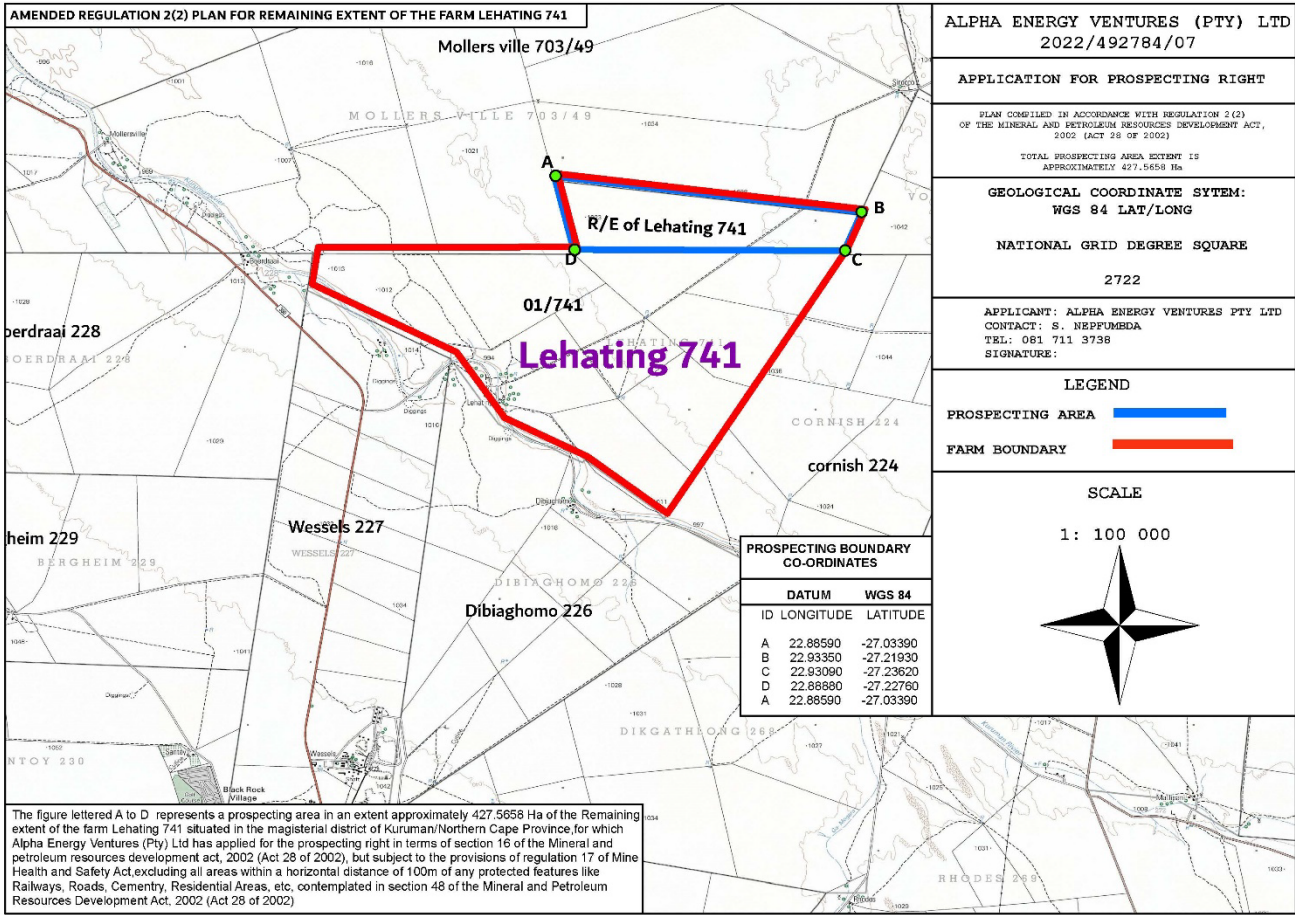
Referees			
Company/ Organization	Contact Person	Relation	Telephone Number
Aurecon South Africa	Dr. Pieter Botha	Former (senior colleague) Environmental Assessment Practitioner at Aurecon	083 321 1634 pieterbotha1950@gmail.com
Amber Earth	Tim Van Stormbroek	Environmental Assessment Practitioner at Amber Earth	082 482 6202 tim@amberearth.co.za
Counsellor	Pastor Patrick Nemabubuni	Counsellor and Manager at Department of Water and Sanitation	084 350 9851 /012 336 7679 083 290 1947 nemabubunimp@gmail.com

Appendix 2:
Regulation 2.2 Plan and Site Plan

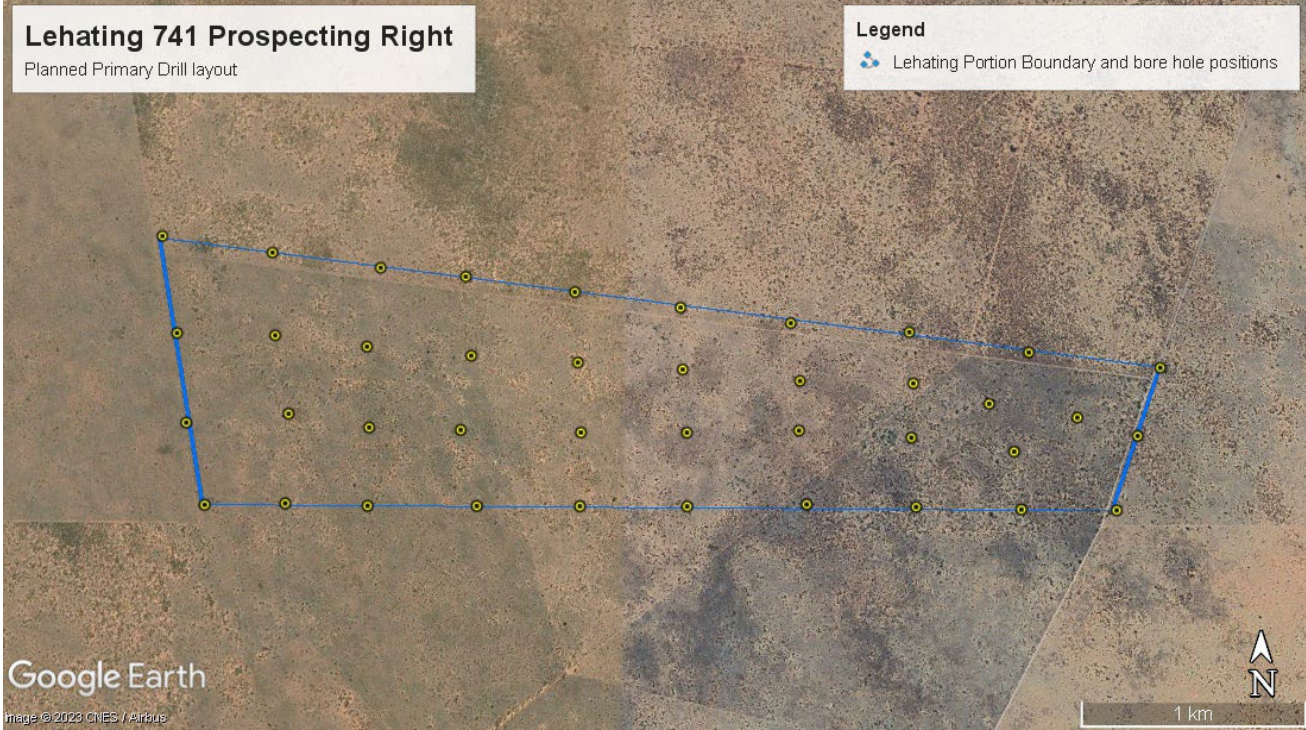
Locality Plan



Regulation 2(2) Plan



Prospecting Plan



Appendix 3:
Public Consultation Report

Appendix 4:
Specialist Studies