Draft Basic Assessment Report and Environmental Management Programme for Prospecting Right Application for Lithium, Manganese, Copper, Diamond, Fluorspar, Gypsum, Uranium Ore, Molybdenum, Rare Earths, mica and Cobalt on the farm Wolfkop 1186 Situated in Hantum Local Municipality of the Namakwa Magisterial District, Nothern Cape Province.

DMR REF: NC 30/5/1/1/2/12766 PR

Prepared for: Red dust trading (Pty) Ltd

Prepared by: Mielelani Consultancy

2021

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

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mineral resources

Department:
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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 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:	**Red dust trading (Pty) Ltd**
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FILE REFERENCE NUMBER SAMRAD: NC 30/5/1/1/2/ 12766 PR

IMPORTANT NOTICE

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

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

TABLE OF CONTENTS

LIST OF TABLES

PART A

LIST OF FIGURES

PART A

PART A

SCOPE OF ASSESSMENT AND REPORT

1 Contact Person and correspondence address

1.1 Details of the EAP

Names of Practitioners:	Phathu Mugagadeli
Qualifiations	BSc in Environmental Sciences Bachelor of Science Honours in Geography
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Fax No. :	086 560 5316
e-mail address:	phathu@mielelani.co.za/ khuliso@mielelani.co.za

1.2 Expertise of the EAP.

The EAP has a Bachelor of Environmental Sciences from University of Venda and Bachelor of Science Honours in Geography (UNISA).

Summary of the EAP's past experience

Mr Mugagadeli Phathutshedzo has a solid 05 years' experience in Conducting EIAs. He has conducted EIAs for various projects including but not limited to Construction, Agricultural, Prospecting and Mining as well as Waste Management. His exposure to different working environment has greatly advanced his technical ability in identifying and assessing impacts as well as providing mitigation thereof, from this role he has learnt the best practical strategies to manage and mitigate impacts. The EAPs' CVs are attached as Appendix 02.

2 Project Locality

2.1 Location of the overall activity

<table>
<tr><td>Farm Name:</td><td>Wolfkop 1186</td></tr>
<tr><td>Application area (Ha)</td><td>Approximately 3 255,7 Hectare</td></tr>
<tr><td>Magisterial district:</td><td>Namakwa District, Northern Cape Province.</td></tr>
<tr><td>Distance and direction from nearest town</td><td>The proposed prospecting area is located approximately about 60 km West of Brandvlei town</td></tr>
<tr><td>21 digit Surveyor General Code for each farm portion</td><td>
<table>
<tr><th>Farm name</th><th>Farm Number</th><th>Registration Division</th><th>Portions</th><th>21 SG Code</th></tr>
<tr><td>Wolfkop</td><td>1186</td><td>C015</td><td>00</td><td>C01500000000118600000</td></tr>
</table>
</td></tr>
</table>

2.2 Locality map

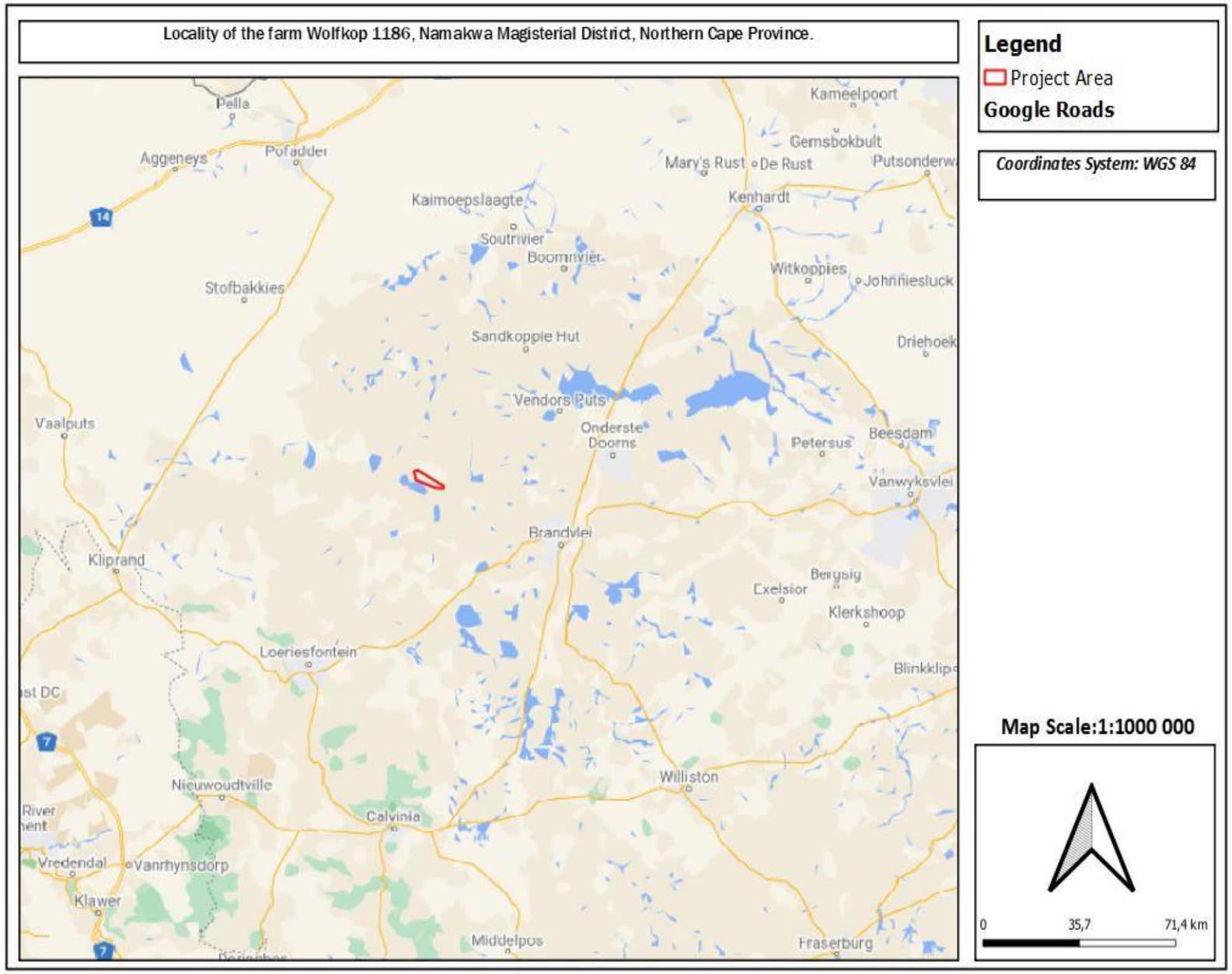


Figure 2—1: Locality Map

3 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

3.1 Listed and specified activities

Table 3-1: Listed Activities

Name of Activity	Aerial Extent of the Activity Ha Or M²	Listed Activity (Mark With An X	Applicable Listing Notice	Waste Management Authorisation (Mark With An X)
Any activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	Extent of application area: 3 255,7 Ha	X	GNR 983 – Listing 1: Activity 20	N/A
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation. The clearance will be to make way for: Drill pad areas; Access roads.	≤ 1 ha	X	GNR 983 – Listing 1: Activity 27	N/A
Drill sites (All 25 Drill Sites)	1.44 ha			
Ablution facility (mobile hired toilets closer to each drill site)	100 m^2			
Access route (Pre-existing access routes will be used)	1 ha			

3.2 Description of the activities to be undertaken

Red Dust Trading (Pty) Ltd proposes to undertake prospecting activities for Lithium, Manganese, Copper, Diamond, Fluorspar, Gypsum, Uranium Ore, Molybdenum, Rare Earths, mica and Cobalt on farm Wolfkop 1186 situated in Namakwa District Municipality, Northern Cape Province.

3.2.1 What is mineral prospecting?

Prospecting is the search of mineral deposits or ore. It is one of the important tools which are used to locate mineral deposits on the surface and underneath the earth's crust. This method involves preliminaries such as Mapping (i.e. Geological Mapping, Aerial Photography of the project area, Geo-chemistry, and Geophysical Surveying, Gravimetric Survey and analysis of available historical data) which are considered non-invasive activities. The process allows one to gain confidence of the possible available mineral deposits within the area.

When the local geology is understood, siting for drilling can then be undertaken. Drilling is done with fairly large machinery that use diamond-tipped, hollow drill 'bits' which produce varying amounts of 'core' depending on the extensiveness of the drill program. Diamond-tipped bits are used because they can go through the hardest of rock, and the core produced is cylindrical and not typically more than a couple inches in diameter. The details of each drill hole (including direction and depth) are recorded in much detail, each meter of core is marked with the depth that it came from and which hole, if there's been multiple drilled.

Once core has been obtained, samples are then sent to a laboratory facility to be 'assayed', which is essentially assessing the certain ore mineral, its body physical and chemical properties. Using this data from the assaying, along with the records of where the assayed drill core came from, the data is re-interpreted to determine subsequent phases of follow-up drilling. If drilling continues, different drilling techniques are used to build confidence in the deposit by determining the size and grade of the 'strike' and 'dip'. The 'strike is the length and width of the mineral ore body and the dip is the angle at which the bodies are leaning towards (if any).

The objective will be to produce a 3D resource model of where and how the minerals are located underground. All this information is used to complete an 'official resource estimate', which is a non-biased report that is required to have been developed by a 'Qualified Person' (QP). The 'Official Resource Estimate' will

outline the categories of mineral resources (inferred, indicated, and measured) as well as the quantity and grade of each resource category

There are two types of mineral project classifications, 'Greenfield' projects and 'Brownfield' projects. Greenfield projects are considered the riskiest, as they have never had any previous exploration work done on them. Brownfield projects are typically the most highly sought after as they are often located near a mine site, and because of this are deemed to have more potential to become an operating mine. This proposed project is considered a Greenfield as there are no existing mines near the proposed site and there is no knowledge of previously undertaken exploration work.

Prospecting activities will be undertaken in five different phases of which each is dependent on the preceding phase. Each phase will provide information that will determine whether the prospecting activities should be continued or abolished.

3.2.2 The description of the proposed prospecting activities

Prospecting activities will be undertaken in four different phases of which each is dependent on the preceding phase. Each phase will provide information that will determine whether the prospecting activities should be continued or abolished.

3.2.2.1 Phase 1: Literature review, Field Mapping and Geophysical Survey

(a) Literature Review

Phase 1 will include the collection and interpretation of all available data and the compilation of a Geographic Information Systems (GIS) database. The information to be collected will include aerial photos, Orthophoto, aeromagnetic data, Topo-cadastral maps, and geological maps, results of historic exploration programmes and any other published literature and maps. The desktop study will aid in compiling a preliminary geological model of the area to be utilized in the planning geological mapping and sighting of drill holes. It also includes accruing results from the companies that has already worked on the area. This provides information such as geological setting, biodiversity as well as water management.

(b) Mapping

Generally mapping involves the geologist walking the area and making observations which are then recorded on a map. To enhance the quality and

reliability of geological maps data obtained during geophysical surveys will be used. Mapping is completed that meaningful structural and geological data may be derived from it and to confirm that the desktop study is accurate.

3.2.2.2 Phase 2: Discovery drilling and sampling

(a) Discovery Drilling

Percussion drill holes (usually up to 165mm in diameter) will be positioned at targets identified during geological mapping and the geophysical surveys. 100 boreholes are planned during this phase with an average depth of 12 m.

The collar position of all boreholes will be surveyed. All drilling is short term and equipment is truck-mounted. During this drilling programme samples are collected every metre and logging will be done by a qualified geologist who will record the lithology. Apart from gravel resources calculations the drilling information will be used to construct gravel thickness, overburden thickness and bedrock elevation contour plans.

The drill sites are rehabilitated. The holes are filled with drill chips and covered with topsoil. Normally nominal, drilling material, liquid spills and refuse are cleared and transported to the relevant municipal dumpsite.

(b) Sample analysis/ Assaying

The assaying will be conducted to determine the mineral content for each core at a South African National Accreditation System (SANAS) accredited laboratory. Sample analysis will inform if there are mineralized zones within the proposed site. Should there be minerals applied for intersected during drilling, preliminary economic assessment will be conducted. A preliminary economic assessment is a study conducted to determine whether a project has the potential to be viable. At this stage, the mineralization, regardless of its quantity and quality, is always considered to be a mineral resource. This study is generally based on industry standards rather than derived from detailed site-specific data.

3.2.2.3 Phase 3: Preliminary economic assessment

The second phase of drilling will be on a denser 100 m by 100 m drilling pattern where positive results are encountered during the scout drilling phase. Borehole positions will be based upon a survey grid. For budgeting purposes another 100 boreholes (12 m deep) are planned for the second phase of drilling. Resources calculations will be updated as well as various contouring plans.

3.2.2.4 Phase 4: Resource drilling and sampling

The project geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no prospecting is done on the ground.

Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

A GIS based database will be constructed capturing all exploration data.

3.2.2.5 Phase 5: Pre-feasibility study

The pre-feasibility and feasibility studies are more detailed. By the time a decision is made to proceed with a pre-feasibility study, a preliminary mineral resource report has been finalized and an ore body model demonstrating its shape, tonnes, and grade is available. A resource cannot be converted to a reserve unless it backed up by at least a pre-feasibility study. Their results will show with more certainty whether the project is viable. At this point, the mineral resource, or a portion thereof, becomes a mineral reserve. The activities associated with the Prospecting Work Programme will be scheduled over a period of five years.

3.3 Activities associated with the proposed prospecting

3.3.1 Site Access

The undertaking of prospecting activities will require access into privately owned properties. Access into these properties must be through access agreements contracts signed between each property owner and Red Dust Trading (Pty) Ltd. The access agreements will be a legal document effective from the date of signing until the exit contract is signed off. The access agreement contracts will detail specific conditions relevant to each property owner.

3.3.2 Access roads

There internal farm access roads from the main local routes to the proposed drill stations will need to be created. The creation of access roads cannot be mapped

at this time as not all drilling positions are known. However, the impact assessment and management details how the roads must be created and managed. Key aspects for creation of access roads are the following:

- ✓ Where access roads are created through ploughing fields, the loss of crops and/or arable land will be compensated for the duration of disturbance;
- ✓ Streams and wetlands crossing will be prohibited;
- ✓ Sensitive areas will be marked a "no-go" area, e.g. wetlands, etc.

3.3.3 Drill station establishment

The establishment of the drill stations will chiefly be dictated to by the underlying geology, however sensitive features must be protected at all times.

3.3.4 Core Drilling

The primary objective is to obtain drill cores for assaying. The affected parties must be consulted and informed of the drilling programme which details the duration of the proposed activities and their input be incorporated into the programme.

3.4 Project scheduling

The department of Mineral Resources and Energy allows for a maximum of five (5) years conducting prospecting activities. The five years' period will include project planning and sourcing of the required materials and equipment. At least 5 working days will be required at each drill station and a maximum of twenty boreholes are proposed and as such an uninterrupted drilling programme can be completed in five months.

The proposed site is accessed mostly through gravel roads that are saturated most of the times in summer. It is therefore recommended to undertake the invasive prospecting activities during the dry period of the year.

Table 3-2: Project Phases and Timeframe

Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for outcome	What technical expert will sign off on the outcome?
1	**Non-invasive** Literature Study Imagery Analysis Geological Mapping Geophysical Survey	Geologist Geologist Geologist Geophysicist	Month 1-12 Month 1-12 Month 1-12 Month 1-12	Maps, plan & report Map & Report Map & Report Digital data & Report	Month 12 Month 12 Month 12 Month 12	Geologist Geologist Geologist Geophysicist
2	**Invasive Prospecting** Scout Percussion Drilling	Geologist Drill foreman	Month 12-24	Drill logs, Map & Report	Month 24	Geologist
3	**Invasive Prospecting** Detail Percussion Drilling	Geologist Drill foreman	Month 25-36	Drill logs, Map & Report	Month 36	Geologist
4	**Non-invasive** Analytical Desktop Study Application for a Mining Right	Geologist	Month 36-48	Maps, Resource statement and final report	Month 48	CEO/Geologist Economist Mining engineer

3.5 Equipment and/or Technology to be used

- ✓ 1 drill rig mounted on a 10-tonne truck or trailer;
- ✓ 1 X 2 200 Litres water tanker; and
- ✓ 2X (4X2) Bakkie.

Figure 3—1: Typical LY44 Geological core drill unit

4 POLICY AND LEGISLATIVE CONTEXT

Table 4-1: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
Constitution of South Africa, specifically section 24(a), (b)(i) – (iii).	Impact assessment and management; and Public Participation Process;	The prospecting activities will only proceed after effective consultation to protect the Rights of interested and affected parties.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) section 16(1)(a)-(c)	This EIA is undertaken as a requirement for the granting of the Right.	The application for prospecting right was lodged and all required documents submitted.
National Environmental Management Act (107; 1998) section 23(1) & (2), 24(1); & 24(4)(b)(i) – (vii).	Impact Assessment, Financial Provision, Mitigation Measures and Public Participation.	✓ The receiving environment was thoroughly assessed; ✓ Probable impacts were identified and their mitigation measures and monitoring mechanisms developed; ✓ Financial Provision for rehabilitation was determined and the applicant will pay the amount before the right is issued; ✓ Affected and Interested Parties were engaged and given opportunities to get involved in the proposed project.
NEMA Environmental Impact Assessment (EIA) Regulations, 2014; R 982 & R 983.	Entire document	✓ All triggered listed activities have been identified and applied for; and ✓ The public participation was done

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
		as per the said Regulations.
National Environmental Management: Waste Act	Used as guidance for mitigation measures as no listed activities were triggered.	The project activities do not trigger a waste management license but proper waste management measures will be addressed in the EMPr.
National Environmental Management: Waste Act	Used as guidance for mitigation measures as no listed activities were triggered.	The project activities do not trigger a waste management license but proper waste management measures will be addressed in the EMPr.
Section 38 of the National Heritage Resources Act (Act No. 25 of 1999).	Part A Section 8.7	The project will not disturb any heritage significance site and artefacts
The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No.10 of 2004), provides for:	Impact Assessment and Baseline Description	There are no protected species on site that would require permits to remove and/ or manage; Alien invasive species will be controlled and monitored; Impacts on the biodiversity have been identified and mitigation has been provided.
National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004);	Impact assessment & Management	As part of the EMPr dust suppression methods will be used.
The National Water Act (NWA) (Act No. 36 of 1998)	Impact Assessment	✓ No water use license is required for this application; ✓ Impacts on water resource will be

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
		prevented; and ✓ Any water required for drilling activities will be obtained from a legal source within the area and brought to site by a tanker.
National Water Act, 1998 (Act No. 36 Of 1998) Regulation 704 (Gn704) Regulations on use of water for mining and related activities	Impact Assessment & Management	All water sources have been identified and water usage for prospecting activities will be controlled in line with the NWA and its regulations
Mine Health and Safety Act, 1996 (Act No. 29 of 1996);	Impact assessment and management	Activity based risk assessment will be conducted prior undertaking the site prospecting activities.
Mining and Biodiversity Guide, 2013	Baseline Environment description and impacts assessment.	There are sections within the proposed with highest risk to mining and have been declared a "no-go" area. Should the prospecting establish that mining is viable, relevant ecological studies will be conducted and make recommendations.
Guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine; 2005.	Financial Provision &	The rehabilitation costs were calculated based on this guideline.
Broad-based black socio-economic empowerment	Details of the Applicant	Red Dust Trading (Pty) Ltd a black

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
charter for the South African mining and minerals industry, 2017; specifically 1(a) & (b) and 2.1.1.1.		owned Company.
National Freshwater Ecosystems Priority Areas (NFEPA, Nel et al., 2011);	Impact Assessment & Description of receiving environment	The NFEPA and other Wetlands were identified and 100 metres buffers were created for each HGM.
Mining and Biodiversity Guidelines 2013	Impact Assessment & Description of receiving environment	The proposed site lies within sensitive areas to mining, and rehabilitation will be undertaken to restore the environmental losses.
National Development Plan 2030	Baseline environment description	The plan is aimed at reducing poverty and inequality. Should prospecting be successful a mine will be developed that will contribute to the local socio-economy. The mining sector is one of the greatest contributor to the South African GDP and labour force.
White Paper on Environmental Management Policy, 1997	Impact management, sustainable development, consultation.	Impact management is provided for all identified impacts
The Free State Freshwater Systematic Conservation Plan	Baseline environment description and impact assessment	There are sections of Critical Biodiversity Areas within the proposed site, these areas have been avoided to prevent impacting them during prospecting

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
National Climate Change Response White Paper; 2011: Climate change will compound the pressures on already stressed ecosystems that have resulted from the unsustainable use and inadequate management of many of South Africa's ecosystems and so potentially reduce the quantity and quality of the services that ecosystems currently provide.	Baseline environment description and impact assessment	The water resources will be protected to ensure supply to local users is not interrupted due to the proposed prospecting which is already under stress due to various factors including Climate Change and over extraction
	Biodiversity and ecosystems	The proposed site according to FS Conservation Plan has Critical Biodiversity Area (CBA) which will require protection when undertaking prospecting activities. The site ecology will be rehabilitated on completion of the proposed prospecting activities.
White Paper On Integrated Pollution waste Management for South Africa; 2000	Impact Assessment and Management	The prospecting activities will minimise generation of wastes on site and waste disposal will be at a registered facility.
White Paper on Environmental Management Policy for South Africa; 1998	Impact Assessment and Management	Sustainable resource usage will be promoted throughout the prospecting duration.
		Ecologically sensitive areas have been identified and mapped and considered "no-go" areas. This is to ensure Biodiversity is conserved.
		No activity will take place within 100

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
		metres buffer of water sources (rivers and wetlands) to ensure water is available to other users at an acceptable quality.
White Paper on the Conservation and Sustainable Use of South Africa' s Biological Diversity, 1997	Impact Assessment and Management	Ecologically sensitive areas have been identified and mapped and considered"no-go" areas. This is to ensure Biodiversity is conserved.
World Heritage Convention Act, 1999	Description of Heritage Resources on site	There are no heritage significance sites within the proposed site.
National Forests Act 84 of 1998	Baseline environment description and impact assessment	The local vegetation has been mapped and sensitive areas avoided.
Conservation of Agricultural Resources Act 43 of 1983	Baseline environment description and impact assessment	The proposed site is actively used for agricultural practice. Disturbance on the agricultural fields will be limited to the drill stations and access roads which must be rehabilitated soon after prospecting to restore agricultural potential. Alien invasive species will also be controlled to prevent spread from the disturbed areas to the surrounding.
National Environmental Health Policy, 2013 Ensure the right to an "environment that is not	Impact assessment and Management	The prospecting activities will be undertaken taking into cognisance the health and safety of the general public which also include its crew, farm

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
harmful to the health and wellbeing of South Africans".		workers and farmers.
Free State Provincial Growth and Development Strategy:2012 The Free State PSDF is a policy document that promotes a 'developmental state' in accordance with national and provincial legislation and directives. It aligns with the Free State Provincial Growth and Development Strategy which has committed the Free State to 'building a prosperous, sustainable and growing provincial economy which reduces poverty and improves social development'.	The need and desirability of the project; Baseline environment description and impact assessment	The agricultural lands will be preserved as disturbance will be reserved on completion of prospecting activities and disturbance will be limited to drill sites and access roads; and The ecological disturbance will be restored on project completion
Letsemeng Local Municipality Integrated Development Plan 2021 – 2022		The plan note the contribution made by the mining sector to the Municipality GDP. The proposed prospecting activities are a decision making tool for mining industries and have little significance in terms of

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
		socioeconomic returns.
Xhariep District Municipality Integrated Development Plan 2020 – 2021	The need and desirability of the project;	The IDP note the prospect for mining in the District. The prospecting activities will determine whether mining is viable in the area.
National Freshwater Ecosystem Priority Areas; 2011	Baseline environment description; Impact assessment & Management.	There is an existing Klawervlei identified to the north and Commissioner salt pan on western side of the study area, Most of the existing rivers within and surround ding the project area are non-perennial/dry. There are also Natural Wetlands known as Commissioner's Salt Pan located towards the South of the project area. This have been mapped and buffered with 250 metres to ensure their ecological functionality is not compromised.
Guideline on Need and Desirability, Department of Environmental Affairs; 2017	The Need and Desirability for the proposed project	The Need and Desirability for the proposed project was investigated, assessed and reported in terms of the guideline.
Stakeholder Engagement, Integrated Environmental Management, Information Series 3; 2002	Public Participation Report (Appendix 04)	The public Participation Process was undertaken in terms of this guideline and the 2017 EIA Regulations.
Scoping, Integrated		The project environmental scoping

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
Environmental Management, Information Series 2, Department of Environmental Affairs and Tourism (DEAT), Pretoria; 2002		was undertaken in terms of the guidelines. The scoping process was undertaken to ensure that all key aspects of the proposed activities were understood and investigated.
Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006	Alternative assessment	The impact assessment was undertaken as informed by the guidelines and other relevant materials
Free State Critical Biodiversity Plan (November 2017)	Biodiversity and ecosystems	It is a technical report with detail on methods followed to produce the first terrestrial biodiversity plan for the Province. The main products of biodiversity planning process are the different terrestrial categories (e.g. Protected, Critical Biodiversity Areas, Ecological Support Areas, Other and Degraded) and land-use guidelines for the above-mentioned categories.

5 Need and desirability of the proposed prospecting activities

The need and desirability of the proposed prospecting activities were investigated and assessed based on the DEA (2017), Guideline on Need and Desirability. According to this guideline the concept of "need and desirability" can be explained in terms of the general meaning of its two components in which need primarily refers to time and desirability to place (i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed?), "need and desirability" are interrelated and the two components collectively can be considered in an integrated and holistic manner. The "need" relates to the interests and needs of the broader public.

Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line. The 2017 Need and Desirability Guideline sets out a list of questions which should be addressed when considering need and desirability of a proposed development. These are divided into questions that relate to ecological sustainability and justifiable economic and social development.

The questions that relate to ecological sustainability include how the development may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. When considering how the development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF). The assessment reports will need to provide information as to how the development will address the socio-economic impacts of the development, and whether any socio-economic impact resulting from the development impact on people's environmental rights. Considering the need and desirability of a development entails the balancing of these factors.

In the National Spatial Development Perspective (NSDP) (2003 and updated in 2006) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas

("spatial targeting") with potential for economic development, with development to serve the broader societies' needs equitably.

The New Growth Path (NGP) (2010) in turn highlights the need to focus on facilitating growth in sectors ("sectorial targeting") able to create employment on a large scale, while not neglecting more advanced industries that are crucial for sustained long-run growth, and encouraging stronger investment by the private and public sectors to grow employment-creating activities rapidly while maintaining and incrementally improving South Africa's core strengths in sectors such as capital equipment for construction and mining, metallurgy, heavy chemicals, pharmaceuticals, software, green technologies and biotechnology.

The National Development Plan 2030 (NDP) (2012) stresses that the threat to the "environment and the challenge of poverty alleviation are closely intertwined" and as such environmental policies should not be framed as a choice between the environment and economic growth. The NDP states that: South Africa faces urgent developmental challenges in terms of poverty, unemployment and inequality, and will need to find ways to "decouple" the economy from the environment, to break the links between economic activity, environmental degradation and carbon-intensive energy consumption.

The aspects of need and desirability of the proposed prospecting project are discussed below in subsection (5.1) and (5.2)

5.1 Securing ecological sustainable development and use of natural resources

5.1.1 How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?

The site assessment conducted to date has established that there are no protected or threatened ecosystems within the proposed site. According to the Northern Cape Systematic Conservation Plan, there are sections of Critical Biodiversity Areas within the proposed site which are largely avoidable as they cover small area of the proposed site. According to mining and biodiversity guidelines 2013, part of proposed site lies on medium and highest risk area to mining. According to the South African National Vegetation Map (Mucina & Rutherford 2006), the proposed site is located within the Nama Karoo Biome (Hoffman 1996), and more especifically, Northern Upper Karoo Vegetation. The Commissioner's Salt Pan towards the south, covering a small portion of the

project area. This pan is considered a Critical Biodiversity Area 2. There is also the presence of numerous artificial dams, marshes and ephemeral pans with a FEPA wetland cluster within the proposed site which in the absence of sound environmental management strategies can be greatly affected. These wetlands were identified mapped and 100 metres buffers were created for each hydro geomorphic unit.

Prospecting activities are of short duration and conducted over a small area and impacts are highly manageable and reversible. The principle of Prevent, Avoid, Manage and Reverse will be applied to the proposed project. The disturbances will be limited to active areas and sensitive areas will all be marked as a "No-Go". The identified ecological sensitive areas are the wetlands and the Category C. High Biodiversity Importance area as identified by the mining and biodiversity guidelines of 2013. Although the drilling positions as indicated in this report are provisional, should they be relocated they will not be established within 100 metres buffers of wetlands areas. The Access roads in cases where they should be created will also be outside sensitive features buffers. Pre-site-clearing for establishment of drill pads tree species will be identified and recorded to avoid removal of species of conservation concern, the EIA did not identify any species of concern, however their presence is not ruled out.

5.1.2 How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?

The proposed prospecting project will have negative impact on the ecosystem as the natural environment will be disturbed to make way for the establishment of drill stations and access roads. Prospecting activities are chiefly dictated to by the location of mineralised zones and can only be undertaken where a potential for mineral deposits exists. Although the ecosystems will be disturbed, the impact can be greatly reversed as the disturbed area will be limited to creation of access roads and establishment of drill stations (20m X20m). Full impact assessment is provided in Part A, Section 9 & 11 and Part B, Section 4 of this report.

5.1.3 How will this development pollute and/or degrade the biophysical environment?

There is a potential to pollute underground water resource during drilling, soil contamination, wetlands destruction and loss of flora and fauna. The prospecting

activities will be undertaken on a relatively small area affecting minimal biophysical environment. Impact management strategies have been provided in this report to prevent, mitigate and manage probable impacts from the proposed prospecting activities.

5.1.4 What waste will be generated by this development?

The prospecting activities are expected to generate general wastes, and small quantities of hazardous and sewage waste. All the waste to be generated will be disposed of at registered waste facilities and disposal certificates will be kept on site. Hazardous waste will result from spills and leakages of hydrocarbons from operating equipment and vehicles.

5.1.5 How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?

According to the consultation, site assessment and GIS reviews conducted there are no Heritage significance sites and objects within the proposed site. However, this does not absolve the contractor from excursing due diligence before undertaking any of the site invasive activities.

5.1.6 How will this development use and/or impact on non-renewable natural resources?

The project is aimed at prospecting for non-renewable mineral resources. The operating machineries and equipment will also make use of non-renewable in the form of hydrocarbons. The project is not expected to excessively use non-renewable in such a way that it can affect other users.

5.1.7 How the ecological impacts resulting from this development impact on people will's environmental right?

The ecological impacts will not largely impact on people's right, there are no natural resource harvesting in the area. The impacts on water resources are highly avoidable and will therefore have little significance.

5.2 Promoting justifiable economic and social development

Prospecting is the research, planning and development phase of a mining project. The evaluation of a project aims to determine whether mineralization occurs and if so, does it occur in economically extractable quantities. Initially these are measured in tonnage and grade. While geological studies are integral

to prospecting, prospecting also includes, amongst others, infrastructural, environmental, socio-economic, financial evaluation and metallurgical studies thereby encouraging the national research and educational sectors.

The main activities in the area are agriculture, both the cultivation and livestock farming and farm houses. The proposed prospecting is not expected to bring halt to current site activities as they can be undertaken concurrently.

A successful prospecting project will result in an establishment of mine depending on the feasibility study conducted. Mining operations on their own are a sustainable development that contribute largely to the South African GDP and creates a large number of employment opportunities. It would be premature to compare the already sustainable agricultural activities and a possible mine. Should the prospecting activities establish a mineable deposit on site, relevant studies which will include socioeconomic study will be commissioned.

5.2.1 What is the socio-economic context of the area

The proposed site is located approximately 60 km west of Brandvlei town and 84.59 km North East of Loeriesfontein Town. According to the latest draft Kha Mai Integrated Development Programme (IDP, 2021-2021: 40), the municipality is facing several challenges such as high unemployment rate, poor service delivery and poor implementation of vital economic development project due to lack of funding financial challenges. Therefore, the proposed development will contribute to favourable economic impacts on the local, regional, and national scale. This will result in numerous job creation and skills development opportunities and provide an economic injection in the region.

5.2.2 What will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?

Prospecting activities are of short duration and are not considered an economic activity. The socio-economic input is very limited, the number of employment opportunities to be created for locals is usually less than five and very little support is required from local businesses. It should however be noted that prospecting is a predecessor of mining which on its own have significant social and economic impacts.

5.2.3 How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?

The proposed activities will not have significant impacts on the local natural and built/human environment. The current site activities can be undertaken concurrently with prospecting activities. There will be a small loss of agricultural land when establishing access roads and drill stations. The impacts from the two invasive activities can be reversed through rehabilitation, and the loss of crops can be avoided by scheduling prospecting activities after harvesting period.

5.2.4 Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?

The proposed prospecting activities are of short term and it is unknown at this stage if mineable ore bodies are present on site. Prospecting activity on its own will not have any benefit for the local communities, benefits will only be realised if the prospecting activities are successful and a mine is established. In such a case, a social and economic impact study will be commissioned and a social labour plan will be drafted which will benefit the local communities.

5.2.5 In terms of location, describe how the placement of the proposed development will result in the creation of residential and employment opportunities in close proximity to or integrated with each other and reduce the need for transport of people and goods

Prospecting activities are not labour intensive and will also not attract any other secondary activities. The prospecting activities are aimed only at determining if there are feasibly minerals on site.

5.2.6 How were a risk-averse and cautious approach applied in terms of socio-economic impacts?

5.2.6.1 What are the limits of current knowledge?

It has not been physically proven if there are proposed minerals on site as no drilling has been conducted previously. The resource modelling software was used to correlate the mineral ore body from the nearby explored properties. It is

therefore possible that proposed minerals may be absent on site, and/or be of poor quality.

5.2.6.2 What is the level of risk associated with the limits of current knowledge?

The prospecting activities are not an economic activity, targeted on less sensitive areas and affect relatively smaller areas. The risk associated with undertaking the prospecting activities have low significance and highly reversible. The prospecting activities raise expectations of the vulnerable and poor communities and should the prospecting activities be unsuccessful the local communities will be at distraught as the prospect of a mine establishment will be lost.

5.2.6.3 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?

The probable impacts were identified, assessed and mitigation measures provided.

5.2.7 How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:

Health – The proposed project will generate dust during driving on gravel access roads and during drilling. Dust particles will be scattered within the immediate area and although to a less significant scale affect the air quality and to people with respiratory diseases. The dust generation must be monitored during operation and controlled through watering and use of biodegradable dust control chemical agents;

Noise – The proposed site is a quiet agricultural area; the drilling machinery will generate noise nuisance. The farm dwellers must be informed of the drilling schedule as the noisy cannot be completely be prevented. The drilling must only be undertaken during the day i.e. 07h00 to 17h00;

Loss of arable land: the drill stations and their access roads will be created on agricultural field resulting in temporary loss of agricultural land. The prospecting activities must be scheduled after harvesting period, and the disturbed areas

must be fully rehabilitated on completion of prospecting activities at each drill station;

Water contamination: The prospecting activities have the potential to contaminate both the underground and the surface water, through spillage of hydrocarbons, interception of aquifers and driving through streams and/or wetlands. The surface water must be clearly delineated on the project layout plan and marked as "no-go" areas and buffers created around each surface water area. Should the groundwater be intercepted the during drilling, a borehole report will be drafted for submission to the Department of Water and Sanitation which will include the depth at which the water was intercepted and the water quality as tested in a controlled laboratory;

Safety: Site access by the prospecting crew may attract opportunist criminals into the private properties. The prospecting crew must at all times carry with them identification cards.

5.2.8 What are the positive impacts & what measures were taken to enhance positive impacts?

The prospecting process is not an economic activity and does not generate any income. It is however necessary to establish whether there is a mineable deposit on site which could then result in a mine development.

The obtained geological knowledge will contribute to South African geological data pool and mapping of the South African mineral ore body.

South Africa faces illegal mining challenge where local knowledge exists about buried economic deposits. The illegal activities does not only result in loss of revenue but the reckless mining methods have higher significant environmental impact and have no commitments to improving the societal living standards. Should prospecting be successful, a legally operating mine will be developed operating within all mining related regulations including the requirements of a social labour plan.

5.2.9 Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?

- ✓ The proposed prospecting will not create competition for natural resources with the locals;
- ✓ The proposed activities will not result in net loss of naturally resources such that other land users and members of the public are affected.

5.2.10 What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?

The current activities undertaken on site are agricultural activities with impact on ecological diversity as larger areas must be cleared to make way for cultivation and increased suspended loads in the riverine system due to nutrients from the fields.

The proposed prospecting activities as compared to the agricultural activities will have less significant impact on the environment and will not create social challenges or use-up available natural resources.

5.2.11 What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)

The prospecting site is chiefly dictated to by the geological setting of the area; the impacts will not discriminate against anyone on site. The local farmers are the directly impacted group as they will temporarily lose their agricultural land.

The development is located appropriately as there are no high density communities nearby that may be affected by the proposed activities. The proposed activities can be undertaken without impacting the sparse residential areas within the proposed properties.

5.2.12 What measures were taken ensure transparent and effective participation of all interested and affected parties

- ✓ This is discussed in Public Participation Process Section of this report and Appendix 03: Public Participation Report;
- ✓ In summary a newspaper advert will be placed, and site notices was placed on the affected properties, major access roads. The landowners were identified through deed search and contacted their comments were incorporated into this report. All IAPs were provided with the draft report for review.

5.2.13 What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage

- ✓ The IAPs will be informed of the application outcome by the DMRE,
- ✓ Should prospecting establish a mineable resource, the IAPs will be fully engaged through EIA process and Social Labour Plans through which the public interest will be protected.

5.2.14 Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?

The proposed mitigation measures are realistic and practical and will ensure that the land will be restored to its original state. The remaining will be the borehole capping made of cement. This disturbance will be less than 0.5m at each drill station.

5.2.15 Measures taken to ensure that impact management costs are paid for by those responsible for harming the environment?

The cost of managing the impacts was calculated using the Department of Mineral Resources (DMR)'s Guidelines document for the evaluation of the quantum of closure-related financial provision provided by a mine. The calculated rehabilitation fee will be paid to the DMRE before the Environmental Authorization is issued.

5.2.16 How the alternatives identified resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?

- ✓ The proposed site for invasive activities (drilling and access roads) will be located such that sensitive areas are avoided to ensure access to natural resources is not affected.
- ✓ The water resources will be avoided to prevent contamination and disruption of water supply to other users.
- ✓ The proposed activities will not result in net loss of ecological diversity ensuring equitable access by others.
- ✓ The proposed prospecting activities will not prohibit the use of land in future for other unrelated activities as the site will rehabilitated

6 Motivation for the overall preferred site, activities and technology alternative

6.1 Preferred Site

The choice for the preferred site was based on the following aspects about the site:

Site geology: the site is underlain by sedimentary rocks belonging to the Beaufort and Ecca Groups of the Karoo Supergroup.

Site Sensitivity: the site does not contain any protected areas, however there are Critical Biodiversity Areas. The CBAs are avoidable since they contribute less than 30% cover of the proposed site. Where the CBAs cannot be avoided, measures management and mitigation measures will be in place to restore the CBAs after prospecting activities which are of short term period.

The site also has active agricultural activities, thus the environmental sensitivities for such areas is very low as no natural vegetation remains. It can be assumed that there are no heritage artefacts or site within the proposed area as they would have been discovered during the agricultural activities.

Current land use: Some portions of the proposed site are used for agricultural activities and large portions being on grassland areas. The prospecting activities can be undertaken concurrently with the site agricultural activities. The

environmental impacts of prospecting activities which is intrusive in nature are highly manageable and reversible.

6.2 Preferred Activities

There are various methods of Diamond prospecting which can be either intrusive or non-intrusive in nature. For this project both the non-invasive and invasive method will be used. Invasive methods, that is drilling and core sampling provides highly reliable data which would be a true reflection of what is to expect on site. Non-invasive methods (desktop study, site walk & geological mapping) rely only outcrops to model site geology whereas in drilling the cores of the substrata are obtained and analysed. The analysis provides data on the grade of minerals ore and their economic viability. Using the drilling technique, the prospecting will successfully determine how viable the mining for the proposed minerals ore are and how long, at what rate the can be mined.

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

Alternatives were chosen based on the consideration of environmental and geological attributes as well as the current land uses within the proposed site. Geological attributes were determined with the use of geological maps. The local geology determines the type of technology to be used depending on the rock strength and burial depth. A comparison of cost-benefit of alternatives chosen was done to choose the most cost-effective methods that are environmentally sound. Existing infrastructure was also considered. Areas that need protection would be excluded from the targeted sites in the demarcation process. Existing infrastructure that could be of use was also considered such as farm roads to ensure minimal impact on the environment.

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

The proposed site was preferred based on the historical geological data which from the desktop standpoint acknowledges the potential presence of Kimberlitic ore body and other valuable minerals underneath the proposed properties.

The site agricultural activities can be undertaken simultaneously with the proposed prospecting activities; of the total area under this application less than

03 ha will be disturbed as such current site activities can be undertaken concurrently with prospecting.

NO OTHER SITES WERE ASSESSED.

6.3.2 The type of activity to be undertaken;

There were three alternatives assessed for this project, geophysical survey, diamond drilling, soil sampling through trenches and a combination of geophysical and any of the other two.

6.3.2.1 Geophysical Survey

A geophysical survey is a method of collecting information about the physical properties of underground rocks and sediments without tunnelling or digging. The method uses equipment that detects anomalies between buried rock formations. The minerals ore body would have different conductivity or electromagnetic properties from the surrounding rocks and will be detected through the anomaly. The short coming of this method is its unreliability on the grade and quantity of the ore body. A mining decision cannot be taken solely based on geophysical method.

6.3.2.2 Core Drilling

Core drilling a solid core is extracted from depth, for examination on the surface. The drill uses a diamond encrusted drill bit to drill through the rock. The bit is mounted onto a core barrel which is attached to the drill stem, which is connected to a rotary drill. Water is injected into the drill pipe, so as to wash out the rock cuttings produced by the bit and also to reduce the heat produced due to friction which causes less wear and tear of the bits. The core is brought to the surface in a tube with diameter ranging between 27 – 85 mm, the thicker the core the more expensive it is.

The obtained core is a true representative of the underground lithology. From the core burial depth and grade can be determined. Multiple cores will establish the thickness of the available minerals, the dip and strike directions. A full resource estimate and mine feasibility study can be determined through core sampling and laboratory assessments. Core drilling is highly informative and can reach the depth of 300 metres.

6.3.2.3 Trenching and soil sampling

Trenches are dug using electric shovels for bulk sampling and/or exposing ore containing deposit. This method is preferred for near surface deposits and alluvial sampling for minerals such as gold and diamonds. This method will not yield the desired results for this project. Trench digging has a higher significance environmental impact as compared to core drilling as the disturbance area is much extensive.

Geophysical and Core Drilling are the preferred method for this project. The geophysical method will aid in locating drill stations and core drilling will reach the desired depth of at least 100 metres of the Beaufort and Ecca Groups.

6.3.3 The design or layout of the activity;

The design of the activity in this project refers to the locations of drilling stations. The drilling areas are located away from sensitive features, and also determined by the distribution and extent of the minerals. The drilling points will be located such that site wetlands and streams as well as the settlement areas are protected and marked as "No-Go" Areas. For the application the drilling areas will be based on geology, topography and environmental sensitivity.

6.3.4 The technology to be used in the activity;

Technology was assessed to determine that which would bring reliable and desirable results. The following factors were evaluated when considering technology:

6.3.4.1 Local geological strata

The geological settings (rock types) and depth of burial determines the type of geophysical methods that are most likely to be successful therefore the technology that goes with such methods.

6.3.4.2 Kimberlite ore body burial depth

Technology choice is also based on the depth burial of the targeted stratum i.e. the preferred drilling equipment must be successful at site specific burial depth.

6.3.4.3 Rock Strength

The drilling equipment must be able to cut through site geological strata to reach buried minerals; therefore for instance a diamond drilling will be preferred where rock strength is very high.

The diamond drilling is the preferred technology because of its ability to cut through hard rock materials.

6.3.5 The operational aspects of the activity

The prospecting activities are carried out in phases with each subsequent phase dependant on the success predecessor. Therefore, a strict operational scheduling must be adhered to.

6.3.6 Other operational aspects:

Water requirement: The prospecting activities (excluding human usage) will require six (6) litres of water per 40 metres drilled, thus 37 litres per proposed 250 metres. The water requirement can be met through sourcing water from the local municipality connection or from the local registered boreholes. No new boreholes will be drilled on site for water sourcing. Consent will be obtained from the municipality for water usage. The water usage onsite is not expected to trigger the NWA Listed activities which would require water use application.

Waste Management: The principle of Reduce, Re-use and Recycle must be implemented at all times. The waste must be separated at source and disposed at an appropriate waste management facility.

Access Roads: The existing access tracks on site will be used to access drilling points. No new roads will be developed without prior communication with the landowner.

6.4 The option of not implementing the activity

The option of not implementing the activity also referred to as a "No-Go" option ensures that the current status quo remains i.e. the site activities continue as they are. There will be no disturbances as a result of prospecting activities.

However, it should be noted that prospecting activities are of short term duration with a maximum of five years. The impacts created by proposed development can be managed and mitigated, and current site activities can be undertaken simultaneously with the prospecting programme. The prospecting activities will disturb less than 03 ha.

The aim of Diamond prospecting is to establish the presence, extent and grade of available minerals on site and should the activity be not implemented this information will remain unknown.

The literature review indicates that there is potential for Minerals, this information is readily available to the public and future applications for in the area will always be expected. This proposed application will establish if there are proposed minerals on site and establish if they area mineable without economic loss. The geological data obtained through full prospecting process will then be submitted to the council of geoscience for safe keeping and evidence based mapping of South Africa.

7 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the EIA Regulations (2014). It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process. A full Public Participation Process (PPP) report will be attached as **Appendix 04.**

Land owners were identified through a search conducted via online search engines accessing the Title Deed office database. In addition to land owner's other relevant organisations where identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-Governmental Organisations (NGOs) with an interest.

The PPP tasks conducted for the proposed project to date include:

1) Identification of key Interested and Affected Parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);
2) Formal notification of the application to key Interested and Affected Parties (all adjacent landowners) and other stakeholders;
3) Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments; and
4) Newspaper adverts.

7.1 IAP and Stakeholder identification, registration and the creation of an electronic database

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principle objective of public participation is to inform and enrich decision-making. This is also its key role in this process.

Interested and Affected parties (IAPs) representing the following sectors of society has been identified:

- ✓ National, provincial and local government;
- ✓ Agriculture, including local landowners;
- ✓ Community Based Organisations;
- ✓ Non-Governmental Organisations;
- ✓ Water bodies;
- ✓ Tourism;
- ✓ Industry and mining;
- ✓ Commerce; and
- ✓ Other stakeholders.

7.2 Formal notification of the application to key Interested and Affected Parties (adjacent landowners) and other stakeholders

The project was announced as follows:

7.2.1 Newspaper advertisement

Newspaper Advert will be published in local newspaper.

7.2.2 Site notice placement

In order to inform surrounding communities and adjacent landowners of the proposed development, site notices was placed on site and at visible locations close to the site.

7.2.3 Written notification

IAPs and other key stakeholders were notified of the project. A background information document (BID) and landowner notification letter was also sent out to the identified I&AP's. Letters indicating the announcement of the Basic Assessment Process, BID and a comment and registration form was sent to all identified IAPs. This communication was sent electronically via email as well as via hand to public places. Copies of the documents mentioned above can be seen as Appendix. The IAPs database is attached as **Appendix 04**.

7.2.4 Meetings

Meetings will be held with affected land owners and their representatives. The meetings details will be provided in **Appendix 04** of this report.

7.2.5 Review of draft reports

This report was released to the public for review and comment. All registered IAPs were notified of the report's availability for comment for 30 days. Additionally, electronic and or hard copies were made available to interested and affected parties who request for them. Hardcopies of the report were also be submitted to affected organs of state and relevant authorities.

7.2.6 Telephonic conversations

All necessary telephonic conversations were held prior to sending out information. This also included WhatsApp and Text Messages.

7.3 Summary of issues raised by Interested and Affected Parties

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

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

8 The Environmental attributes associated with the alternatives.

Key aspects of the baseline environment that are likely to impact on the scope of the impact assessment and management measures that are implemented as well as project decisions regarding alternatives are listed below.

8.1 Topography

The topography of the region is a gently undulating to moderately undulating landscape of the Highveld plateau, some small scattered marshes and pans occur in the area, rocky outcrops and ridges also form part of significant landscape features in the area. The proposed Prospecting area is characterised by gentle with elevation ranges between 880 m (West) 913 m (East).

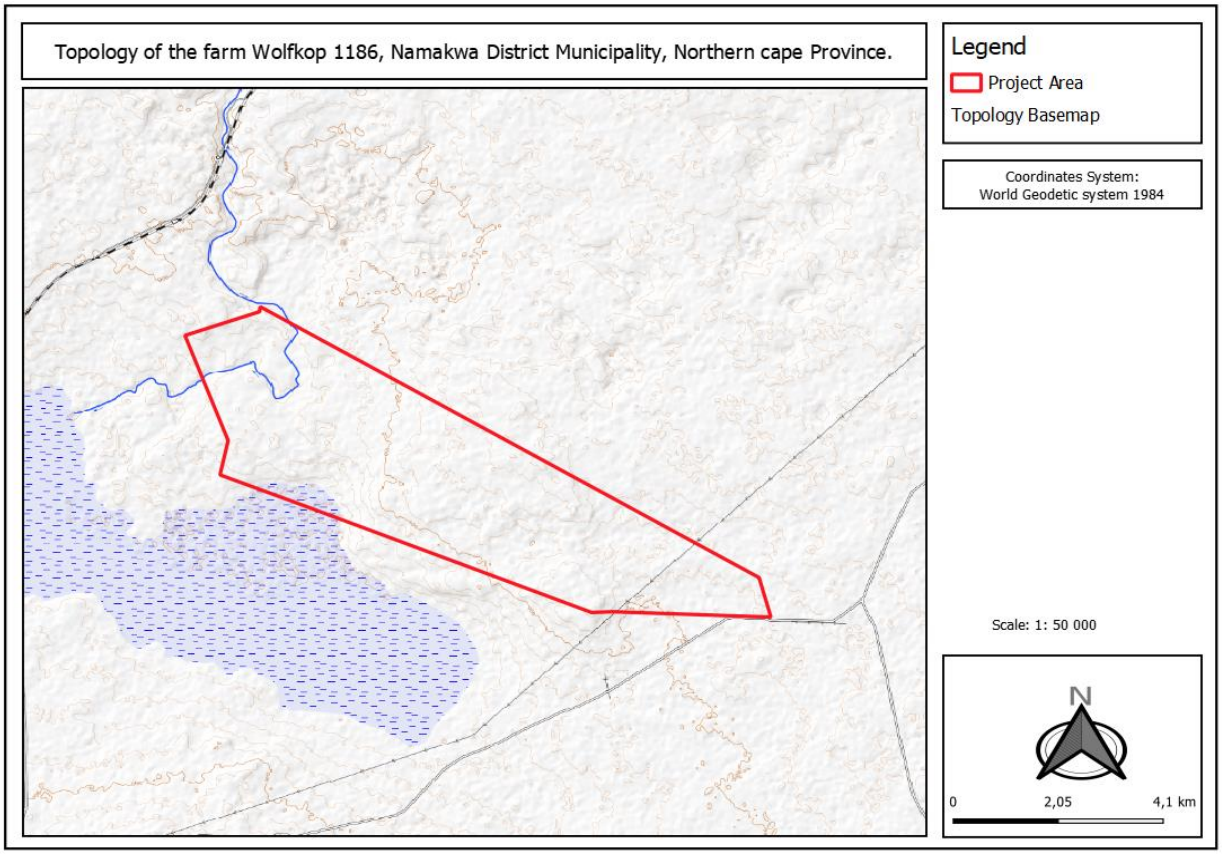


Figure 8—1: Site Relief Map

8.2 Climate

The project areas fall within one of the municipalities located in the semi desert region bordered by a coastline on 350 km. To manage every one of the different conceivable climatic fiascos it is consequently critical to discover methods of

moderating the potential debacles just as discovering accomplices to deal with the interaction.

Figure 8 below reveals that the area experiences high temperatures during summer, with colds winter seasons, where temperatures can drop to 3 °C. The area is also characterised hot temperatures (dashed red) during the day and cold nights (blue lines).

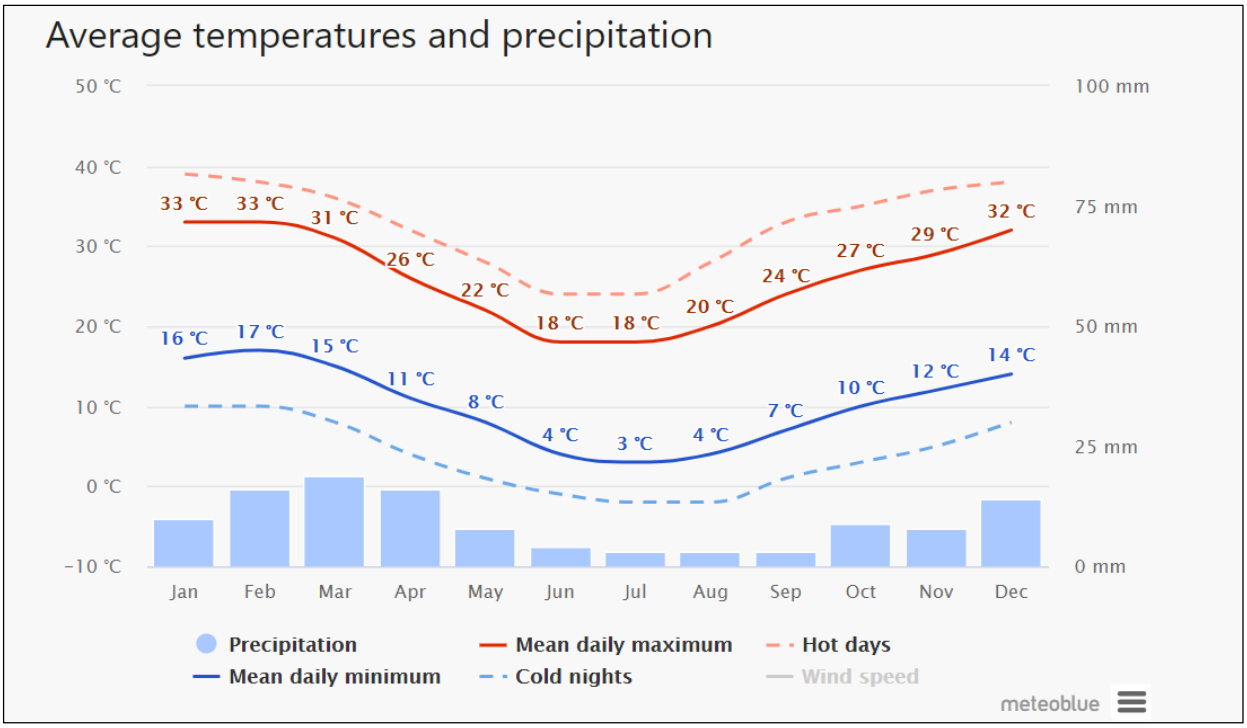


Figure 8—2: Site Climate Overview

8.3 Air Quality

The main objective of the Air Quality Impact Assessment is to determine the potential impact of emissions from the operational activities associated with the proposed prospecting project on ambient air quality. The proposed project area and surrounding where mainly utilised for Livestock farming and cultivation. Sources identified as possibly impacting the air quality in the region include, but are not limited to:

- ✓ **Fugitive dust:** This includes fugitive dust from paved and unpaved roads, agricultural activities (land preparation and harvesting) and wind erosion from open areas, which generates fugitive dust and PM10;
- ✓ **Stack emissions:** stack emission include the release of Sulphur dioxide (SO_2) and heavy metals from surrounding nearby mining operation;

- ✓ **Biomass burning biomass:** burning emissions include with carbon monoxide (CO), methane (CH_4) and nitrogen dioxide (NO_2) gases;
- ✓ **Household fuel combustion:** It is likely that households within the local utilize wood for cooking and space heating (during winter) purposes. Emissions from domestic burning include PM10, carbon dioxide (CO_2), Sulphur dioxide SO2 and carbon monoxide (CO).
- ✓ **Vehicle tailpipe emissions:** Significant primary pollutants include carbon dioxide (CO_2), carbon (C), Sulphur dioxide (SO_2), oxides of nitrogen (mainly NO), particulates and lead. Secondary pollutants include NO_2, photochemical oxidants such as ozone, Sulphur acid, sulphates, nitric acid, and nitrate aerosols (particulate matter).

The proposed prospecting project that we are proposing will also contribute to the above mentioned sources. Below are some of the impact prevention, mitigation and control to address air quality concerns:

- ✓ **Household fuel combustion**-regarding this, we can advise people to wear warm clothes during winter than burning of woods to warm the space or using electric heaters.
- ✓ **Fugitive dust** – On this issue we will make sure that the dust is being suppressed all the time -Reduced unnecessary trips; and

  – Vehicles low speed will be implemented
- ✓ **Vehicle tailpipe emissions**-all vehicles should be serviced and always be in a good condition to avoid producing unnecessary smoke.
- ✓ **Biomass burning**-the drilling team will be advised not to start any fire on site to avoid burning of the bush but then if this happens the EAP will be informed and call fire fighters to end the fire.

8.4 Geology

The proposed site is located within geology of The rocks are predominantly hybrid migmatites with granites/granodiorites and minor maffic intrusives such as gabbro's and diorites in the form of sills and dykes. The surface geology of the area comprises mainly of Quaternary sediments namely alluvial diamondiferous gravel, sand (red and grey aeolian dune sands), shale and andesite in places amygdaloidal and/porphyritic with quartzite and conglomerate lenses near the bottom.

8.4.1 Regional Geology

8.4.1.1 Beaufort and Ecca Groups of the Karoo Supergroup

The geology of the Northern cape Province is underlain by sedimentary rocks belonging to the Beaufort and Ecca Groups of the Karoo Supergroup. The sedimentary rocks conformably overlie the Collingham formation (Viljoen, 2005). Viljoen (2005) further mentioned that the lithology is composed of sandstone, blueish grey and dark grey to black shale and dark grey mudstone with interbedded siltstone6, which have been intruded by dolerite sills and dykes.

They are part of the vast Karoo basin that covers almost two-thirds of South Africa, and were deposited between 200 and 300 million years ago (CGS, 2014). These rocks are known to host major coal and clay deposits. The former generally occur as fairly thick, flat, shallowlying coal seams. Of the country's 18 principal coalfields, two occur in the Free State Province, these being the Vereeniging-Sasolburg and Free State fields.

The early Quaternary sediments most likely cover the Karoo Supergroup particularly the Dwyka Group and the Ecca Group. The Dwyka Group is situated on the on glaciated Precambrian bedrock surfaces along the northern basin margin but overlies the Cape Supergroup in the south. This group consists of a selection of lithofacies types. The lithofacies types consist mainly of massive diamictite, stratified diamictite, massive carbonate-rich diamictite, mudrock with stones and mudrock facies.

The Ecca Group consists of up to 16 formations. These formations mirror the lateral facies changes that characterize the Ecca Group Formation. The individual formations can be grouped into three geographical areas for descriptive purposes except for the Prince Albert and Whitehill Formation.

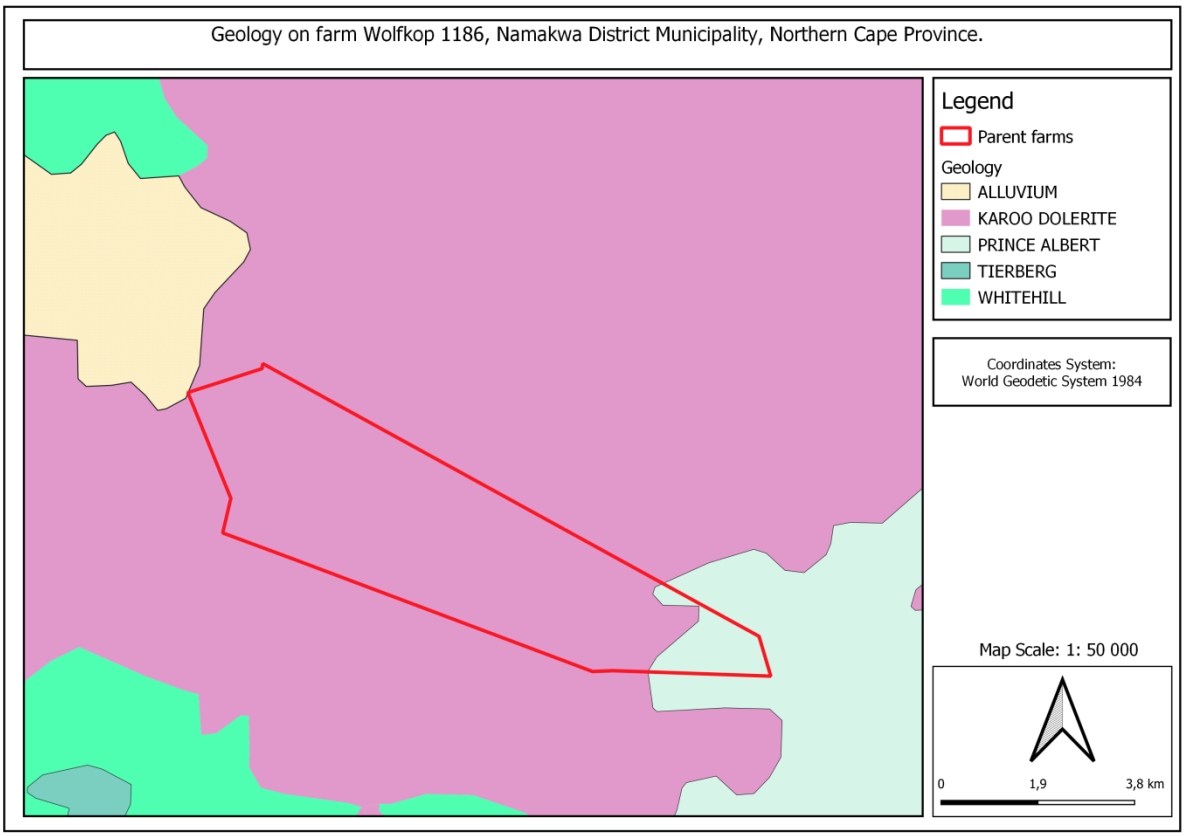


Figure 8—3: Site Geology

8.4.2 Local Geology

8.4.2.1 kimberlite Formation

The complex internal geology of the kimberlite ore body, With the exception of the dykes, all these rocks are Precambrian in age and form part of the Kheis System of the Namaqua Metamorphic Complex. There are a great many lithological types, many of which grade into one another and are genetically related, making mapping difficult. It is evident that there were a number of phases of intrusion and metamorphism. Pegmatite dyke swarms are stand-out features in the mafics, migmatites and older granite suites. These are largely the homogeneous, unzoned types, with occasional zoned bodies carrying classical mineralisation.

Before the major kimberlite deposits in southern Africa are described, it is necessary to summarize the current state of knowledge regarding kimberlite geology. In this section four main topics will be summarized, the definition of kimberlite, Group 1 and 2 kimberlites, kimberlite nomenclature and kimberlite pipe formation models. Whilst it is recognized that work was and is still being

conducted on kimberlites (sensu stricto and sensu lato) elsewhere, this section will focus on the characteristics of southern African kimberlites only.

8.5 Underground and Surface Water

8.5.1 Groundwater

The site is located in Quaternary Basin D53F. the Commissioner salt pan and Klawervlei is situated next to the proposed area.

Groundwater resources in the area can be divided into two distinct aquifers, namely a shallow perched aquifer in the weathered zone followed by a deeper fractured hard rock aquifer. The fractured rock aquifer occurs as transmissive fractures in consolidated bedrock of either the Karoo sediments or the basement granite that underlies the Karoo sediments. A third, deeper aquifer in the underlying basement granite can also occur. Little information is however available for this aquifer, though it will also be a secondary fractured rock type.

8.6 Surface Water

The site falls within quaternary cactchment D53F, and is within the Upper Orange water management area in which Klawervlei draining the catchment. This catchment area is very flat with a 0.83 % slope. The catchment area was identified with a high permeable soil class and low runoff volume, therefore the 1:50 year flood runoff was estimated at 33 m^3/s.

8.6.1 Site Rivers/ streams

A network of seasonal streams exists in the area and there is one perinnial stream flowing inside of the proposed area, which is the Klawervlei flowing to the west of the proposed site.

The Klawervlei is situated to the west and is considered a FEPA system with a Class C: Moderately Modified Status. Commissioner's Salt Pan is a pan in Northern Cape and has an elevation of 850 metres. There is also the presence of numerous ephemeral pans with a FEPA wetland cluster.

River Name	PES	River Condition
Klawervlei	Class C: Moderately Modified	AB: Largely Natural

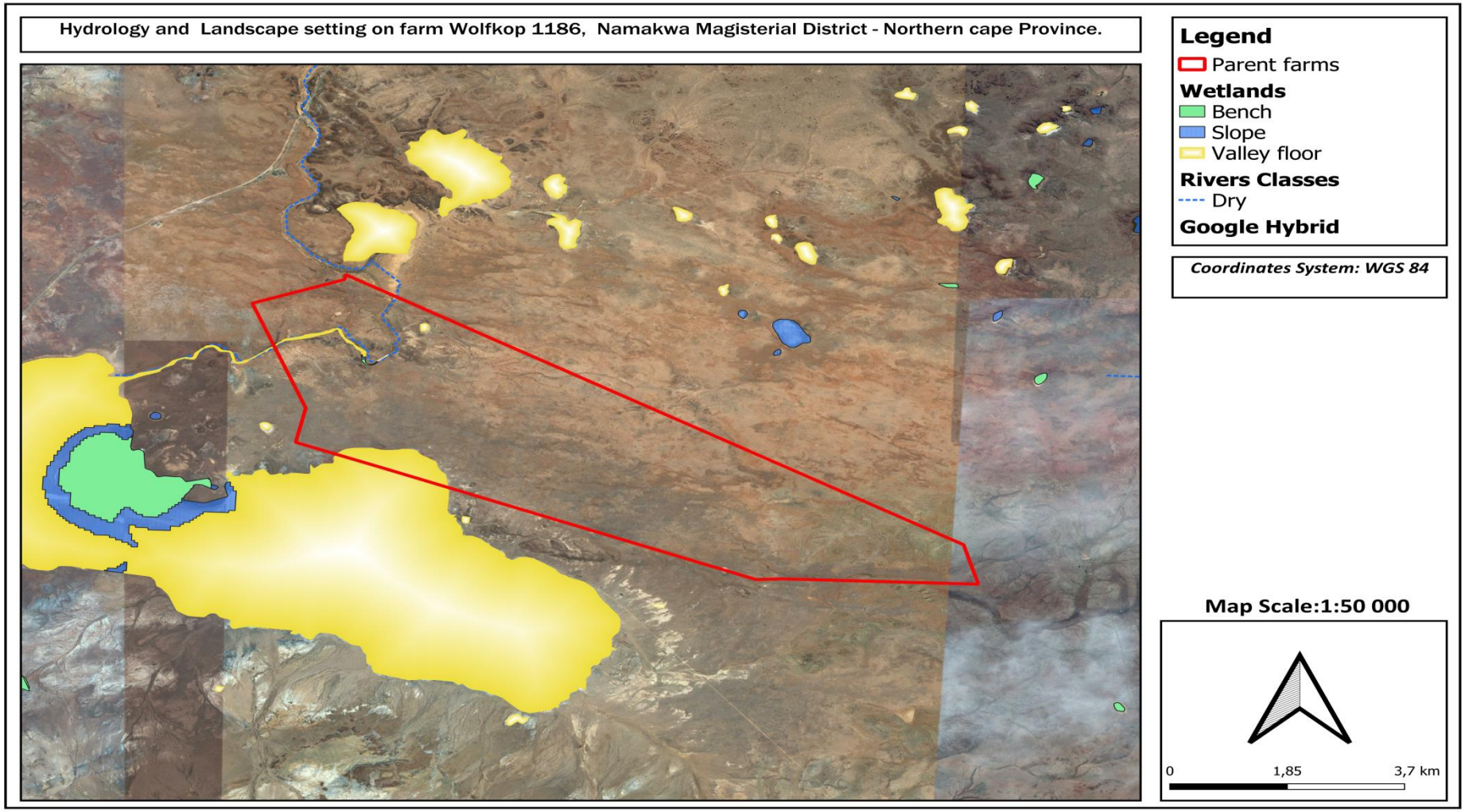


Figure 8—4: Surface Water Map

8.6.2 Site Wetlands

(a) Floodplain Wetlands

A very extensive marsh exist within and outside the proposed site boundaries. The Marshes are considered the National Freshwater Ecosystem Priority Areas (NFEPA). The wetlands functionality must be maintained which not only include water but ecology as well. The present ecological status and wetland condition as determined by the NFEPA Programme is **C: Moderately modified.**

(b) Dams/ Ponds

There are no ponds on site, but they mighty be available inorder to support the site agricultural activities.

The dams are man made and their PES are less significant.

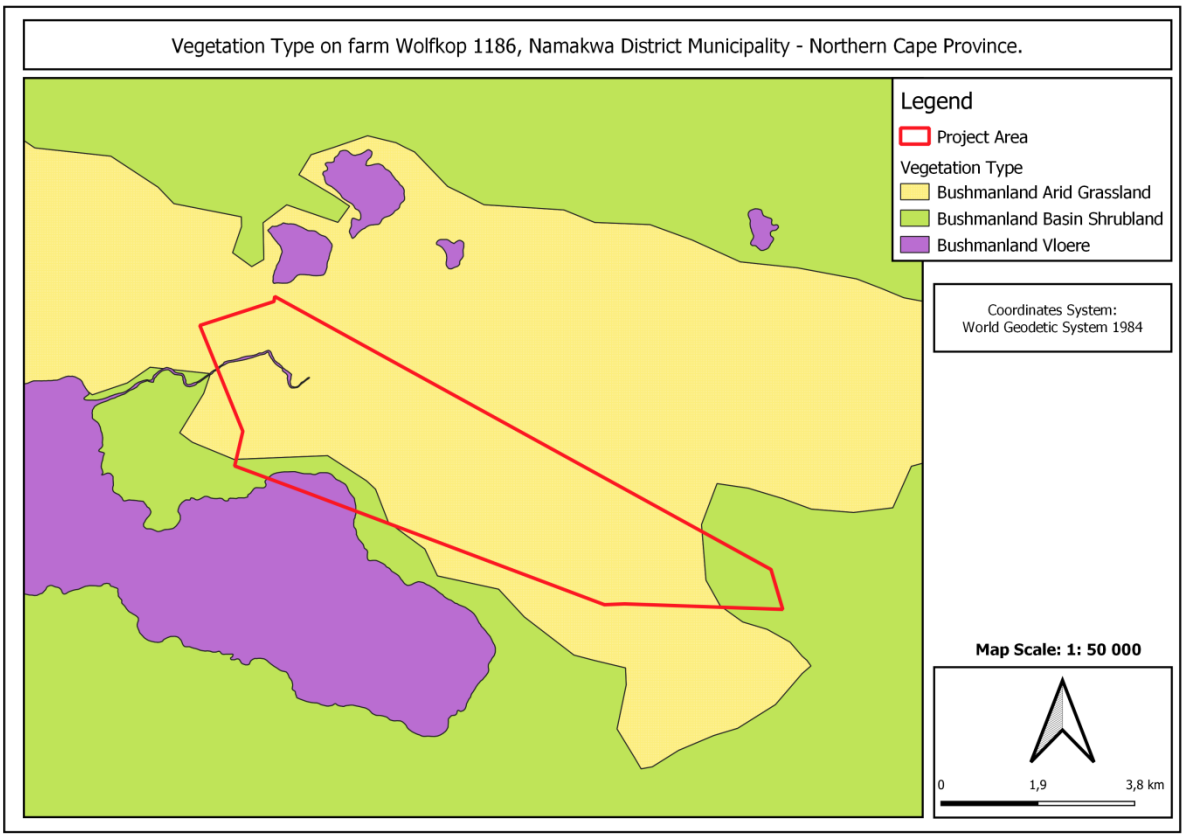
8.6.3 Water Resource Management

- ✓ The drilling positions have been predetermined to avoid sensitive areas i.e. wetlands and streams and their buffers;
- ✓ A 100 metres buffer zone must be applied to all water features on site;
- ✓ Water extraction from site sources will not be permitted, this includes rivers and boreholes without consent from the owners in case of private water sources and consent from the Municipality where water will be sourced from municipal connections;
- ✓ Stream crossings must be through existing crossings;
- ✓ The applicant will appoint an independent environmental officer to precide over the propsecting activities protecting the integrity of the natural environment which includes biodivesity and water resource;
- ✓ The applicant must made available site notices during operation communicating the boundaries of the buffer zones of the water sources;
- ✓ The managemnt and control of probable impacts is further discussed in section 9 and 11 of this report.

8.7 Biodiversity

8.7.1 Regional Vegetation and Habitats

The study area is located within the Nama Karoo Biome (Hoffman 1996), and more specifically, Northern Upper Karoo Vegetation (Mucina & Rutherford 2006). The Nama Karoo biome covers much of the central and western regions of the country. The dominant vegetation is a grassy, dwarf shrubland. Grasses tend to be more common in depressions and on sandy soils, and less abundant on clayey soils. Grazing rapidly increases the relative abundance of shrubs. Most of the grasses are of the C4 type1 and, like the shrubs, are deciduous in response to rainfall events. The biome is dominated by a steppe-type vegetation, comprising a mixture of shrubs, dwarf shrubs and annual and perennial grasses.



MAP

Figure 8—5: Site Vegetation

The biome is associated with the moderate rainfall regions (250-450 mm per annum) and is suited to commercial sheep and goat production. The summer

seasonality of the rainfall in the eastern parts of the biome means that there is often abundant grass production during the growing season. Graziers attempt to optimize production by sparing or resting grassy dwarf shrubland in the wet season. Herbivory by domestic livestock during the growing season has been shown to reduce grass cover and promote the growth of larger shrubs (species of Rhus, Acacia and Euclea) and dwarf shrubs. In the winter months, the dwarf shrubs maintain their crude protein at around 8 %, providing excellent forage. The nutrientrich substrata provided by the mudstones, sandstones and dolerites mean that this production can be considered sustainable.

Other trees in this area include Rhus lancea, Rhus leptodictya, Ziziphus mucronata, and the exotic Schinus molle. Termite mounds are plentiful throughout the whole area, and are used as perches by some birds. Karoo scrub and grasses, indigenous trees such as *Rhus lancea*, *Acacia tortilis*, *Ziziphus mucronata*, *Rhus*

pyroides, while exotics includes *Melia azedarach*, *Schinus molle*, *Pyracantha angustifolia*, *Opuntia* sp and Pampas grass, *Cortaderia selloana*.

Fauna

The Karoo is home to a relatively rich avifaunal component with about 300 regularly recorded species and another hundred that occasionally or rarely occur (Harrison et al. 1997). It has been documented that land use changes in this area have not only altered avian species richness, but also mutualisms and plant-bird interactions. During the first Southern African Bird Atlas Project a total of 156 bird species where recorded in the quarter degree grid cell, 2925AC Koffiefontein (Harrison et al. 1997).

8.7.2 Site Ecological Sensitivity

The site sensitivity was determined from the Northern Cape wildlife's Terrestrial Critical biodiversity areas Plan. According to this conservation plan there are minor sections of Critical Biodiversity Area (Optimal). The invasive prospecting activities will be undertaken outside the Critical Biodiversity Areas.

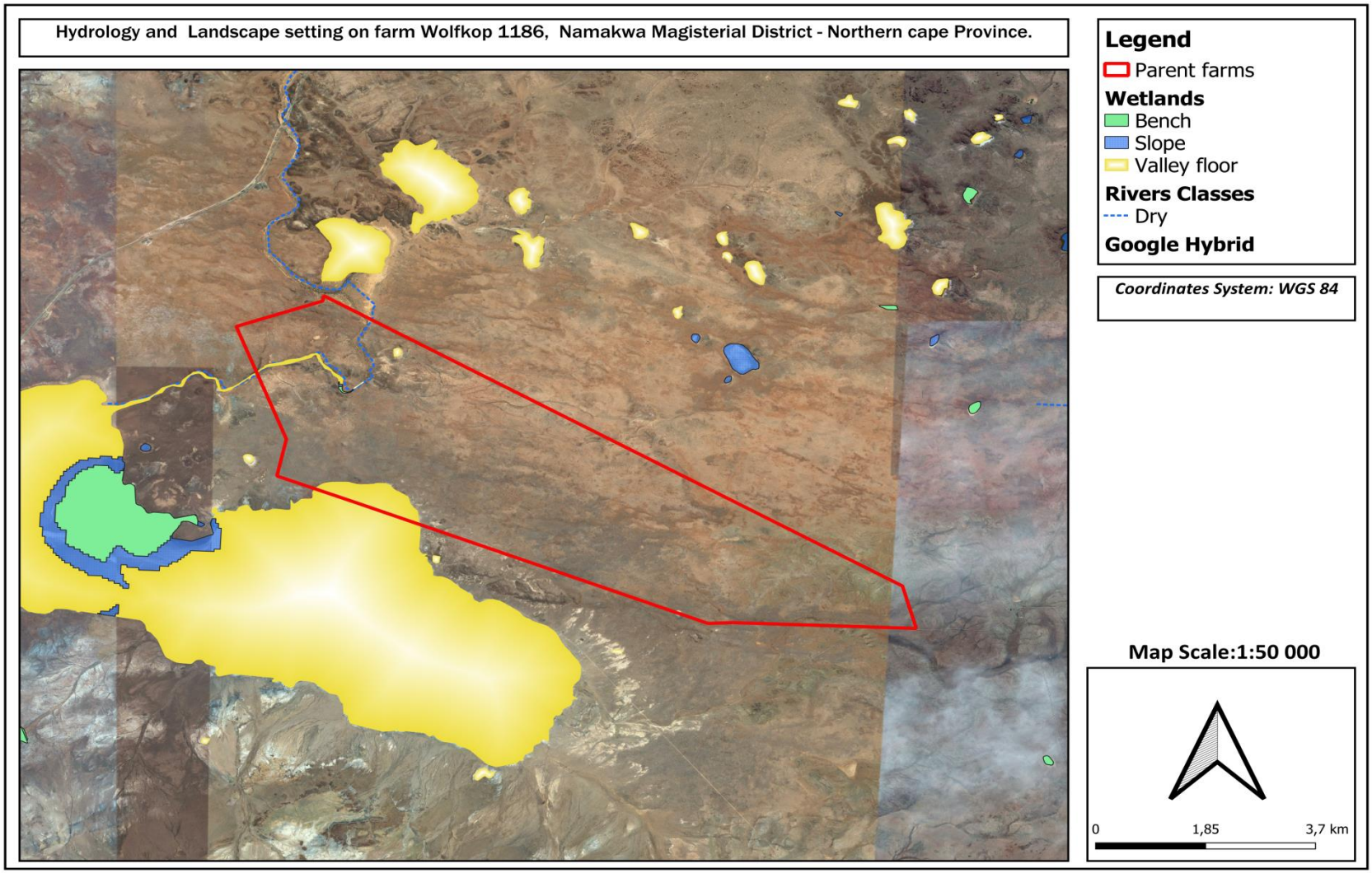


Figure 8—6: Site Sensitivity Map

8.8 Social Characteristics of the Study Area and Surrounds

The proposed site is within Hantum Local Municipality of the Namakwa District Municipality in the Northern Cape Province. The jurisdiction of the Hantam Municipality covers an area of 36 128 km², which constitutes 28% of the total area (viz. 126 836 km²) of the Namakwa District municipality within which it lies.

The Hantam Municipality is located in the south-western segment of the district and wedged mainly between both Northern Cape and Western Cape municipalities. The Northern Cape municipalities are the Karoo Hoogland, Kareeberg and !Kheis municipalities (to the east), Kamiesberg and Khai-Ma municipalities (to the west), and Kai !Garib (to the north). The Western Cape municipalities are Matzikama and Cederberg Municipalities (to the west) and Witzenberg Municipality (to the south).

8.8.1 Demographic Conditions

8.8.1.1 Population Distribution

The table below includes the population size and the number of households in the municipal area in 2001, 2011 and 2017 respectively. The annual population growth rate in Hantam municipality for the 2011—2017 period was a mere 0.2% with a marginally higher increase (0.3%) per annum in the number of households. Overall, the Hantam municipal area is characterised by negative population growth and, thus, changing dynamics, i.e. the number of persons and the number of households has decreased since 1995 (also see graph below)

Population	2001	2011	2017
Number of people	25 241	21 127	21 505
Percentage Increase/decrease		-1.5% per annum (2001-2011)	0.2% per annum (2011-2017)
Number of households	7 115	6 049	6 196
People per household (approximate)	3.5	3.5	3.5
Source: Quantec			

8.8.1.2 Population by race

The White population grouping in the Hantam municipal area has for the 2011—2017 period, experienced a percentage decrease (-0.8%) in the number of

persons. The other three population groupings experienced positive growth rates over this period. The Black-African population grouping showed strong annual growth since 2011 of more than 4%, while the Asian (admittedly off a very low base) and Coloured groupings showed average growth of 1% and 0.2% respectively. It is important to note the composition of the population with specific reference to the Black-African and Coloured population groupings. In this regard, the Black-African population grouping was 4% of the total population in 2011 and 4.9% in 2017. The Coloured population grouping comprised 83.8% of the total population in 2011 and 83.4% in 2017. Together, these groupings comprised about 88% of the population in both 2011 and 2017. Hence, a key question in considering any future growth and development path for Hantam municipality should be the amount of resources used by and allocated to both these population groupings. This 'demarcation of funds' will be possible owing to towns being segregated along socio-economic class lines in the form of race-based urban spatial configurations. The demographics of the Hantam municipal area are by population grouping is indicated in the table below:

Indicator	Black-African		Coloured		White		Asian	
	2011	2017	2011	2017	2011	2017	2011	2017
Population size	841	1 059	17 698	17 944	2 467	2 372	121	130
Proportional share of total population	4.0%	4.9%	83.8%	83.4%	11.7%	11.0%	0.6%	0.6%
Number of households by population group	247	288	4 748	4 856	1 033	1 031	21	21
Source: Quantec								
Brandvlei	18	-	2 088	-	199	-	3	-
Calvinia	144	-	6 937	-	1 355	-	24	-
Hantam Non-Urban	48	-	4 147	-	1 010	-	0	-
Loeriesfontein	15	-	2 057	-	331	-	3	-
Nieuwoudtville	39	-	1 172	-	220	-	6	-
Source: Census 2011 (approximate totals)								

8.8.1.3 Unemployment

The 2017 employment status of the working age population in the Namakwa district of 39.1% (or 29 212) formally employed is better than the situation in 2001 when 34.7% or 27 715 was formally employed but worse than in 2016 (39.3% or 29 317).

However, and measured as a percentage, 10.3% of the working age population was unemployed in 2017, compared to 8.2% in 2001 and 10% in 2016.

In the Hantam municipal area, 5 165 (or 38.2%) of the working age population was formally employed in 2017, compared to 5224 (or 39.3%) in 2016 and 5 614 (or 37.4%) in 2001, i.e. a relative improvement in overall formal employment since 2001 but worsening in recent years. These figures also represent a worsening trend if measured in number of persons employed. The number of unemployed persons (802) in the municipal area, in 2017, was more or less the same as in 2016 (746) and in 2001 (779).

These trends must be seen in the light of the general depopulation of the municipality, i.e. a smaller working age population and the high percentage of persons not economically active.

Any unemployment figure, irrespective of how large, has serious repercussions on the ability of the population, at large, to uphold dignified living conditions and for the municipality to fulfil its revenue-raising mandate as the number of indigent households will increase. For the unemployed, pension/welfare payments are the only reliable source of income. The table below includes the employment status of the working age population in the Hantam and Namakwa District municipal areas in 2001, 2011, 2016 and 2017, respectively

Description	2001	2011	2016	2017
Hantam				
Working age	15 017	13 246	13294	13 508
Employed (formal)	5614	4594	5224	5165
Unemployed	779	791	746	802
Not economically active	7932	6454	5557	5646
Namakwa District				
Working age	79 773	74 962	74 620	74 733
Employed (formal)	27 715	26 512	29 317	29 212
Unemployed	6605	7482	7468	7704
Not economically active	42 455	34 435	29 311	28 666
Source: Quantec				

8.8.1.4 Education

There is a slight improvement in the number of persons with matric in the Hantam municipal area despite a very low population growth rate. The biggest success, however, is the substantially fewer persons with no schooling in 2011 and 2017 compared to 2001. The education levels in the municipal area are indicated in the table below:

Indicator		2001	2011	2017	%change (2011 to 2017)
Education	No schooling	4 515	3 080	3 068	-32.1%
	Matric	2 367	2 390	2 451	3.6%
	Higher education (certificate with Grade 12 or better)	1 035	997	1 056	2.1%
Source: Quantec					

8.8.1.5 Income

The Census 2011 shows that a significant proportion (about 76%) of the population in the municipal area earns less than R76 401 per annum, i.e. less than R5 200 per month. In the context of housing delivery, these people will have to be beneficiaries of the 'give-away' housing programmes, i.e. the RDP and BNG programmes with ownership as the tenure type, and the CRU programme with rental as tenure type. The table below includes the number of households in the municipal area (as a percentage) grouped by annual household income and place of residence (by urban or rural).

Income category	Brandvlei	Hantam NU	Loeriesfontein	Nieuwoudtville	Calvinia	Tankwa-Karoo National Park	Grand Total
No income	1.0%	1.2%	1.3%	1.0%	2.4%	0.0%	6.8%
R 1 - R 4 800	0.4%	0.5%	0.4%	0.2%	1.0%	0.0%	2.5%
R 4 801 - R 9 600	0.8%	1.0%	0.9%	0.5%	1.8%	0.0%	4.8%
R 9 601 - R 19 600	2.2%	7.9%	3.0%	1.7%	6.2%	0.0%	21.1%
R 19 601 - R 38 200	3.1%	8.3%	2.6%	1.6%	9.2%	0.0%	24.8%
R 38 201 - R 76 400	2.1%	2.8%	2.1%	1.5%	7.6%	0.1%	16.2%
R 76 401 - R 153 800	1.3%	1.7%	1.0%	1.1%	5.2%	0.0%	10.3%
R 153 801 - R 307 600	0.7%	1.8%	0.7%	0.5%	4.1%	0.0%	8.0%
R 307 601 - R 614 400	0.1%	1.2%	0.4%	0.2%	1.5%	0.0%	3.4%
R 614 001 - R 1 228 800	0.1%	0.5%	0.1%	0.1%	0.3%	0.0%	1.2%
R 1 228 801 - R 2 457 600	0.0%	0.2%	0.1%	0.0%	0.2%	0.0%	0.6%
R 2 457 601 or more	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.3%
Unspecified	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**11.9%**	**27.1%**	**12.7%**	**8.6%**	**39.6%**	**0.1%**	**100.0%**
Source: Census 2011							

8.9 Heritage Resources

A Heritage Impact Assessment was not undertaken as part of the development of the impact assessment. Based on desktop review, consultation and available Geographic Information System data, there are no heritage and cultural sites and features within the prospecting area. However, this does not absolve the contractor from excursing due diligence before undertaking any of the site invasive activities.

8.10 Description of the current land uses.

- The main economic land use in the proposed site is agriculture and mining on Commissioner salt pan;
- Water ponds, collecting water from seasonal and/or after rain streams for agricultural purpose;
- A network of gravel access roads exists within the proposed site, the roads are used for access between farm portions and also to access the farm houses; the same roads will be used to access drill points avoiding creation of new stream crossings.

8.11 Description of specific environmental features and infrastructure on the site

- Water Ponds/dams – Numerous ponds/dams for retention of water for longer periods. The water is used within the proposed sites and;
- Wetland areas distributed sparsely within the proposed site. These wetlands have been marked as "Sensitive area" (Surface Water Map) and no prospecting activities will be undertaken within wetlands.

8.12 Environmental and current land use map

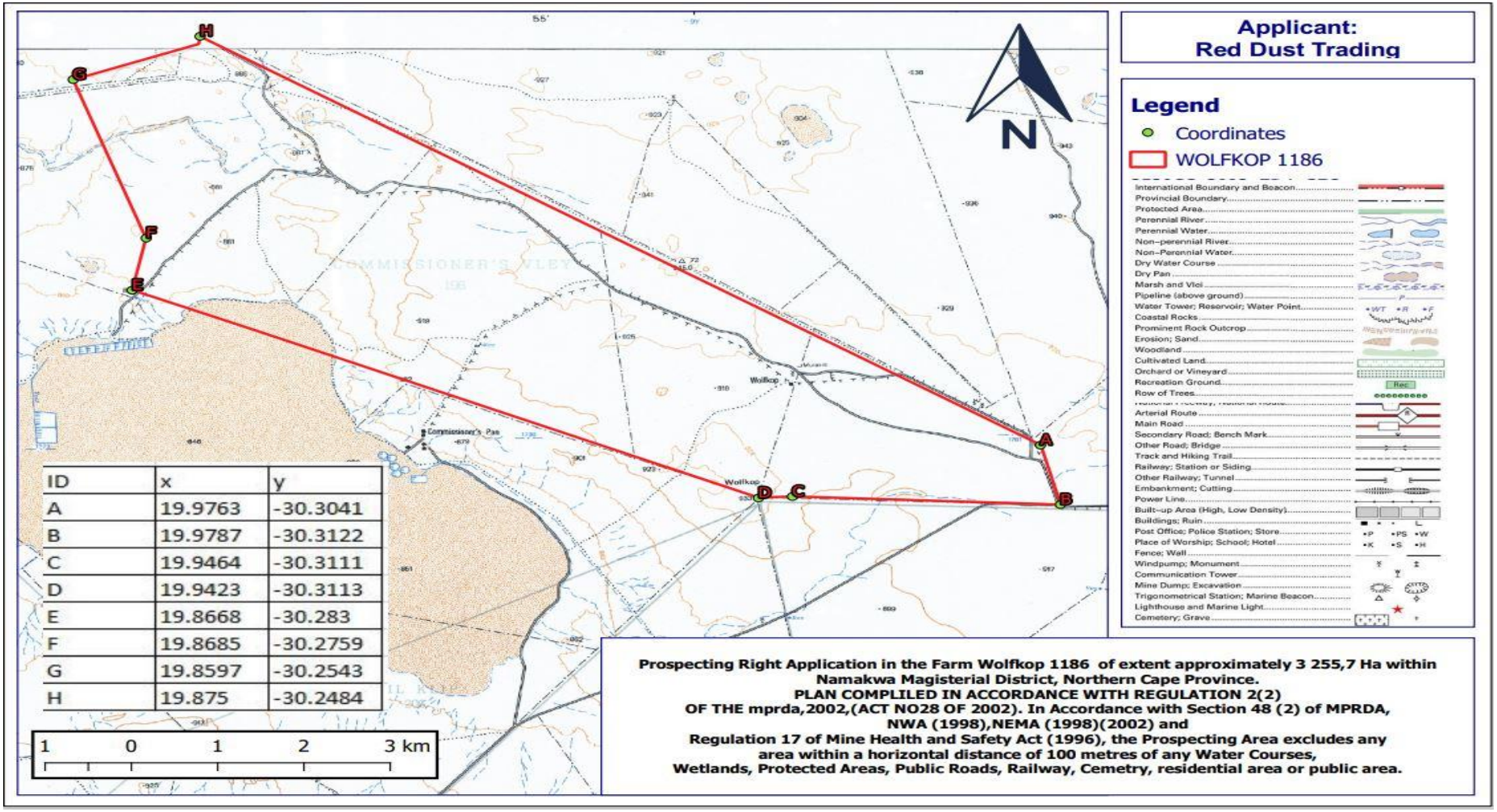


Figure 8—7: Site Map

9 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed.

Here a list of possible impacts will be provided, a full impact analysis which includes the significance of the impacts, their nature, extent, duration and probability of the impacts, the degree impacts reversibility and irreplaceable loss of resources has been provided in section 11 of Part A on page 76 as per the assessment criteria provided in section 9.1 of Part A on page 64.

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
Desktop Study	No Impacts								No Impact
Geophysical Survey	Legal liabilities	Commencement of prospecting surveys without relevant authorisations	3	2	4	3	3	2	30
		Accessing private property without access agreement contracts	1	2	4	3	3	2	26
		Undertaking legally listed activities without authorization in terms of other Acts other than NEMA & MPRDA	1	2	4	4	4	3	45
		Partial fulfilment of operating authorisations	2	3	4	4	4	3	51
	Job creation	The surveyors may require assistants, less than three people may be required.	1	1	3			2	+10
	Temporary loss of agricultural area	Agricultural land will be temporarily lost to make way for establishment of geophysical survey stations and their access roads.	1	1	1	2	2	2	14
	Loss of vegetation	Vegetation clearing for establishment of survey stations and their access roads	1	1	1	2	1	3	18
	Loss of local habitats	Loss of vegetation will result in loss of habitats	1	2	1	2	1	2	14
	Loss of wildlife	As vegetation is cleared, habitats will be lost so will the associated wildlife.	2	1	1	1	1	2	12
Geophysical Survey	Disruption of natural	The movement of vehicles on site on newly created roads and existing will create	2	1	1	2	1	2	14

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
	corridors	hazards for wildlife							
		There are CBAs within site and free movement of fauna will be disturbed as vegetation is lost and some corridors are blocked.	2	1	1	2	1	2	14
	Introduction and spread of alien invasive species	Alien invasive plants are opportunistic plants taking advantage of ecological disturbances	2	1	2	2	2	2	18
	Fire breakout	Fire hazard will be presented by smoking and intentional fires (cooking and related)	2	3	2	4	4	2	30
	Waste generation	Poor house keeping	1	1	2	1	1	2	12
	Compromised safety and security	Criminals accessing site affecting the land owners and prospecting team	1	3	2	4	4	2	28
Site Establishment: Access roads creation; & Drill pad preparation.	Legal liabilities	Expansion of authorised activities and area without approval by the competent authority	3	2	3	2	2	3	36
		Failure to meet conditions of the access agreements contracts	3	2	3	3	2	3	39
		Undertaking listed activities without relevant licences (E.g. WUL)	2	3	4	4	4	4	68
		Partial fulfilment of operating authorisations	2	2	2	4	4	4	56
	Job creation	The surveyors may require assistants, less than five people may be required.	2	1	2			4	20
	Loss and compaction of Fertile topsoil soil	Driving outside approved corridors (Creating shortcuts), clearing for road drill pads establishment	1	2	3	3	2	4	44
Site Establishment:	Accelerated soil erosion	Soil disturbance accelerates erosion especially on steep slopes	2	2	4	2	2	3	36

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
Access roads creation; & Drill pad preparation.	Soil contamination	Soil will mainly be contaminated buy leakages of hydrocarbons and poor waste management	1	2	3	2	2	3	30
	Loss of agricultural land	Creation of access roads and drill station will result in temporary loss of arable land	1	2	3	2	2	4	40
	Surface water contamination	Flow of water from contaminated areas and temporary storage areas	2	2	3	2	2	3	33
	Destruction of wetlands	Driving and establishment of drill stations on wetlands areas and their buffers. There are several wetlands identified within the proposed site.	3	3	3	4	4	3	51
	Increased suspended solids	The disturbances of surface will promote erosion and increase suspended solids and nutrients from agricultural land into the local streams.	2	1	3	1	1	2	16
	Meeting water requirement	Water will be required for domestic purposes, cooling of operating machineries and dust suppression	2	1	2	1	1	2	14
	Loss of vegetation	Clearing of vegetation will result in loss of plant species and may reduce species diversity	2	2	4	3	4	3	45
	Destruction of natural corridors	Natural corridors will be disturbed during site establishment and operation of the proposed activities	3	2	3	2	2	3	36
	Loss of habitats	Habitats will be lost along with vegetation and soil disturbance	2	3	3	3	3	3	42
	Introduction of Alien Invasive plants	Alien invasive plants will take advantage of the disturbances and spread to nearby areas	2	3	4	3	2	3	42
Site Establishment: Access roads creation; & Drill pad	Dust generation	The clearing of vegetation and driving on gravel roads will result in dust generation	2	1	3	1	1	3	24

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
preparation.	Site access by opportunistic criminals	The site is a quiet area with few families, criminals may use the opportunity to access the site with prospecting crew. The prospecting equipment and livestock are attractive for criminals.	1	1	3	4	4	2	26
	Disturbance and destruction of cultural and heritage resources	Disturbance of resources such as graves and cultural significance areas.	1	3	2	4	4	2	28
	Fire breakout	Fire breakout from smoking, accidents and intentional fires	2	2	2	4	4	2	28
	Land Pollution	Poor housekeeping, mixing of wastes,	2	1	2	1	1	3	21
	Health and safety	Health and safety hazards arises from operating machineries, vehicles; encounter with dangerous wild animals such as poisonous snakes, scorpions and spiders; and stream crossings	1	2	2	3	3	3	33
	Legal liabilities	Illegal expansion of authorised activities (E.g. Exceeding the approved number of boreholes)	2	2	3	2	2	2	22
		Partial fulfilment of the EA (E.g. No Appointment of ECO and submission of Annual Audits)	2	2	3	3	2	3	36
	Job creation	The surveyors may require assistants, less than five people may be required.	1	1	2			1	4
	Groundwater contamination	There is a potential that the drilling process may reach underground water resource and introduce contaminants to the underground	2	2	4	2	1	2	22
Site Establishment: Access roads creation; & Drill pad	Surface water contamination	Flow from contaminated surfaces to the local streams	2	1	3	2	1	2	18

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
preparation.	Increased suspended solids	The disturbances of surface will promote erosion and increase suspended solids and nutrients from agricultural land into the local streams.	2	1	3	1	1	2	16
	Noise nuisance	The drill rig generate excessive noise during operations	1	2	3	1	1	3	24
	Soil contamination	Contamination from hydrocarbons leakages and wastes disposal	1	2	3	2	2	3	30
	Disturbance and/or destruction of cultural and heritage resources	The drill process has the potential to disturb buried heritage and cultural artefacts unknown at the time of project planning.	3	3	2	4	4	3	48
	Health and safety hazards	Health and safety hazards arises from surface excavations, operating machineries, vehicles, encounter with dangerous wild animals such as poisonous snakes, scorpions and spiders	2	3	3	4	4	2	32
	Dust generation	The movement of vehicles and operation of drilling equipment will generate dust.	2	1	3	1	1	4	32
	Release of sulphide gas	Kimberlite releases the smelly sulphide gases, the smelly gas will be released through the drill holes.	2	1	4	1	1	4	36
	Land Pollution	Poor housekeeping	2	1	2	1	1	3	21
Decommissioning & Rehabilitation	Soil Contamination	Soil contamination will mainly be mainly from spillages and leakages of hydrocarbons	2	2	2	2	2	3	30
	Land Pollution	Poor housekeeping	1	1	3	1	1	3	21
Decommissioning & Rehabilitation	Spread of alien invasive plants	The ecological disturbance will promote invasion by alien invasive plants	2	2	4	2	2	4	48
	Blockage of the	Borehole rehabilitation may block subsurface flow if hard materials are used to	2	2	4	2	1	2	22

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility			Where (E + D + I + L + R) X P = Significance						
Activity	**Potential Impact**	**Impact description (All impacts are negative unless indicated)**	**Rating Before Mitigation**						**Significance Before Mitigation**
			E	**I**	**D**	**R**	**L**	**P**	
	subsurface flow	backfill boreholes.							
Cumulative Impacts									
Suspended Solids	The area is primarily an agricultural area with high mean annual precipitation. The runoff from the cultivated areas have high nutrient contents. Prospecting will increase the suspended solids as more soil will be loosened.								-30
Encroachment into wetlands areas	Wetlands have been largely impacted by the local agricultural activities (grazing and cultivation. Addition of prospecting can potential worsen the situation in the absence of preventative and mitigation measures.								-35
Contribution to SA geological knowledge	The prospecting project will contribute to the geological data pool as kept by the Council of Geoscience. The prospecting area will be mapped in detail.								+28
CBA degradation	The agricultural activities have impacted the CBA, in the absence of sound impact prevention and management techniques the CBAs will be further degraded.								

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

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

Extent: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;

Duration (D): Indicates what the lifetime of the impact will be;

Intensity (I): Describes whether an impact is destructive or benign;

Impact Reversal (R): The probability and the degree of reversing the activity impact**;**

Irreplaceable Loss (L): Loss of resources that cannot be replaced; and

Probability (P): Describes the likelihood of an impact actually occurring;

Cumulative: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

The significance of each risk/impact will be identified as follows:

Impact Significance = Probability (P) X Consequence (C), where

$$C = E + I + D + R + L$$

Table 9-1: Criteria Used for Rating of Impacts

CRITERIA	DESCRIPTION			
Extent	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighbouring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
Duration	Permanent (4) Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	Long-term (3) The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	Medium-term (2) The impact will last for the period of the construction phase, where after it will be entirely negated	Short-term (1) The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
Intensity	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected

CRITERIA	DESCRIPTION			
			in a modified way	
Impact Reversal	Highly Impossible (4) Impact reversal will certainly be impossible	Moderate (3) Impact can be reversed to some extent with loss of natural resources	Possible (2) High possibility of impact reversal	Definite (1) Impact can be totally reversed
Loss of irreplaceable resources	Definite (4) Resources definitely be lost	Highly Probable (3) Most likely that resources will be lost	Possible (2) Resources may be lost	Improbable (1) Loss of resources is highly unlikely
Probability Of Occurrence	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low

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

Table 9-2: Criteria for Rating of Classified Impacts

		Impact Significance (Consequence * Probability)															
Probability ↑	4	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
	3	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
	2	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
	1	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Consequence (Extent + Intensity + Duration + Reversibility +Irreplaceable Loss) →															

Table 9-3: Impact consequence class description

Score	Description	Colour Code
Negligible (0 -10 points)	A negligible impact that can be easily managed and avoided.	
Low impact/ Minor (11 -20 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.	
Medium impact/ Moderate (21 - 30 points)	Mitigation is possible with additional design and construction inputs.	
Critical (31 – 50 Points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.	
Catastrophic (51 - 80 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.	
Status	Denotes the perceived effect of the impact on the affected area.	
Positive (+)	Beneficial impact.	
Negative (-)	Deleterious or adverse impact.	

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

9.2 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

9.2.1 Positive Impacts

Prospecting activities are precursor activities to mining, they evaluate the possibilities of mine establishment. There are very limited returns from prospecting activities. The returns from prospecting activities can only be realised after a successful prospecting project. It has not been proven that Kimberlite ore body are presence on site and if presence whether they can be sustainable be mined. The very limited benefits from the proposed activities are:

Ore Reserve quantification: The presence of Kimberlite ore body on site will be verified and thereafter the economic value of the ore will be determined which could ultimately lead to the establishment of a mine. The mine itself have significant socioeconomic value. In the event that a viable reserve is confirmed, there would be high degree of positive impacts such as employment of large number of local residents, socio-economic balance of the local community and on the National and Provincial scale mining contribute highly to the Gross Domestic Product (GDP).

Contribution to South African geological data: The practical geological results obtained through this prospecting will be submitted to the South African Council of Geoscience for comprehensive mapping of South Africa based on proven data.

SMME and Street Vendor Support: The prospecting team will require basic services from the local community which would mainly be provided by the Small businesses and street vendors.

9.2.2 Negative Impacts

Commencement of listed activities in terms of NEMA, NWA and other Legislations without authorisation: A potential always exist that unauthorised undertaking of listed activities may take place on site in the form of project scope expansion and disregard of Authorisations' conditions. This could for example be increasing the number of authorised boreholes and impacting watercourses without water use license;

Loss of agricultural land and alternative land use conflicts: The site is not zoned for mining/industrial activities. This will create a parallel demand for land as successful prospecting activities will results in the establishment of a mine. There are active agricultural practices (Crop and livestock) on site that will be directly affected by the proposed prospecting activities. Establishment of access roads and drill stations in agricultural areas will result in temporary loss of agricultural land for the duration of prospecting;

Loss, contamination and compaction of fertile soil: Access roads and drill station establishment will result in removal/compaction of topsoil resulting in reduced fertility. The driving and parking of vehicles also create potential for hydrocarbon contaminations;

Soil erosion: Establishment of access roads and drill station disturbs soil cohesion increasing the potential for soil erosion;

Loss of biodiversity, natural corridors and habitats: There are Critical Biodiversity Areas (CBAs) within the proposed site and a potential exists for disturbances of this areas, with the loss of vegetation, habitats are also lost;

Loss of species of concern: The EIA process did not identify any red listed species within the proposed site. It should be noted that the proposed site is within the vulnerable grassland, and there are sections of CBAs and areas with high sensitivity to mining in terms of the Mining and Biodiversity Guidelines of 2013. The presence of species of concern cannot be ruled out;

Introduction of alien invasive plants: Invasive plants flourish where there is disturbances and ecological imbalances. The clearing of vegetation to establish drill stations and access roads has the potential to introduce and facilitate spread of invasive alien plants;

Degradation of Wetlands, streams and other water sources: There are numerous wetlands and water pods within the proposed site, there is high potential for impacting on the wetlands when crossing to access drilling points, should management measures be ignored;

Contamination of underground water resource: The drill activity has the potential to contaminate the underground water resource, introducing contaminates through the drill hole;

Contamination of surface water: Flow of stormwater from contaminated areas into the local watercourses;

Generation of waste: The prospecting activities will generate both the general and hazardous wastes. The waste will be managed using the "triple R" principle, Reduce, Reuse and Recycle;

Dust Generation: The vehicles and machinery movement on gravel roads will generate dust. The dust generation potential is considered low, the housing units on site to be affected by the dust are sparsely distributed hence the dust will have lower significance;

Fire breakout: There are potentials for fire breakout from the activities sites, smoking is a significant contributor to fire breakouts. A fire breakout will have huge implications in the area burning the CBAs and crops;

Health and safety risks: The operating machinery, equipment and vehicles, and excavations and undertaking activities in the wild create health and safety risks to the prospecting crew and the local community;

Criminal activities: Crime in South Africa is a social challenge faced by almost everyone, the presence of prospecting machinery and equipment on site will attract criminals who would seek to steal and sell such equipment;

Poor housekeeping: The site activities will generate wastes and proper waste management and site cleaning will be required to prevent the "dirty" site visuals;

Disturbance and/or destruction of cultural and heritage resources: The EIA Process did not identify any cultural and heritage significance sites and resources, however the possibility of unearthing heritage and cultural resources is not ruled out;

Noise Generation: The site is largely natural and there are no residential units within the proposed properties, the operation of drilling machinery will create noise that will easily reach the farm houses.

9.3 The possible mitigation measures that could be applied and the level of risk

The mitigation measures have been thoroughly discussed in Part A subsection 1)j) and Part B 1)a)iv). Below a summative impact/risk management is provided.

Commencement of listed activities in terms of NEMA, NWA and other Legislations without authorisation: It must be ensured that all activities undertaken are authorised in terms of the relevant legislations and the conditions of the authorisations must be upheld at all times;

Loss of agricultural land and alternative land use conflicts: The activities must be scheduled after harvesting period, topsoil be preserved and site rehabilitated after the prospecting activities;

Loss, contamination and compaction of fertile soil: The topsoil must be preserved, and no multiple roads must be created to access the same station. The access roads must be ripped to loosen the soil;

Soil erosion: Prospecting activities must be scheduled during the dry season, and storm water must be controlled;

Loss of biodiversity, natural corridors and habitats: The disturbance must be limited to active areas and the site be rehabilitated as soon as the prospecting activities are completed at each station;

Loss of species of concern: The appointed ECO and EO must record all cleared/removed species and indigenous species must be reintroduced to the disturbed sites;

Introduction of alien invasive plants: An alien invasive plants control and management programme must be developed and adhered to;

Degradation of Wetlands, streams and other water sources: All surface water areas are no-go areas and no activity must take place within these areas and their buffers;

Contamination of underground water resource: Drill holes must be rehabilitated and plugged as soon as they are out of use, and a record of ground water monitoring before, during and after prospecting activities must be kept and any deviation from the pre-activities water condition must be attended to;

Contamination of surface water: Any flow from contaminated areas must be controlled and contained. The wet areas (wetlands and watercourses) are no-go areas;

Generation of waste: The waste will be managed using the "triple R" principle, Reduce, Reuse and Recycle. Waste bins must be provided for storage of wastes separately.

Dust Generation: A minimum speed limit of 40 km/h must be maintained on all internal gravel roads, dust generation must be monitored and controlled;

Fire breakout: Designated smoking areas must be provided, and firefighting equipment must be provided at all drill stations;

Health and safety risks: All operators must have operating competence certificates, handling of wild life must be done by trained personnel, and all openings must be barricaded;

Criminal activities: Access into the properties must be controlled, no hiring must be done on site and the farmers must be informed of the prospecting schedule and the crew;

Poor housekeeping: The site must be kept clean at all times;

Disturbance and/or destruction of cultural and heritage resources: Should any cultural and heritage resources be discovered, the work must be stopped, the SAPS and the Heritage Agency be notified; and

Noise Generation: The operating machinery and vehicles must be kept in good working conditions and the affected communities must be kept abreast of any activity with high noise generation potential.

9.4 Motivation where no alternative sites were considered

- The proposed prospecting area is targeted as the desktop studies as conducted by Red dust trading (Pty) Ltd, suggest that there is high possibility of Cobalt, Copper, Diamond, Flourspar, Gypsum, Lithium, Manganese, Mica, Molybdenum, Rare Earths, Uranium Ore as the area is underlain by sedimentary rocks belonging to the Beaufort and Ecca Groups of the Karoo Supergroup.

- There is sufficient open area with no human settlements that could possibly create conflicts with the land owners;
- Although there is a network of streams, these can be avoided and prospecting be undertaken on dry areas with 100 metres buffer zones to all surface water areas applied.
- The site agricultural activities can be undertaken concurrently with the proposed prospecting activities; and
- There were no historical sites identified within the proposed site.

9.5 Statement motivating the alternative development location within the overall site

The site layout is mainly influenced by the distribution of the targeted geological stratum, however the drilling site is also influenced by the accessibility and environmental sensitivity. Thus, the drilling sites are located away from all watercourses and wetlands area.

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

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

10.1 Stakeholder consultation

The stakeholder consultation process was undertaken in a manner to be interactive, providing landowners and identified stakeholders with the opportunity to provide input into the project. This was a key focus, as the locals are aware of their environment and can provide site specific information, which may not be available in desktop research material. Stakeholders were requested to provide their views on the project and any potential concerns which they had. All comments and concerns were captured and formulated into the impact assessment.

10.2 Desktop study

A detailed desktop investigation was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:

- South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS system; SANBI Plants of South Africa; and SANBI Important Birds Area;
- Geographic Information System base maps and Google Earth;
- Department of Water Affairs and Sanitation's information documents such as the ground water vulnerability report;
- Department of Environmental Affairs (DEA) land use map;
- Mining and Biodiversity Guidelines;
- Review of Journals, Books and unpublished papers;
- Free State Systematic Conservation Plan;
- Local and District Municipality Integrated Development Plan;
- Local and District Municipality Strategic Development Framework;

- ❖ Relevant Provincial, National and International Policies, Regulations & Acts.

10.3 Site Visit

A site visit was conducted to ensure that the information gathered as part of the Desktop investigation reflects the current status of the land. The site visit was conducted.

10.4 Impacts assessment, rating and management

The ratings of the identified impacts were undertaken in a quantitative manner as provided in Impact Assessment Section. The ratings were undertaken in a manner to calculate the significance of each of the impacts. The EAP also assesses and rate the outcomes of the calculation to determine whether the outcome reflects the perceived and the actual views; The identification of management measures is done based on the significance of the impacts and measures that have been considered appropriate and successful, specifically as Best Practical and Economical Options.

11 Assessment of each identified potentially significant impact and risk

11.1 Assessment of all identified impacts and risks

Table 11-1: Impact Assessment

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility										Where (E + D + I+L+R) X P = Significance	
Activity	**Potential Impact**	**Impact description**	**Impact Rating**						**Significance Before Mitigation**	**Impact management**	**Significance After Mitigation**
			E	**I**	**D**	**R**	**L**	**P**			
Desktop Study	No Impacts								No Impact		No Impact
Geophysical Survey	Legal liabilities	Commencement of prospecting surveys without relevant authorisations	3	2	4	3	3	2	30	✓ No listed activity must be undertaken without authorisation from relevant authority (PR & EA); & ✓ The scope of work must not be changed/expanded without consent of the DMR;	No Impact
		Accessing private property without access agreement contracts	1	2	4	3	3	2	26	✓ On issuing of the Prospecting Right the holder must engage the land owners for access agreements contracts; & ✓ A complaint register must be established to record all complaints from land owners and other affected parties also reflected measures taken to address the complaints and dates.	5
		Undertaking legally listed activities without authorization in terms of other Acts other than NEMA & MPRDA	1	2	4	4	4	3	45	✓ No listed activity must be undertaken without authorisation from relevant authority (Tree removal permit/ WUL)	5
		Partial fulfilment of operating authorisations	2	3	4	4	4	3	51	✓ A copy of each operational license/permit must be kept on site; ✓ All permits/authorisations/licenses must be fully reviewed before work can be undertaken to ensure that required resources are made available ✓ The conditions of the EA must be made known to all involved personnel on site; ✓ Activity based risk assessment must be conducted to identify all possible risks associated with the activity ✓ All site personnel must be inducted on all legislative requirements pertaining to site activities; & ✓ Daily toolbox talks must be conducted to ensure every involved person understand the risk associated with the activities and the conditions of the EA	5
	Job creation	The surveyors may require assistants, less than three people may be required.	1	1	3			2	10	✓ Should assistants be required, they should be sourced from the local community; & ✓ Hiring must be done off site.	10

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility									Where (E + D + I+L+R) X P = Significance	
Activity	**Potential Impact**	**Impact description**	**Impact Rating**						**Significance Before Mitigation**	**Impact management**	**Significance After Mitigation**
			E	**I**	**D**	**R**	**L**	**P**			
Geophysical Survey	Temporary loss of agricultural area	Agricultural land will be temporarily lost to make way for establishment of geophysical survey stations and their access roads.	1	1	1	2	2	2	14	✓ The affected land users must be informed of the area to be affected and the amount of damages and be compensated for their losses; ✓ No camping areas must be established on site; ✓ The prospecting activities must be scheduled after harvesting period; ✓ The activities must be restricted to approved site plan; ✓ Topsoil must be stripped and stockpiled separately from other materials for rehabilitation purpose; & ✓ The soil fertility/ land capability must be restored on completion of prospecting activities	8
	Loss of vegetation	Vegetation clearing for establishment of survey stations and their access roads	1	1	1	2	1	3	18	✓ Although no protected or endangered plant species were identified during the EIA; Site Assessment process, the absence of such must be confirmed before clearing takes place; ✓ Vegetation clearing must be limited to active area; ✓ Survey stations and related access roads must be cleared progressively, rehabilitated immediately on activity completion; ✓ Seedbank for indigenous vegetation may be established to aid during site rehabilitation; ✓ No fires must be allowed on site; & ✓ No camping areas must be established on site;	10
	Loss of local habitats	Loss of vegetation will result in loss of habitats	1	2	1	2	1	2	14	✓ Vegetation clearing must be limited to active area; ✓ No camping areas must be established on site; ✓ Survey stations and related access roads must be cleared progressively, rehabilitated immediately on activity completion; & ✓ Seedbank for indigenous vegetation may be established to aid during site rehabilitation; No fires must be allowed on site	10
	Loss of wildlife	As vegetation is cleared, habitats will be lost so will the associated wildlife.	2	1	1	1	1	2	12	✓ Search and rescue must be conducted before vegetation clearance; ✓ No hunting must be allowed on site; ✓ The site must be kept neat at all times to avoid attraction of scavengers; ✓ Each drill station must be rehabilitated as soon as prospecting activities are completed at that particular station; ✓ No fire must be allowed on site, and smoking must be strictly on designated areas only; ✓ Excavations must be barricaded to prevent animal fall-in; & ✓ No pets must be brought to site.	12
	Disruption of natural corridors	The movement of vehicles on site on newly created roads and existing will create hazards for wildlife	2	1	1	2	1	2	14	✓ The vehicle speed must be limited to 40 km/h within the proposed site to prevent hitting and driving over wildlife;	10

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility										Where (E + D + I+L+R) X P = Significance	
Activity	**Potential Impact**	**Impact description**	**Impact Rating**						**Significance Before Mitigation**	**Impact management**	**Significance After Mitigation**
			E	**I**	**D**	**R**	**L**	**P**			
		There are CBAs within site and free movement of fauna will be disturbed as vegetation is lost and some corridors are blocked.	2	1	1	2	1	2	14	✓ Excavations must be barricaded to prevent animal fall-in; ✓ Disturbances must be limited to active areas only; ✓ Animal traps and hunting is prohibited; ✓ Only active areas can be cleared at a time, rehabilitated on activity completion before advancing to the next drill hole unless the drilling activities are undertaken simultaneously; & ✓ The disturbed areas must be rehabilitated as soon as the work is completed at that particular area.	12
Geophysical Survey	Introduction and spread of alien invasive species	Alien invasive plants are opportunistic plants taking advantage of ecological disturbances	2	1	2	2	2	2	18	✓ Only indigenous plants may be used for rehabilitation; ✓ A poster of all common invasive plants for the area must be developed and employees be inducted on the subject; ✓ The invasive plants must be removed as soon as they are identified; & ✓ Invasive alien plants control and monitoring programme must be developed and approved by the ECO.	6
	Fire breakout	Fire hazard will be presented by smoking and intentional fires (cooking and related)	2	3	2	4	4	2	30	✓ Smoking must be strictly be at designated areas only; ✓ No fires are allowed on site (cooking, warming, etc.); ✓ The emergency plan must include emergency fire preparedness; & ✓ Each prospecting crew must have firefighting equipment.	5
	Waste generation	Poor house keeping	1	1	2	1	1	2	12	✓ Wastes must be stored in marked waste bins for transfer to skips and then disposal sites; ✓ The prospecting site must be kept tidy at all times; ✓ The temporary waste storage bins and skips must be closed to prevent overflows, scavengers attraction and smell nuisance; ✓ All site personnel will be inducted on reduce, reuse and recycle concept; & ✓ A clean-up campaign must be undertaken every second Friday.	6
	Compromised safety and security	Criminals accessing site affecting the land owners and prospecting team	1	3	2	4	4	2	28	✓ Land owners must be provided with prospecting schedule; ✓ No hiring must be done on site; ✓ All site personnel must have identification card; ✓ Criminal activities must be reported to SAPS immediately; ✓ Access gates must remain locked and access be authorised; & ✓ All activities must remain within the approved site.	15
Site Establishment: Access roads creation & Drill pad preparation	Legal liabilities	Expansion of authorised activities and area without approval by the competent authority	3	2	3	2	2	3	36	✓ No listed activity must be undertaken without authorisation from relevant authority (PR & EA);	5
		Failure to meet conditions of the access agreements contracts	3	2	3	3	2	3	39	✓ A complaint register must be established to record all complaints from land owners and other affected parties also reflected measures taken to address the complaints and dates; & ✓ An open consultation system must be maintained with all land owners	5
		Undertaking listed activities without relevant licences (E.g. WUL)	2	3	4	4	4	4	68	✓ No listed activity must be undertaken without authorisation from relevant authority	5

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility										Where (E + D + I+L+R) X P = Significance	
Activity	**Potential Impact**	**Impact description**	**Impact Rating**						**Significance Before Mitigation**	**Impact management**	**Significance After Mitigation**
			E	**I**	**D**	**R**	**L**	**P**			
										(Tree removal permit/ WUL)	
		Partial fulfilment of operating authorisations	2	2	2	4	4	4	56	✓ In cases where amendments are required the existing conditions are binding until legally amended; ✓ Should assistants be required, they should be sourced from the local community; ✓ All site personnel must be inducted on all legislative requirements pertaining to site activities; & ✓ All permits/authorisations/licenses must be fully reviewed before work can be undertaken to ensure that required resources are made available.	5
Site Establishment: Access roads creation & Drill pad preparation	Job creation	The surveyors may require assistants, less than five people may be required.	2	1	2			4	20	✓ No hiring must be done onsite; & ✓ Only locals must be considered	25
	Loss and compaction of Fertile topsoil soil	Driving outside approved corridors (Creating shortcuts), clearing for road drill pads establishment	1	2	3	3	2	4	44	✓ Topsoil must be removed before any activity with soil compaction potential is undertaken; ✓ The topsoil must be stockpiled away from the drainage lines and outside the 1:100 year floodline but within the approved prospecting area; Contaminated topsoil must be treated as soon as possible and where treatment is not possible, the soil must be separated and stored in contaminated materials bin; Storm water diversion channels must be developed around topsoil stockpiles; Topsoil must not be used for any other activity besides rehabilitation unless there is excess; ✓ Vehicle and machinery movements must be restricted to approved corridors; ✓ No new access roads must be developed without the approval of site ECO; & ✓ Created access roads no longer in use must be ripped for vegetation regrowth.	20
	Accelerated soil erosion	Soil disturbance accelerates erosion especially on steep slopes	2	2	4	2	2	3	36	✓ Storm water diversion channels must be developed around stockpiling area; ✓ Soil disturbance must be limited to working area; & ✓ Roads must not be created against steep slopes.	21
	Soil contamination	Soil will mainly be contaminated buy leakages of hydrocarbons and poor waste management	1	2	3	2	2	3	30	✓ No parking and driving will be allowed outside the approved area as per the site layout plan; ✓ All site vehicles and equipment must be properly maintained regularly and daily inspection sheet be kept with each truck; ✓ A drip tray must be placed under stationery machineries; ✓ Leakages and Spillages must be attended to as soon as they are noticed and the contaminated soil must be placed in designated plastic bags/bins to be cleaned or disposed of at registered appropriate waste site; ✓ Waste must be categorized and separated, and stored in waste bins; & ✓ Major spillages must be reported to the DMR and DWS.	16

E = Extent, D = Duration, I = Intensity, P = Probability of occurrence, L= Irreplaceable Loss of Resources, R = Impact Reversibility									Where (E + D + I+L+R) X P = Significance	
Activity	**Potential Impact**	**Impact description**	**Impact Rating**						**Significance Before Mitigation**	**Impact management**	**Significance After Mitigation**
			E	**I**	**D**	**R**	**L**	**P**			
Site Establishment: Access roads creation & Drill pad preparation	Loss of agricultural land	Creation of access roads and drill station will result in temporary loss of arable land	1	2	3	2	2	4	40	✓ The affected land users must be informed of the area to be affected and the amount of damages and be compensated for their loss; ✓ The prospecting activities must be scheduled after harvesting period; ✓ The activities must be restricted to approved site plan; ✓ Topsoil must be stripped and stockpiled separately from other materials for rehabilitation purpose; ✓ The soil fertility/ land capability must be restored on completion of prospecting activities; & ✓ Only active areas can be cleared at a time, rehabilitated on activity completion before advancing to the next drill hole unless the drilling activities are undertaken simultaneously.	18
	Surface water contamination	Flow of water from contaminated areas and temporary storage areas	2	2	3	2	2	3	33	✓ Storm water must be diverted away from active areas to avoid contamination; ✓ Contaminated water must be contained and not released unless treated; ✓ All contaminated surfaces must be cleaned as soon as they are noticed; ✓ Temporary chemical toilets must be provided, placed outside 1:100 floodline. The construction of "long drop" toilets is prohibited; ✓ Under no circumstances may open areas or the surrounding bush be used for sanitation; ✓ Stream crossing must be through existing tracks, and no new crossings must be created; ✓ Chemicals and hydrocarbons must be stored on elevated bunded walls and storm water must be diverted away from this area; & ✓ Waste storage bins and kips must be covered to prevent rain fill-up and overflows.	10
	Destruction of wetlands	Driving and establishment of drill stations on wetlands areas and their buffers. There are several wetlands identified within the proposed site.	3	3	3	4	4	3	51	✓ All site wetlands must be identified and buffered with at least 100 metres from the edge; ✓ No activity can be undertaken within wetlands areas and their buffers; ✓ Stream crossings must be at existing crossings only, no new stream crossing must be created. ✓ Invasion by alien plants from active areas into wetlands must be controlled and monitored; ✓ The wetlands must not be used as dumping sites; & ✓ No infrastructure including chemical toilets must be placed within buffers of the wetlands.	5
	Increased suspended solids	The disturbances of surface will promote erosion and increase suspended solids and nutrients from agricultural land into the local streams.	2	1	3	1	1	2	16	✓ Storm water must be diverted from disturbed active areas until the areas are rehabilitated; ✓ Soil disturbance must be limited to the approved site plan; ✓ Storm water diversion berms must be created around stockpiling areas; & ✓ Access roads must not be created against steep slopes.	8

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	Meeting water requirement	Water will be required for domestic purposes, cooling of operating machineries and dust suppression	2	1	2	1	1	2	14	✓ No new boreholes must be drilled for supply of water for prospecting activities; ✓ All Municipalities water use bylaws must be adhered to; ✓ Water reuse will be encouraged provided the water is suitable; ✓ The water uses will not trigger Section 21 of NWA listed water uses; & ✓ Water usage must be recorded by the site Environmental officer on a daily basis.	10
	Loss of vegetation	Clearing of vegetation will result in loss of plant species and may reduce species diversity	2	2	4	3	4	3	45	✓ Although no protected or endangered plant species were identified during the EIA Site Assessment process, the absence of such must be confirmed before clearing takes place; ✓ Vegetation clearing must be limited to active area as per the site plan; ✓ Only active areas can be cleared at a time, rehabilitated on activity completion before advancing to the next drill hole unless the drilling activities are undertaken simultaneously; ✓ Seedbank for indigenous vegetation may be established to aid during site rehabilitation; ✓ Plants extraction for purposes unrelated to prospecting is prohibited; ✓ Should any red listed plants be identified on site, tree removal permit must be applied for; ✓ No fires must be allowed on site; & ✓ The disturbed areas must rehabilitated soon after activity completion.	22
Site Establishment: Access roads creation & Drill pad preparation	Destruction of natural corridors	Natural corridors will be disturbed during site establishment and operation of the proposed activities	3	2	3	2	2	3	36	✓ Excavations must be barricaded to prevent animal fall-in; ✓ Disturbances must be limited to active areas only; ✓ Animal traps and hunting is prohibited; & ✓ The disturbed areas must be rehabilitated as soon as the work is completed at that particular area.	18
	Loss of habitats	Habitats will be lost along with vegetation and soil disturbance	2	3	3	3	3	3	42	✓ Vegetation clearing must be limited to active area; ✓ Only active areas can be cleared at a time, rehabilitated on activity completion before advancing to the next drill hole unless the drilling activities are undertaken simultaneously; ✓ Seedbank for indigenous vegetation may be established to aid during site rehabilitation; & ✓ No fires must be allowed on site.	20
	Introduction of Alien Invasive plants	Alien invasive plants will take advantage of the disturbances and spread to nearby areas	2	3	4	3	2	3	42	✓ Only indigenous plants may be used for rehabilitation; ✓ A poster of all common invasive plants for the area must be developed and employees be inducted on the subject; ✓ The invasive plants must be removed as soon as they are identified; & ✓ Invasive alien plants control and monitoring programme must be developed and approved by the ECO.	9

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	Dust generation	The clearing of vegetation and driving on gravel roads will result in dust generation	2	1	3	1	1	3	24	✓ A speed limit of 40 km/h must be implemented on all internal gravel access roads; ✓ The dust must be monitored regularly and controlled when necessary; & ✓ The dust control measures will include watering and application of biodegradable dust control agent;	12
	Site access by opportunistic criminals	The site is a quiet area with few families, criminals may use the opportunity to access the site with prospecting crew. The prospecting equipment and livestock are attractive for criminals.	1	1	3	4	4	2	26	✓ Land owners must be provided with mine schedule; ✓ No hiring must be done on site; ✓ All site personnel must have identification card; ✓ All activities must remain within the approved site.	18
Site Establishment: Access roads creation & Drill pad preparation	Disturbance and destruction of cultural and heritage resources	Disturbance of resources such as graves and cultural significance areas.	1	3	2	4	4	2	28	✓ There are no historically or heritage resources known to be on site; & ✓ Should any paleontological or cultural artefacts be discovered work at the point of discovery must stop, the location be clearly demarcated and SAHRA contacted immediately. Work at the discovery site may only be recommenced on instruction from SAHRA.	21
	Fire breakout	Fire breakout from smoking, accidents and intentional fires	2	2	2	4	4	2	28	✓ Smoking must be strictly be at designated areas only; ✓ No fires are allowed on site (cooking, warming, etc.); ✓ The emergency plan must include emergency fire preparedness; & ✓ Each prospecting crew must have firefighting equipment	6
	Land Pollution	Poor housekeeping, mixing of wastes,	2	1	2	1	1	3	21	✓ Wastes must be stored in marked waste bins for transfer to skips and then disposal sites; ✓ The prospecting site must be kept tidy at all times; ✓ The temporary waste storage bins and skips must be closed to prevent overflows, scavengers attraction and smell nuisance; & ✓ Hazardous wastes must be separated from general wastes and stored separately.	10
	Health and safety	Health and safety hazards arises from operating machineries, vehicles; encounter with dangerous wild animals such as poisonous snakes, scorpions and spiders; and stream crossings	1	2	2	3	3	3	33	✓ Each operate must have a licenses/competent certificate for every vehicle and machinery they operate; ✓ Daily inspections must be undertaken before the machineries are operated; ✓ Activity based risk environmental, health and safety assessment must be undertaken before any activity is undertaken; ✓ Daily toolbox talks must be conducted to ensure every involved person understand the risk associated with the activities and the conditions of the EA; ✓ No swimming is allowed in local streams and streams; ✓ Handling of dangerous and poisonous wild animals must be done by competent person (training certificates must be kept on site if part of the crew); ✓ Contact details of all local emergency services must be kept readily available on site; & ✓ Firefighting equipment must be provided at each drill station.	16

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Drilling	Legal liabilities	Illegal expansion of authorised activities (E.g. Exceeding the approved number of boreholes)	2	2	3	2	2	2	22	✓ The prospecting project must be limited to approved site and activities; ✓ No listed activity must be undertaken without authorisation from relevant authority (PR & EA); ✓ On issuing of the Prospecting Right the holder must engage the land owners for access agreements contracts; & ✓ No listed activity must be undertaken without authorisation from relevant authority (Tree removal permit/ WUL).	5
Drilling		Partial fulfilment of the EA (E.g. No Appointment of ECO and submission of Annual Audits)	2	2	3	3	2	3	36	✓ A copy of each operational license/permit must be kept on site; ✓ All permits/authorisations/licenses must be fully reviewed before work can be undertaken to ensure that required resources are made available; ✓ The conditions of the EA must be made known to all involved personnel on site; ✓ Activity based risk assessment must be conducted to identify all possible risks associated with the activity; ✓ All site personnel must be inducted on all legislative requirements pertaining to site activities; & ✓ Daily toolbox talks must be conducted to ensure every involved person understand the risk associated with the activities and the conditions of the EA.	5
	Job creation	The surveyors may require assistants, less than five people may be required.	1	1	2			1	4	✓ Should assistants be required, they should be sourced from the local community.	4
	Groundwater contamination	There is a potential that the drilling process may reach underground water resource and introduce contaminants to the underground	2	2	4	2	1	2	22	✓ The drill stations must be kept neat at all times; ✓ The drill rig must be kept in good conditions to prevent hydrocarbons' leakages; ✓ Storm water must be diverted away from the drill pads; ✓ The underground water must be monitored thorough existing boreholes before, during and after prospecting activities, recording water levels and quality; ✓ Should ground water be encountered during drilling, DWS must be informed and borehole report be submitted; ✓ The borehole must be plugged immediately after activities at that particular borehole are completed; & ✓ The borehole capping/ plugging is provided in this report.	12

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Drilling	Surface water contamination	Flow from contaminated surfaces to the local streams	2	1	3	2	1	2	18	✓ Storm water must be diverted away from active areas to avoid contamination; ✓ Contaminated water must be contained and not released unless treated; ✓ All contaminated surfaces must be cleaned as soon as they are noticed; ✓ Temporary chemical toilets must be provided, placed outside 1:100 floodline. The construction of "long drop" toilets is prohibited ✓ Under no circumstances may open areas or the surrounding bush be used for sanitation; ✓ Stream crossing must be through existing tracks, and no new crossings must be created; ✓ Chemicals and hydrocarbons must be stored on elevated bunded walls and storm water must be diverted away from this area; & ✓ Waste storage bins and kips must be covered to prevent rain fill-up and overflows.	10
	Increased suspended solids	The disturbances of surface will promote erosion and increase suspended solids and nutrients from agricultural land into the local streams.	2	1	3	1	1	2	16	✓ Storm water must be diverted from disturbed active areas until the areas are rehabilitated; ✓ Soil disturbance must be limited to the approved site plan; ✓ Storm water diversion berms must be created around stockpiling areas; & ✓ Access roads must not be created against steep slopes;	8
	Noise nuisance	The drill rig generate excessive noise during operations	1	2	3	1	1	3	24	✓ The prospecting activities must be restricted to day time (07:00 - 18:00); ✓ The affected parties must be provided with prospecting schedule; and ✓ Land owners and affected parties must be notified 3 days prior should any activity with extreme noise be conducted.	20
	Soil contamination	Contamination from hydrocarbons leakages and wastes disposal	1	2	3	2	2	3	30	✓ No parking and driving will be allowed outside the approved area as per the site layout plan; ✓ All site vehicles and equipment must be properly maintained regularly and daily inspection sheet be kept with each truck; ✓ A drip tray must be placed under stationery machineries; ✓ Leakages and Spillages must be attended to as soon as they are noticed and the contaminated soil must be placed in designated plastic bags/bins to be cleaned or disposed of at registered appropriate waste site ✓ Waste must be categorized and separated, and stored in separate waste bins; ✓ Major spillages must be reported to the DMR and DWS.	12
	Disturbance and/or destruction of cultural and heritage resources	The drill process has the potential to disturb buried heritage and cultural artefacts unknown at the time of project planning.	3	3	2	4	4	3	48	✓ There are no historically or heritage resources known to be on site; & ✓ Should any paleontological or cultural artefacts be discovered work at the point of discovery must stop, the location be clearly demarcated and SAHRA contacted immediately. Work at the discovery site may only be recommenced on instruction from SAHRA.	21

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Drilling	Health and safety hazards	Health and safety hazards arises from surface excavations, operating machineries, vehicles, encounter with dangerous wild animals such as poisonous snakes, scorpions and spiders	2	3	3	4	4	2	32	✓ The surface opening must be barricaded and marked with visible tapes; ✓ The surface openings must be backfilled as soon as they are out of use. ✓ Each operate must have a licenses/competent certificate for every vehicle and machinery they operate; ✓ Daily inspections must be undertaken before the machineries are operated; ✓ Activity based risk environmental, health and safety assessment must be undertaken before any activity is undertaken; ✓ Daily toolbox talks must be conducted to ensure every involved person understand the risk associated with the activities and the conditions of the EA; ✓ No swimming is allowed in local streams and streams; ✓ Handling of dangerous and poisonous wild animals must be done by competent person (training certificates must be kept on site if part of the crew); ✓ Contact details of all local emergency services must be kept readily available on site; ✓ Firefighting equipment must be provided at each drill station; & ✓ The site personnel must be provided with PPE.	12
	Dust generation	The movement of vehicles and operation of drilling equipment will generate dust.	2	1	3	1	1	4	32	✓ A speed limit of 40 km/h must be implemented on all internal gravel access roads; ✓ The dust must be monitored regularly and controlled when necessary; & ✓ The dust control measures will include watering and application of biodegradable dust control agent;	14
	Release of sulphide gas	Kimberlite releases the smelly sulphide gases, the smelly gas will be released through the drill holes.	2	1	4	1	1	4	36	✓ The affected parties must be fully informed about this impact in advance; & ✓ The drill holes must be plugged overnight and permanently plugged as soon as the work is done at that particular drill hole	16
	Land Pollution	Poor housekeeping and sanitation	2	1	2	1	1	3	21	✓ Wastes must be stored in marked waste bins for transfer to skips and then disposal sites; ✓ The prospecting site must be kept tidy at all times; & ✓ The temporary waste storage bins and skips must be closed to prevent overflows, scavengers' attraction and smell nuisance.	8
Decommissioning & Rehabilitation	Soil Contamination	Soil contamination will mainly be mainly from spillages and leakages of hydrocarbons	2	2	2	2	2	3	30	✓ It must be ensured that contamination is prevented during rehabilitation; ✓ All site vehicles and equipment must be properly maintained regularly and daily inspection sheet be kept with each truck; ✓ A drip tray must be placed under stationery machineries; ✓ Leakages and Spillages must be attended to as soon as they are noticed and the contaminated soil must be placed in designated plastic bags/bins to be cleaned or disposed of at registered appropriate waste site ✓ Waste must be categorized and separated, and stored in separate waste bins; ✓ There must be no storage of fuel on site; ✓ Servicing of vehicles and machinery must be done off site; & ✓ Major spillages must be reported to the DMRE and DWS.	10

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			E	**I**	**D**	**R**	**L**	**P**			
	Land Pollution	Poor housekeeping and sanitation	1	1	3	1	1	3	21	✓ Wastes must be stored in marked waste bins for transfer to skips and then disposal sites; ✓ The prospecting site must be kept tidy at all times; ✓ The temporary waste storage bins and skips must be closed to prevent overflows, scavengers attraction and smell nuisance; & ✓ Temporary chemical toilets must be provided by a company approved by the Engineer. These toilets must be made available for all site staff. The construction of "long drop" toilets is forbidden; Under no circumstances may open areas or the surrounding bush be used as a toilet facility;	6
	Spread of alien invasive plants	The ecological disturbance will promote invasion by alien invasive plants	2	2	4	2	2	4	48	✓ Only indigenous plants must be used for rehabilitation; & ✓ The alien plants must be monitored post project closure for 2 years.	12
	Blockage of the subsurface flow	Borehole rehabilitation may block subsurface flow if hard materials are used to backfill boreholes.	2	2	4	2	1	2	22	✓ The borehole must be backfilled with clean (washed), uncontaminated, or excavated materials so that the permeability of the selected materials are similar to the properties of the geological strata against which they are placed; ✓ In order to prevent potentially contaminated surface run-off or other liquids entering the backfilled borehole, it is necessary to complete the backfilling of all boreholes with an impermeable plug and cap. The top two metres (or two meters below plough depth in agricultural areas) should be filled with cement, concrete or bentonite grout; & ✓ An approved Method Statement must be used for capping and post management of drill holes	9

11.2 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.
No specialist studies were undertaken and none were requested.			

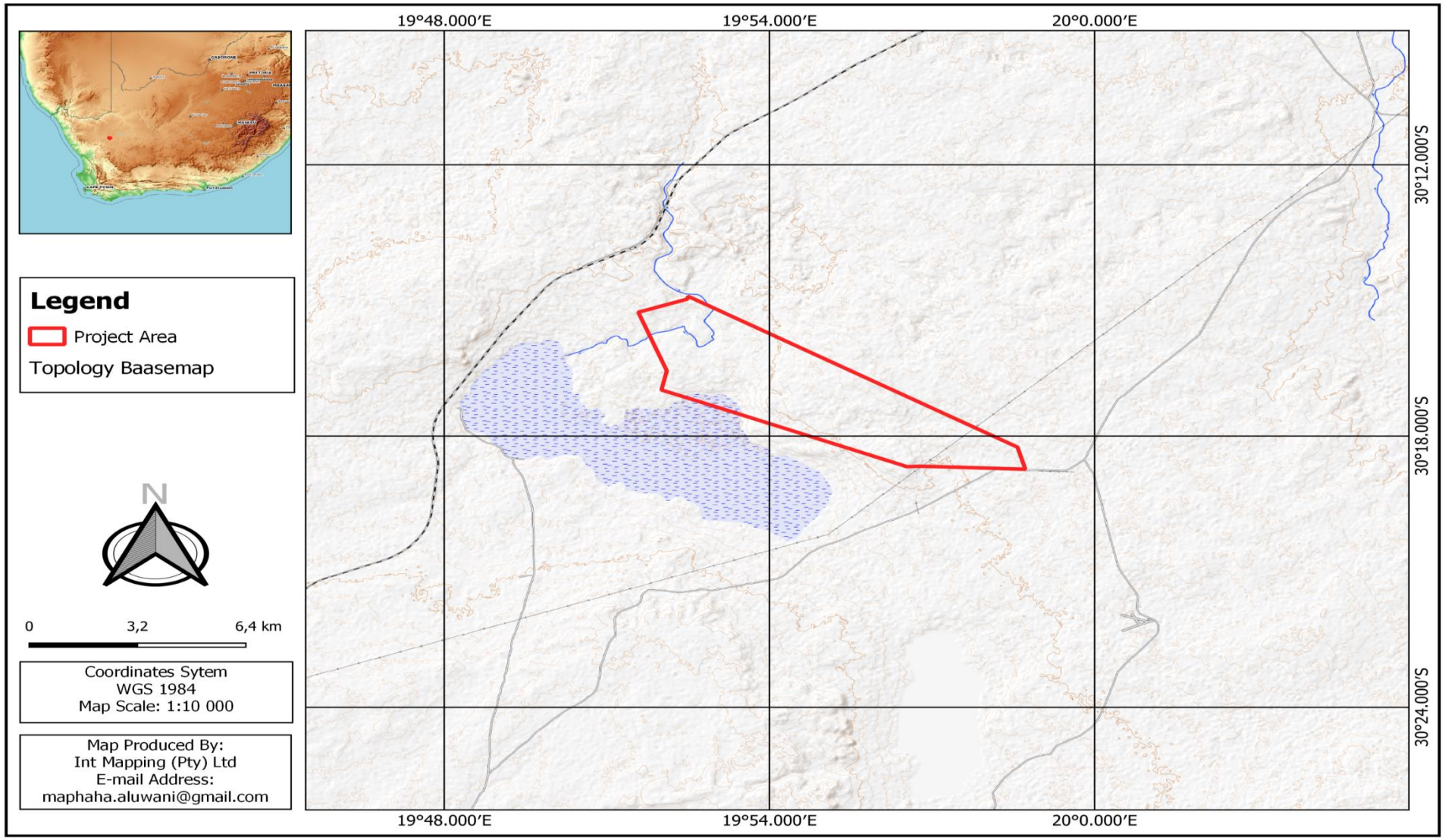
11.3 Environmental impact statement

- ✓ The site lies within the Nama Karoo Biome (Hoffman 1996), and more specifically, Northern Upper Karoo Vegetation;
- ✓ There are sections of CBA within the proposed, that can be easily avoided during prospecting;
- ✓ There are no protected areas within the proposed site and no red listed species were identified;
- ✓ According to the Mining and Biodiversity Guidelines (MBG) of 2013, there are areas within the proposed site considered moderate and highly Sensitive to Mining and related activities. These areas are along the streams and wetlands;
- ✓ The sensitive ecological areas in terms of the CBA and MBG were found to be highly transformed through agricultural practices;
- ✓ Several water ponds and artificial dams identified within the proposed site;
- ✓ There are no known cultural and heritage significance sites within the proposed site, however their presence cannot be completely ruled out;
- ✓ The main land use on site is agriculture;
- ✓ The proposed prospecting activities are of short duration and can be completed in a period of a year to a maximum of 5 years;
- ✓ The prospecting activities are non-complex and mostly mechanised requiring skilled professionals, as such less than four people will be hired to provide support to the project team, the proposed project will not have significant impact on the local socioeconomic conditions;
- ✓ The driving and drilling activities are expected to generate noise nuisance affecting the few farm residents and fauna. The Noise nuisance cannot be prevented and will only be managed through limiting the activities to day time;
- ✓ Driving gravel roads and drilling activities will generate dust pollution which can be managed by controlling limiting vehicle speed on gravel road and applying dust suppression methods (watering and/or biodegradable dust suppression agent);

- ✓ Accidents may happen between site vehicles and wild life resulting in loss of life and/or mobility of the fauna, the noise generated will also create stress for the local fauna;
- ✓ The proposed activities will have minimal impact on water resource as they will be located on dry lands and water usage is expected to be low at a rate of 6 litres per 40m drill hole;
- ✓ The agricultural activities will be temporarily affected where drill stations and access roads will be established, however this will be done immediately after harvesting season to reduce the significance of the impact and the affected land users will be consulted throughout;
- ✓ Prospecting activities are not labour intensive and will therefore not have any significant impact on the socioeconomic status of the local community;

Prospecting activities will affect relatively small area in relation to the application area, approximately less than 3 ha of the application area will be disturbed. The disturbances will be of short duration as the project will not exceed 5 years. The sensitive ecological areas will be avoided and drill stations and access roads will be located on less sensitive areas. The wet areas (Wetlands and streams) are considered a no-go area and no activity will take place within their 100 metres buffer. Overall the proposed project will not have major significant impacts should the EMPr be implemented.

11.4 Final Site Map



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

11.5.1 Positive Impacts

Prospecting activities are precursor activities to mining, they evaluate the possibilities of mine establishment. There are very limited returns from prospecting activities. The returns from prospecting activities can only be realised after a successful prospecting project. It has not been proven that kimberlite ore body are presence on site and if presence whether they can be sustainable be mined. The very limited benefits from the proposed activities are:

kimberlite ore body quantification: The presence of kimberlite ore body on site will be verified and thereafter the economic value of the seams will be determined which could ultimately lead to the establishment of a mine. The mine itself have significant socioeconomic value. In the event that a viable reserve is confirmed, there would be high degree of positive impacts such as employment of large number of local residents, socio-economic balance of the local community and on the National and Provincial scale mining contribute highly to the Gross Domestic Product (GDP).

Contribution to South African geological data: The practical geological results obtained through this prospecting will be submitted to the South African Council of Geoscience for comprehensive mapping of South Africa based on proven data.

SMME and Street Vendor Support: The prospecting team will require basic services from the local community which would mainly be provided by the Small businesses and street vendors.

11.5.2 Negative Impacts

Commencement of listed activities in terms of NEMA, NWA and other Legislations without authorisation: A potential always exist that unauthorised undertaking of listed activities may take place on site in the form of project scope expansion and disregard of Authorisations' conditions. This could for example be increasing the number of authorised boreholes and impacting watercourses without water use license;

Loss of agricultural land and alternative land use conflicts: The site is not zoned for mining/industrial activities. This will create a parallel demand for land as successful prospecting activities will results in the establishment of a mine. There are active agricultural practices (Crop and livestock) on site that will be directly affected by the proposed prospecting activities. Establishment of access roads and drill stations in agricultural areas will result in temporary loss of agricultural land for the duration of prospecting;

Loss, contamination and compaction of fertile soil: Access roads and drill station establishment will result in removal/compaction of topsoil resulting in reduced fertility. The driving and parking of vehicles also create potential for hydrocarbon contaminations;

Soil erosion: Establishment of access roads and drill station disturbs soil cohesion increasing the potential for soil erosion;

Loss of biodiversity, natural corridors and habitats: There are Critical Biodiversity Areas (CBAs) within the proposed site and a potential exists for disturbances of this areas, with the loss of vegetation, habitats are also lost;

Loss of species of concern: The EIA process did not identify any red listed species within the proposed site. It should be noted that the proposed site is within the vulnerable grassland, and there are sections of CBAs and areas with high sensitivity to mining in terms of the Mining and Biodiversity Guidelines of 2013. The presence of species of concern cannot be ruled out;

Introduction of alien invasive plants: Invasive plants flourish where there is disturbances and ecological imbalances. The clearing of vegetation to establish drill stations and access roads has the potential to introduce and facilitate spread of invasive alien plants;

Degradation of Wetlands, streams and other water sources: There are numerous wetlands and artificial dams within the proposed site, there is high potential for impacting on the wetlands when crossing to access drilling points, should management measures be ignored;

Contamination of underground water resource: The drill activity has the potential to contaminate the underground water resource, introducing contaminates through the drill hole;

Contamination of surface water: Flow of stormwater from contaminated areas into the local watercourses;

Generation of waste: The prospecting activities will generate both the general and hazardous wastes. The waste will be managed using the "triple R" principle, Reduce, Reuse and Recycle;

Dust Generation: The vehicles and machinery movement on gravel roads will generate dust. The dust generation potential is considered low, the housing units on site to be affected by the dust are sparsely distributed hence the dust will have lower significance;

Fire breakout: There are potentials for fire breakout from the activities sites, smoking is a significant contributor to fire breakouts. A fire breakout will have huge implications in the area burning the CBAs and crops;

Health and safety risks: The operating machinery, equipment and vehicles, and excavations and undertaking activities in the wild create health and safety risks to the prospecting crew and the local community;

Criminal activities: Crime in South Africa is a social challenge faced by almost everyone, the presence of prospecting machinery and equipment on site will attract criminals who would seek to steal and sell such equipment;

Poor housekeeping: The site activities will generate wastes and proper waste management and site cleaning will be required to prevent the "dirty" site visuals;

Disturbance and/or destruction of cultural and heritage resources: The EIA Process did not identify any cultural and heritage significance sites and resources, however the possibility of unearthing heritage and cultural resources is not ruled out; and

Noise Generation: The site is largely natural and there are also residential units within the proposed properties, the operation of drilling machinery will create noise that will easily reach the local residents.

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

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

Avoid at Source: Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).

Abate on Site: add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).

Abate at Receptor: if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).

Repair or Remedy: some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.

Compensate in Kind; Compensate Through Other Means: where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

11.6.1 Impact management objectives:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts
- Provide sufficient information and guidance to plan the prospecting activities in a manner that would reduce impacts (both social and Environmental) as far as practicable.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.

- ❖ Provide a management plan that is effective and practical for implementation

11.6.2 Impact management Outcome

- ✓ Risk assessment must be conducted before any site activity is undertaken and management measures are available and understood by everyone involved;
- ✓ Site access agreements between the affected parties and Red dust trading (Pty) Ltd must be signed before any work is conducted;
- ✓ No invasive activity must be undertaken within 100 metres buffer of surface water (Streams and water bodies);
- ✓ The activities are restricted to approved area;
- ✓ Soil erosion must be prevented and monitored;
- ✓ Vegetation clearance must be restricted to active areas;
- ✓ Invasion by alien invasive plants must controlled and monitored;
- ✓ Wastes must be disposed at registered facilities and disposal certificates be kept on site;
- ✓ The site activities must be restricted to day time;
- ✓ No new stream crossing must be created and water contamination must be prevented

11.7 Aspects for inclusion as conditions of Authorisation

- ✓ EA final site layout map detailing the drilling locations should be submitted to the relevant landowners to prior to the commencement of these activities;
- ✓ The land owners must be notified about the project scheduling;
- ✓ Environmental Control Officer appointment,
- ✓ Storm water management;
- ✓ Provision of PPE;
- ✓ Total number of boreholes to be drilled;
- ✓ Opening and maintenance of complaints register;

- ✓ Access control into the prospecting property;
- ✓ Activity based environmental risk assessment;
- ✓ Daily toolbox talks;
- ✓ Emergency preparedness plan
- ✓ Impact monitoring programme;
- ✓ Project environmental auditing.
- ✓ Closure certificate

11.8 Description of any assumptions, uncertainties and gaps in knowledge

- ✓ The confidence for presence of ore body is based on desktop studies;
- ✓ The entire site was not traversed for protected species identification, the identification was aided by desktop studies and as such care should be exercised when removing vegetation;
- ✓ The absence of Heritage significance areas and artefacts was based on desktop studies using pre-existing literature and GIS Software Programs.

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

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

- ✓ Based on the desktop studies the site lies within the Beaufort and Ecca Groups of the Karoo Supergroup and therefore kimberlite ore body deposits are more likely; prospecting activities must be undertaken to confirm the ore body;
- ✓ The disturbance on water resources will be very minimal as prospecting activities will be undertaken on dry lands;
- ✓ The disturbance on biodiversity can be full reversed once the prospecting activities ceases;
- ✓ The site agricultural activities can be undertaken simultaneously with the proposed prospecting activities (Can also be scheduled after harvesting

season) and the disturbance will only be limited to active area which will be less than 3 ha.

- ✓ The available literature in the absence of proven data (through prospecting) will always attract mining interest companies, should this prospecting be approved, the evidence based geological data will become available in support or against mining establishment in the area; and
- ✓ The acquired geological knowledge will contribute significantly to the academic world towards mapping of South African geology based on drilling results.

11.10 Conditions that must be included in the authorisation

- ❖ The applicant (Red dust trading) must engage with the affected parties upon issuing of the Prospecting Right, the two parties must develop a legally binding resolute and exhaustive access agreement contracts which will detail the following (inter alia):
  - o The duration of the prospecting crew on site and operation times;
  - o The number of personnel to access the site at any given time;
  - o Compensation for losses resulting from prospecting activities (e.g. loss of crops and arable land);
  - o Activity scheduling in respect to site activities such as game hunting and schooling; and
  - o Any matter deemed necessary during the access consultation process.
- ❖ No activities can take place within the 100 metre buffers of any water source;
- ❖ All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site; the site temporary storage skips and beans must be closed at all times to prevent scavenging and smell nuisance;
- ❖ An annual performance must be undertaken throughout the duration of the prospecting activities;

- The financial provision must be reviewed annually to determine if it's still appropriate to site activities;
- Ground water monitoring must be conducted using existing boreholes on site;
- A complaints register must be kept on site, recording each complaint and how it was addressed;
- The EA does not negate the responsibility of the holder to comply with any other statutory requirements that may be applicable to undertaking of the prospecting activities;
- The EA does not grant authorisation to National Water Act Section 21, any water listed water use in terms of this Act must be applied for with the Department of Water Affairs and Sanitation (DWS);
- The EA will only be effective in the event that the corresponding prospecting right is issued in terms of the MPRDA and none of the listed activities commence without the corresponding prospecting right;
- The impact management and mitigation measures as described in this report are mandatory.
- A person is guilty if that person fails to comply or contravene a condition of the EA;
- A copy of the EA must be kept on site where the activity will be undertaken;
- The conditions of the EA and the EMPr must be made known to all personnel to be directly involved in the prospecting activities;
- The applicant must provide site personnel with personal protective equipment (PPE);
- The applicant must appoint an independent Environmental Control Officer who will also conduct annual environmental audits for submission to the department;
- Activity based environmental risks must be conducted before any site activity is undertaken;

- A monitoring programme must be budget foe and implemented for the duration of the impact as directed by the EMPr;
- Storm water must be effectively managed to prevent contamination and erosion;
- A closure certificate must be applied for in terms of the MPRDA within 180 days of the occurrence of lapsing, cancellation, cessation, relinquishment and completion of prospecting activities; and
- Only indigenous plants can be used for rehabilitation.

11.11 Period for which the Environmental Authorisation is required

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

12 Undertaking

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

13 Financial Provision

The site rehabilitation processes will require **R 50 257 .28**

13.1 Explain how the aforesaid amount was derived.

The aforesaid amount was derived using the Department of Mineral Resource and Energy guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine.

13.2 Confirm that this amount can be provided for from operating expenditure

It is hereby undertaken that the amount of **R 50 257 .28** in the form of a bank guarantee for rehabilitation purposes as required in terms of section 24P (1) of the NEMA, will be provided to the DMR upon granting of the requested prospecting right.

14 Specific Information required by the competent Authority

14.1 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:-

14.1.1 Impact on the socio-economic conditions of any directly affected person.

The directly impacted person are the land owners and/or occupiers within the proposed site. These will include the sparse households on site and agricultural area. All the affected parties were identified and consulted before the report is finalised.

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

The site has been disturbed previously by other activities i.e. agriculture and no heritage significance objects were found on site during the undertaking of such activities. It is presumed that there are no artefacts or sites of heritage importance on site.

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

The requirements of the Act in terms of section 24(4) (b) (i) – (vii) as guided by section 24(4A) are provided below with sections in which they have been addressed:

(i) Investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity:

- ✓ ***Part A section 9:*** *impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts;*
- ✓ ***Part A section 9.2:*** *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;*
- ✓ ***Part A section 11:*** *Assessment of each identified potentially significant impact and risk****;***

- ✓ ***Part B section 4:*** *Impacts to be mitigated in their respective phases**.***

(ii) Investigation of mitigation measures to keep adverse consequences or impacts to a minimum:

- ✓ **Part A section 11**: Assessment of each identified potentially significant impact and risk;
- ✓ **Part A section11.5**: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;
- ✓ **Part B section 4**: Impacts to be mitigated in their respective phases.

(iii) Investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act;

- ✓ **Part A section 8.7**: *Heritage Resources.*

(iv) Reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information:

- ✓ **Part A section 11.7:** Description of any assumptions, uncertainties and gaps in knowledge

(v) Investigation and formulation of arrangements for the monitoring and management of consequences for or impacts on the environment, and the assessment of the effectiveness of such arrangements after their implementation;

- ✓ ***Part B section 5.2:*** *Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including, Monitoring of Impact Management Actions, Monitoring and reporting frequency, Responsible persons, Time period for implementing impact management actions, Mechanism for monitoring compliance**.***

(vi) Consideration of environmental attributes identified in the compilation of information and maps contemplated in subsection (3);

- ✓ **Part A section 8:** *The Environmental attributes associated with the alternatives.*

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1 Details of the EAP

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

2 Description of the Aspects of the Activity

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

2.1 Composite Map

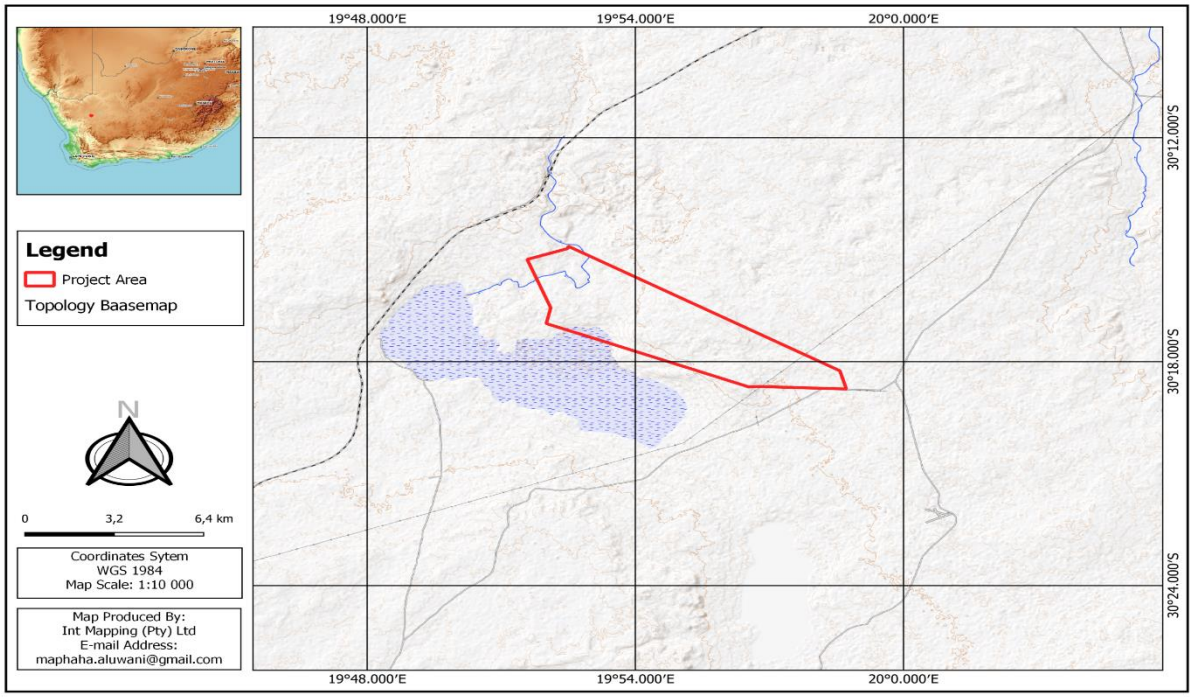


Figure 2—1: Composite Map

3 Description of Impact management objectives including management statements

3.1 Determination of closure objectives

The closure objectives thus are as follows:

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

3.2 Volumes and rate of water use required for the operation.

The operational machinery and equipment is expected to use less than 60 litres of water per day for cooling and dust suppression. The water usage will not trigger the National Water Act (36;1998) listed water uses.

3.2.1 Has a water use licence has been applied for?

A water use licence is not required for this project but should any NWA water uses be triggered a water use license will be applied for.

4 Impacts to be mitigated in their respective phases, the Impact Management Outcomes and Management Actions

Measures to rehabilitate the environment affected by the undertaking of any listed activity and the description of impact management outcomes, identifying the standard of impact management required for the aspects, and description of impact management actions, identifying the manner in which the impact management objectives and outcomes will be achieved.

Table 4-1: Impacts Assessment & Mitigation

IMPACT ASSESSMENT AND MANAGEMENT								
Potential Impact	**Phase**	**Disturbance Scale**	**Aspects Affected**	**Mitigation Type**	**Mitigation Measures**	**Standard to be Achieved**	**Compliance with Standards**	**Time Period for Implementation**
Desktop Study								
No Impact	Planning	None	None	None	None	Protect sensitive site	Locate sensitive and protected areas such as rivers)	N/A
Creation of access roads (Access to drill points)								
Creation of access roads within streams/rivers and alteration of river beds	Construction	1 ha	Water Supply	Control through planning and design; Control through avoidance	✓ Stream crossings must be through existing tracks; ✓ The altered river beds must be rehabilitated and alien invasive plants be monitored and all foreign materials be removed from the stream courses.	Protect water resources;	Access roads created in dry lands;	Through the project
Introduction of Alien invasive species	Construction	1 ha	Biodiversity	Control through rehabilitation; Control through monitoring;	✓ All possible alien invasive plants must be identified and be communicated with site management team for control; ✓ Alien invasive plants must be removed as soon as they are identified; ✓ A post closure monitoring programme must be established.	Control listed invasive plants	Alien invasive plants will be identified, removed and regrowth monitored.	Through the project
Loss of agricultural land	Construction	1 ha	Socioeconomic	Control through consultation with property owners.	The disturbance area must be limited to drill pads and access roads only; All affected property owners must be fully consulted and access agreement be established and signed by both parties.	Preserve economic agricultural area	Land owners will be consulted and compensated for loss of developed agricultural land.	Through the project
Establishment and preparation of drill pads/area								
Unauthorised access into private property	Construction	3 255,7 ha	Private Property	Control through consultation with property owners.	✓ Access agreements must be signed by the land owners; and ✓ All site personnel must have identification cards.	Protection of private properties.	Consult all land owners	Before and after accessing site.
Clearing of vegetation to establish survey stations and access roads.	Construction Phase	500 m^2	✓ Biodiversity; ✓ Soil; ✓ Humans; and ✓ Water.	✓ Remedy through rehabilitation; ✓ Conduct site walks; ✓ Limiting disturbance areas; and ✓ Control through	✓ Site walk must be done before vegetation clearing is undertaken and should there be protected species, they must be marked and must not be removed without permit; ✓ Clearing of vegetation must be limited to drill	Biodiversity conservation	✓ Species will be identified before clearing; ✓ Disturbance will be limited	Throughput the Prospecting Period

IMPACT ASSESSMENT AND MANAGEMENT								
Potential Impact	**Phase**	**Disturbance Scale**	**Aspects Affected**	**Mitigation Type**	**Mitigation Measures**	**Standard to be Achieved**	**Compliance with Standards**	**Time Period for Implementation**
				implementing activity methods statement.	areas only; ✓ New access roads must be created in consultation with the land owners and must not disturb drainage lines; ✓ Multiple tracks must not be created to access a single point; ✓ No fires are allowed on site; and ✓ All disturbed areas must be rehabilitated as soon as they are out of use; ✓ The site must be monitored for invasion by invasive alien plants and they must be removed as soon as they are identified.			
Destruction of habitats when clearing vegetation	Construction	1 ha	Fauna	✓ Control through search and rescue; and ✓ Limiting disturbance area.	✓ Before vegetation is cleared in each drill station, search and rescue must be ensured that there is no fauna; ✓ Where fauna are present they must be moved to undisturbed adjacent areas;	Biodiversity conservation	Search and rescue	Throughput the Prospecting Period
Contamination and erosion of topsoil and stockpiles before, during removal and stockpiling	Construction	500 m^2	Soil	✓ Control through storm water diversion beams; ✓ Control through implementing activity methods statement;	✓ Contamination of soil from any leaks, spillages of hydrocarbons and any other hazardous substances must be cleaned as soon as they occur; ✓ Topsoil stockpiles must be located away from any chemical substance storage; ✓ Site vehicles, machinery and equipment must always be in good working conditions and daily inspections be conducted before they are used and a checklist be kept onsite; ✓ No vehicles and equipment maintenance must be done on site and faulty equipment must be taken off site. ✓ Topsoil stockpiles must be located away from drainage lines to prevent erosion;	Rehabilitation standard	Topsoil will be preserved and protected from contamination and erosion for later use during rehabilitation	Throughput the Prospecting Period
Core drilling								
Disturbance of local sewage and water pipes connections	Construction	500m^2	Services supply	✓ Control through consultation with local municipality;	✓ Obtain a layout plan for local connections to determine if there are any in the proposed site; and	Preservation of private properties	Local connections layout plan will be reviewed to determine best possible area for drilling	Throughput the Prospecting Period

IMPACT ASSESSMENT AND MANAGEMENT								
Potential Impact	**Phase**	**Disturbance Scale**	**Aspects Affected**	**Mitigation Type**	**Mitigation Measures**	**Standard to be Achieved**	**Compliance with Standards**	**Time Period for Implementation**
				✓ Control through implementing activity methods statement.	✓ Should any pipe damage occur, the relevant authority must be notified immediately.			
Water contamination emanating from site soil contaminations, and drainage lines crossings.	Construction	150 m^2	Water; and soil	✓ Control through environmental awareness training; ✓ Control through implementing activity methods statement; ✓ Control through daily inspection of site machinery and equipment;	✓ Littering must be controlled on site; ✓ Soil contamination from hazardous substances must be attended to as soon as they occur; ✓ All major water contamination must be reported to the Department of Water Affairs; ✓ Site vehicles, machinery and equipment must always be in good working conditions and daily inspections be conducted before they are used and a checklist be kept onsite; ✓ No vehicles and equipment maintenance must be done on site and faulty equipment must be taken off site.	Protection of water sources and water quality	✓ Contaminations will be prevented and when they occur they will be reported to DWS; ✓ Daily inspections will be conducted.	Throughput the Prospecting Period
Disturbance, contamination of aquifers' in both quality and quantity	Construction	2 ha	Water	✓ Control through implementing activity methods statement; ✓ Control through daily inspection of site machinery	✓ Before drilling is undertaken ground water detection must be done to avoid water bearing lithologies; and ✓ Drilling holes must be capped overnight to prevent dirt and any impurities to get underground; ✓ The drilling machineries must be kept in good working conditions to prevent leakages of hydrocarbons;	Protection of water sources and water quality	Presence of aquifers will be tested before drilling.	Before drilling at each drilling station.
Unearthing of heritage significance artefacts	Construction	500 m^2	Heritage Artefacts	Conduct site walks	✓ The site walk conducted during the EIA and the history of site land uses ruled out the possibility of heritage artefacts on site; ✓ However, should any heritage significance artefacts be unearthed work at that area must be stopped immediately and the Police as well as SAHRAS be notified immediately.	Preservation of heritage sites and objects	Site assessment was done	The site team must remain alert throughout the prospecting period
Generation of dust	Construction	1 ha	Air Quality	Control through dust suppression	✓ Should the activities create significant, the working areas must be watered to prevent generation of dust	✓ Air Quality standards; ✓ Health and Safety	Dust suppression	During prospecting activities
Generation of noise as the site is located at less than	Construction	1 Ha	Noise	✓ Maintain through servicing of site	✓ All site machineries must be kept in good working conditions;	Noise standards	Consult affected parties	During prospecting

IMPACT ASSESSMENT AND MANAGEMENT								
Potential Impact	**Phase**	**Disturbance Scale**	**Aspects Affected**	**Mitigation Type**	**Mitigation Measures**	**Standard to be Achieved**	**Compliance with Standards**	**Time Period for Implementation**
6 km from the town.				equipment; and ✓ Consultation with affected parties.	✓ Faulty machineries must be taken off site for service			activities
Health and safety risks arising from machinery operations and human errors.	Construction	50 m^2	Health and safety	Control through implementation of activity based methods statements;	✓ Each machine operator must have a certificate of competence for that specific machinery; ✓ All site machineries must be kept in good working conditions; ✓ All excavations must be clearly marked with a reflective tape and barricaded overnight;	Health and safety standards	Machinery kept in good working conditions;	Throughput the Prospecting Period
Site Rehabilitation								
Soil Erosion	Post Closure	500 m^2	Soil; Water; and Biodiversity	Control through storm water control beams;	✓ Where necessary storm water control beams must be used to control erosion along rehabilitated access roads; ✓ Rehabilitation materials including topsoil must be free of contaminates such as hydrocarbons; ✓ Topsoil must not be compacted but care should be given to prevent erosion;	Erosion prevention	Control erosion	During and after prospecting period
Invasion by Alien invasive plants	Post Closure	1 ha	Biodiversity	Control through monitoring and removal.	✓ Invasive alien plants must be monitored during and after prospecting activities; ✓ All invasive plants must be removed once identified and a follow-up be developed.	Preserving biodiversity	Invasive species will be monitored and cleared.	During and after prospecting period
Other Impacts								
Failing to meet local community expectations especially job creation	Construction	-	Social	Control through consultation	✓ Consultations must be done with local leaders and the number of people to be employed and how they will be employed be communicated; ✓ No unauthorised personnel must be allowed into prospecting site	Engage local community	Community will be engaged through its elected leaders	Before undertaking prospecting activities
Property theft for both the land owners/users and applicant	Planning and Construction	-	Social and Security	Implement a working security system to control site access and personnel identification.	✓ All authorised personnel must have identification card; ✓ No unauthorised personnel must be allowed on site.	Safety and Security	Ensure safety of site personnel	During prospecting activities.

5 Financial Provision

5.1 Determination of the amount of Financial Provision

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

The baseline environment as described in Section 8 of Part A of this report is mainly an agricultural area with sections of Critical Biodiversity Areas and Wetlands. The closure objectives will ensure that the disturbed natural environment (which was established to be sensitive) is restored. The objectives will also ensure that the soil erosion is prevented and soil fertility in disturbed agricultural areas is restored. The closure objectives are as follows:

a) The facilitation of the re-establishment of agricultural activities and soil capability in disturbed areas;

b) Removal of all infrastructure and material introduced to site;

c) Removal of all wastes and their disposal;

d) Promotion of the rapid re-establishment of the natural vegetation and the restoration of the site ecology. The disturbed areas shall be rehabilitated to ensure that:

- The biodiversity habitat restored after prospecting;
- Eliminate any safety risk associated with drill holes and sumps through adequate drill hole plugging and backfilling;
- Environment and resources are not subjected to physical and chemical deterioration;
- The site is reversed to almost its original state;
- The after-use of the site is beneficial and sustainable in a long term;

e) Removal, control and monitoring of alien invasive plants; and

f) Monitoring of rehabilitation progress

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

This Basic Assessment Report and Environmental Management Programme was made available to each registered stakeholder for review and comment for a period of 30 days. This included the closure objectives as outlined in this report.

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

Due to the nature of the activities, the impacts will be very limited and of short duration. The management plan is provided in such a manner as to ensure concurrent rehabilitation. The drill stations areas and access roads will be the main area experiencing impacts. In this event the activities will be temporary in nature, and a detailed management plan has been provided to address potential impacts associated with these activities**.** The main only rehabilitation activities will be required is borehole capping, rehabilitation of access roads and drill stations, and restoration of soil fertility in disturbed agricultural areas:

5.1.3.1 Borehole capping

Drill holes must be permanently capped as soon as is prospecting activities are completed at that particular borehole. Figure below provides the prepared procedure for the secure plugging of exploration drill holes.

It will be crucial to ensure that the boreholes are free from all obstructions that may interfere with the sealing of the hole. All foreign materials must be removed, together with any other infrastructure (dip tubes etc). The condition of any borehole casing and grout must be examined to ascertain whether its retention in the hole would prejudice any of the objectives of the abandonment.

The ground will be restored as closely as possible to its pre-drilled condition. The borehole will be backfilled with clean (washed), uncontaminated, or excavated materials so that the permeability of the selected materials are similar to the properties of the geological strata against which they are placed. The backfilled borehole will then mimic the surrounding natural strata and groundwater flow and quality will be protected.

The materials used to backfill must be clean, inert and non-polluting. Suitable materials include pea gravel, sand, shingle, concrete, bentonite, cement grout and uncontaminated rock.

N.B. UNDER NO CIRCUMSTANCES SHOULD MATERIALS WHICH ARE LIKELY TO CAUSE POLLUTION BE USED AS INFILL.

For artesian boreholes, the rehabilitation process will aim to confine the groundwater to the aquifer from which it came – in order to prevent loss of confining pressure and the loss of water resources to the surface or other formations. The first step is to control the artesian flow through

- Extending the casing above ground level beyond the elevation to which water will rise in the borehole (the potentiometric surface).
- Introducing a pre-cast plug at an appropriate level within the hole.

In order to prevent potentially contaminated surface run-off or other liquids entering the backfilled borehole, it is necessary to complete the backfilling of all boreholes with an impermeable plug and cap. The top two metres (or two meters below plough depth in agricultural areas) should be filled with cement, concrete or bentonite grout. A concrete cap of suitable strength, with a diameter at least one metre greater than the width of the backfilled borehole (see Fig. 1), should then be installed.

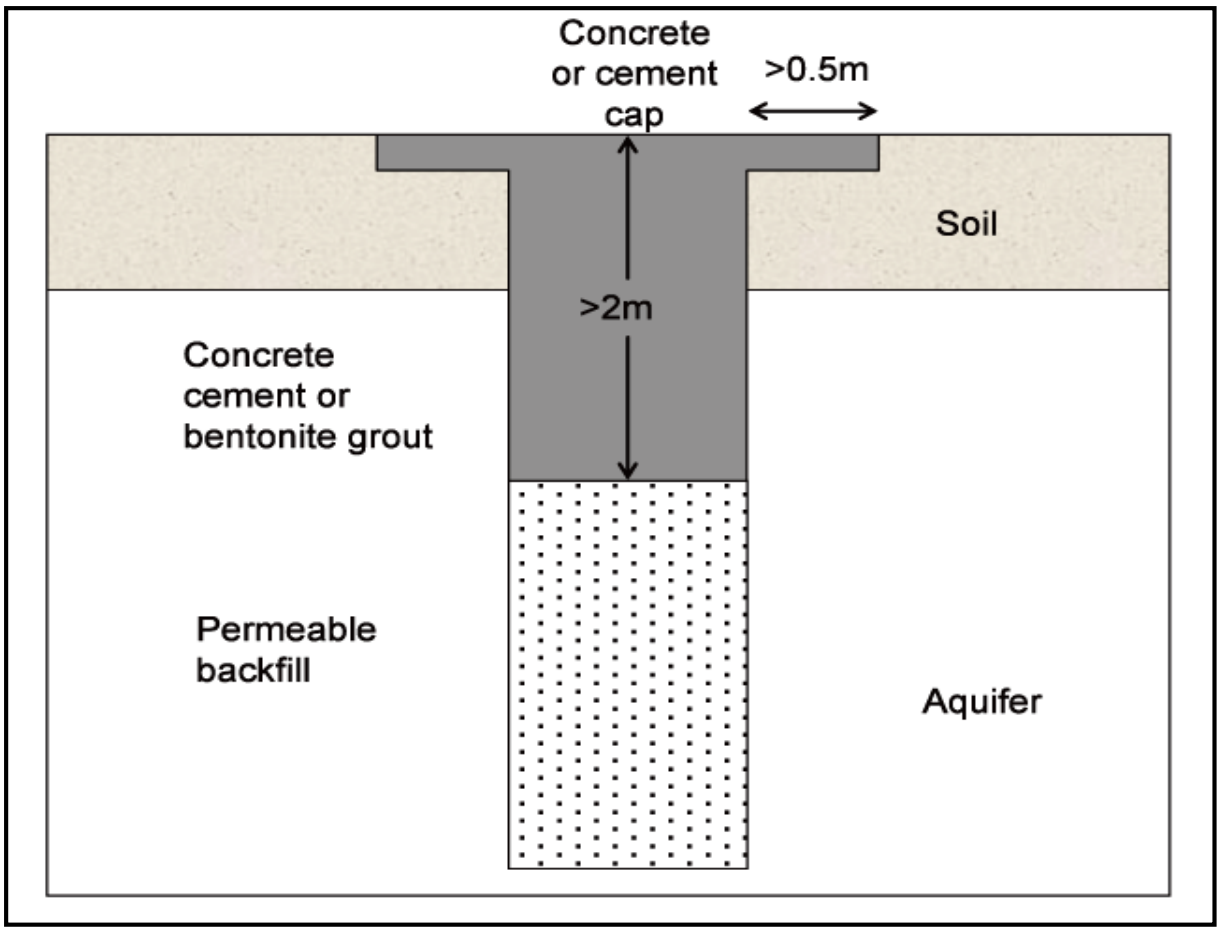


Figure 5—1: *Capping of Boreholes*

5.1.3.2 Rehabilitation of created internal access roads

The internal access roads that were created solely for prospecting activities will be ripped to facilitate vegetation regrowth. The rehabilitation of access roads will be done in consultation with the land owners and the roads will not be ripped should they want to continue using the access roads. This will be done within the limitations of all the relevant Legislations.

5.1.3.3 Re-vegetation

It is recommended that a standard commercial fertilizer high in the standard elements is added to the soil before re vegetation, at a rate of 10 -20k g/ha (application rate to be confirmed based on input from a suitably qualified specialist). The fertilizer should be added to the soil in a slow release granular form. A suitably qualified ecologist will be appointed to determine the appropriate veld grass mix for hand seeding.

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

5.1.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives

The closure objectives aim at restoring the site to its original state, i.e. conditions that were existing before the prospecting activities were undertaken. The rehabilitation measures will achieve the object, the created access roads will be ripped, boreholes capped and vegetation regrowth will be facilitated where necessary. Once all the rehabilitation activities are completed the site will be fully restored to its original state thus the closure objectives will be met.

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

CALCULATION OF THE QUANTUM

Applicant:	**Red dust trading (Pty) Ltd**	**Ref No.:**	**NC 30/5/1/1/2/ 12766 PR**
Evaluators:	**Mugagadeli Phathutshedzo**	**Date:**	**2021/05/06**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	R 15,22	1	1	R -
2 (A)	Demolition of steel buildings and structures	m2	0	R 221,99	1	1	R -
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	R 327,14	1	1	R -
3	Rehabilitation of access roads	m2	100	R 39,72	1	1	R 3 972,00
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	R 385,55	1	1	R -
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	R 210,30	1	1	R -
5	Demolition of housing and/or administration facilities	m2	0	R 443,97	1	1	R -
6	Opencast rehabilitation including final voids and ramps	ha	0	R205 242,16	1	1	R -
7	Sealing of shafts adits and inclines	m3	0	R 119,17	1	1	R -
8 (A)	Rehabilitation of overburden and spoils	ha	0,01	R136 828,10	1	1	R 1 368,28
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R170 416,93	1	1	R -
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	R494 971,55	1	1	R -
9	Rehabilitation of subsided areas	ha	0	R114 572,93	1	1	R -
10	General surface rehabilitation	ha	0,2	R108 390,94	1	1	R 21 678,19
11	River diversions	ha	0	R108 390,94	1	1	R -
12	Fencing	m	20	R 140,40	1	1	R 2 808,00
13	Water management	ha	0,1	R 46 733,73	1	1	R 4 673,37
14	2 to 3 years of maintenance and aftercare	ha	0,1	R 16 356,80	1	1	R 1 635,68
15 (A)	Specialist study	Sum	0			1	R -
15 (B)	Specialist study	Sum				1	R -
					Sub Total 1		R 36 135,52

1	Preliminary and General	4336,26264	**weighting factor 2** 1	R	4 336,26
2	Contingencies	R3 613,55		R	3 613,55
			Subtotal 2	R	44 085,34
			VAT (14%)	R	6 171,95
			Grand Total	**R**	**50 257,28**

5.1.6 Confirm that the financial provision will be provided as determined.

It is hereby undertaken that the amount of **R 50 257 .28** in the form of a bank guarantee for rehabilitation purposes as required in terms of section 24P (1) of the NEMA, will be provided to the DMRE upon granting of the requested prospecting right.

5.2 Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including, Monitoring of Impact Management Actions, Monitoring and reporting frequency, Responsible persons, Time period for implementing impact management actions, Mechanism for monitoring compliance

Table 5-1: Compliance Monitoring and Frequency

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Site establishment	Legal transgression; Accidents and Incidents	✓ Prospecting Right; ✓ Environmental Authorisation ✓ Acts, Regulations and any other site permits; and ✓ Access agreements ✓ Emergency Preparedness and Response Plan	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMRE
Creation of access roads	Soil Erosion; Vegetation Clearing; Introduction of	✓ Existing roads are used as far as practicable; ✓ No multiple tracks are created; ✓ Erosion control beams effectiveness;	Applicant/ Site EO/ ECO	After creation of each access road; Monitoring reports must be submitted quarterly.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	alien invasive plants.	✓Vegetation clearing limited to working area; ✓Site walk to identify absence/ presence of threatened and/or protected species; ✓Control of alien invasive plants;		
Drill pads establishment and Core drilling	Clearing of vegetation; Contamination of ground water; House keeping	✓ Vegetation clearing limited to working area; ✓ Site walk to identify absence/ presence of threatened and/or protected species; ✓ Control of alien invasive plants;	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMRE

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		✓ Monitoring of water table depth; ✓ Reducing and reusing of waste on site; ✓ Waste separation and disposal; and ✓ Openings barricades and drill hole capping.		
Topsoil stockpiling	Stockpiling erosion; Stockpiling contamination;	Erosion & contamination prevention.	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMRE
Operation of site machinery	✓ Noise generation;	✓ Dust suppression; ✓ Machinery operational	Applicant/ Site EO/ ECO	Daily inspection of equipment; Monitoring

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	✓ Soil contamination; ✓ Dust generation	standards; ✓ IAPs consultation.		reports must be submitted quarterly to DMRE
Site Personnel	Security breach	✓ Site employees' identification; ✓ Land owners' complaints; ✓ Access restriction to private properties (beyond prospecting area).	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMRE
Ablution facility	Soil and water contamination	✓ Provision of portable chemical toilets; ✓ Disposal of sewage wastes	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMRE

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Water requirements	Over extraction of water	✓ Water usage	Applicant/ Site EO/ ECO	Water usage must be recorded on a daily basis and monthly reports must be submitted quarterly to DMRE
Rehabilitation	Erosion;	✓ Rehabilitation rate and success ✓ Vegetation regrowth	Applicant/ Site EO/ ECO	Post closure and findings submitted to DMRE

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

Annual performance assessments must be undertaken on the EMPr. These reports must also include the assessment of the financial provision. The reports should be submitted to the DMRE as per the requirement of section 24P(3) of NEMA (107;1998).

5.3 Environmental Awareness Plan

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

All the employees including visitors will undergo and environmental induction to ensure that all potential impacts, best practice guidelines and policies are communicated. The induction process will be conducted as per the attached Awareness Program (**Appendix 03**). The induction will cover amongst others the following:

- Legal requirements for the site i.e. EA and EMPr;
- Waste management;
- Incident and accident Management; and
- Emergency Response Procedure.

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

The following steps will be undertaken to ensure that risks are identified at the earliest and ensure that they are avoided:

5.3.2.1 Delegation of a Project Environmental Officer

An Environmental Officer (EO) must be appointed before any activity can be undertaken on site. The officer must be a qualified environmental Practitioner.

5.3.2.2 Notice of Commencement

Free State Province Department of Mineral Resource and Energy must be notified in writing 2 weeks before the prospecting activities are undertaken.

5.3.2.3 Environmental Documents

Prior to commencement of work on site, the EO is to ensure that the following documents are available on site:

- The Environmental Authorisation;
- The final approved Environmental Management Programme (EMPr); and
- Method statements for different site activities

5.3.2.4 Environmental Monitoring

The EO is to undertake monthly internal environmental compliance audits and prepare monthly environmental audit reports during the construction period. The internal environmental audit must include the following information:

(i) An assessment of the Contractor's compliance with:
- The relevant conditions of all permits: EA, WUL, etc.;
- The approved Environmental Management Programme;
- The approved Construction Site Plan.
- The approved Construction Method Statements.

(ii) Provide feedback on:
- Environmental training undertaken;
- Any environmental incidents or complaints;
- Waste type quantities recycled and disposed;
- Any environmental issues identified;
- The results of any environmental investigations;
- Actions undertaken from previous audits; and
- Recommended actions to be undertaken.

5.3.2.5 Environmental Training

Prior to working on site, every person that will be undertaking any retrofit activities must receive training on the relevant environmental management requirements. The EO is to ensure that the environmental training includes the relevant requirements from:

- All site authorisations; and
- The final approved Environmental Management Programme.

5.3.2.6 Development of procedures and checklists

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

Emergency Preparedness and Response: The procedure will be developed to specifically include risk identification, preparedness, response measures and reporting. The procedure will specifically include spill and fire risk, preparedness and response measures. The appropriate emergency control centers (fire department, hospitals) will be identified and the contact numbers obtained and made available on site. The procedure must be developed in consultation with all potentially affected land owners. In the event that risks are identified which may affect adjacent landowners (or other persons), the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize the impact.

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

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

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

6 Specific information required by the Competent Authority

No specific information was required by the Competent Authority.

7 UNDERTAKING

The EAP herewith confirms

a. The correctness of the information provided in the reports ☒

b. The inclusion of comments and inputs from stakeholders and I&APs;☒

c. The inclusion of inputs and recommendations from the specialist reports where relevant;☒ and

d. That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.☒

Signature of the environmental assessment practitioner:

Mielelani Consultancy

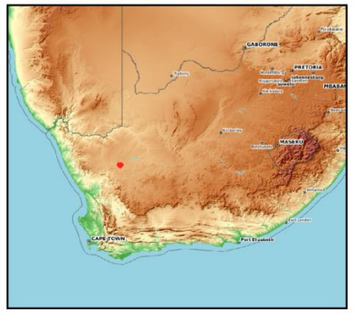
Name of company:

Date:

-END-

APPENDICES

APPENDIX 01: Locality Map



Legend

Project Area

Topology Baasemap

N

0 3,2 6,4 km

Coordinates Sytem
WGS 1984
Map Scale: 1:10 000

Map Produced By:
Int Mapping (Pty) Ltd
E-mail Address:
maphaha.aluwani@gmail.com

19°48.000'E 19°54.000'E 20°0.000'E

30°12.000'S

30°18.000'S

30°24.000'S

APPENDIX 02: EAP CV

APPENDIX 03: ENVIRONMENTAL AWARENESS PLAN

1. Introduction

Legislation requires that an prospecting/Prospecting company who prepares an environmental management program must develop an environmental awareness plan describing the manner in which the company intends to inform his or her employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

1.1. The Environmental Awareness Plan (EAP)

The EAP forms part of the EMPr and is intended to create the required awareness and culture with personnel and contractors/service providers on environmental safety and health issues associated with the prospecting activities.

1.2. The applicant's policy on environmental awareness

This Environmental Awareness Plan (EAP) will serve as the basis for the induction of all new employees (as well as contractors pending the nature of their work on site) on matters as described herein and read in conjunction with the EMPr. The Plan will also be used to hone awareness of all employees on a continuous basis. Specific environmental awareness performance criteria will also form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational work force.

1.3. Fostering environmental awareness

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimized and environmental compliance maximized.

Environmental awareness will be fostered in the following manner:

a) Induction course for all workers on site, before commencing work on site.

b) Refresher courses as and when required

c) Daily toolbox talks at the start of each day with all workers coming on site, where workers can be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.

d) Taking part in national and international environmental campaigns like National Marine Week, National arbour day, National Wetlands day exacta.

e) Displaying of information posters and other environmental awareness material in the general assembly points.

1.4. Training and environmental awareness

The company accepts that environmental awareness training is critical for the workforce to understand how they can play a role in achieving the objectives specified in the EMPr and ensure that the actions specified in the EMPr are implemented effectively and efficiently. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

2. The environmental awareness training course

All employees should attend the course, regardless of position, status or level of responsibility. With a background of basic environmental awareness and an understanding of basic environmental issues and sensitivities, personnel may be motivated and empowered to do their share in helping to maintain the integrity of the environment on the prospecting site through environmental impact management.

The goal of this course is therefore to enable a shared understanding and common vision of the environment, the impact of a prospecting operation on the environment (and why this is important) and the role of prospecting personnel in terms of environmental management and compliance.

The induction course will compose of the following steps:

- The first step will include background discussion of the environment concept: of what it comprises and how we interact with it.
- The second step will be a description of the components and phases of the specific Prospecting operation.

- The third step will be a general account of how the Prospecting operation and its associated activities can affect the environment, giving rise to what we call Environmental Impacts.
- The fourth and most important step will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading our environment. This is known as Environmental Impact Management.

3. Course content

The following can be seen as draft course content as it will be building on as specific needs arrases and will be supplemented with the handout of reading material and extracts of the EMPr on which the course will be based.

3.1. The environment

The environment consists essentially of the living environment, the non-living environment and the man-made environment. The living environment consists of our plant and animal resources. The non-living environment includes the soil, water and geological resources. The man-made environment comprises our infrastructure, social, cultural and archaeological resources.

These environments depend on one another, and man depends on them all for his survival. Damage to one will be felt by so we must fry to protect the as well as their interactions with one another as they occur in nature.

When undertaking a Prospecting operation or any other form of development this concept must be kept in mind. Development must be implemented in such a way that we benefit today without compromising the ability of future generations to benefit as well. Employees should understand this concept of sustainability and sustainable development.

3.2. Description of the components and phases of the operation

The project description should be explained as part of induction together with the main components or activities that can affect the environment, giving rise to what we call environmental impacts. The Prospecting operation consists of a number of different components

3.3. Description of Environmental Impacts

A general account of how the Prospecting operation and associated activities can affect the environment must be explained. This is basically a description of concept of environmental impacts.

a) What is an Environmental Impact?

An environmental impact is the result, either good or bad, of man's actions on the natural environment This results in one or many changes in the environment may also affect the availability of resources and the environment's capacity to function.

Impacts can occur either as a result of:

- The use of a resource;
- Or the pollution of a resource.

In addition, impacts can be categorised as the following:

- Foreseen, such as the necessary clearing of the vegetation before Prospecting begins, or Unforeseen, such as the flooding of an area following heavy rains;
- **Avoidable**, such as the unnecessary spillage of diesel during refuelling- or **Unavoidable**, such as the disturbance created during drilling; **Simple**- such as litter untidying the prospecting site, or **Cumulative** which is a collective impact from different existing activities.

a) Environmental Impacts

Typical environmental impacts anticipated on a Prospecting site include the following:

The loss of plants; The loss of animals; Soil pollution; Dust liberation; Soil compaction and erosion; and Water pollution;

b) Causes of environmental impacts

These environmental are caused primarily by inadequate planning & not adhering to the EMPr Specifications'.

- The inadequate planning & preparation of the Prospecting site;
- The uncontrolled expansion of the Prospecting site footprint;
- The uncontrolled activity of Prospecting staff;
- The injudicious removal / disturbance of vegetation and habitat;
- The unnecessary loss of soil;

- Uncontrolled vehicular movement & circulation;
- The haphazard storage of vehicles, equipment and material;
- The uncontrolled servicing, repair and refuelling of vehicles;
- Unclear policy on solid waste management;
- Unclear policy on waste water;
- The uninformed use, storage and disposal of hazardous material;
- The erosive power of storm water and runoff;
- Unintentional fires;

3.4. Description of Environmental Impacts Mitigation

The fourth and most important step of an induction course will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading their environment. This is known as Environmental Impact Management and is also described in the Environmental Management Programme. The coarse discussion should also include general environmental code of conduct practices such as:

Impact management: Prospecting site establishment (general):

- Do not cross any site fences;
- Do not walk, drive or store material in rehabilitating areas;
- Report any access into fenced off areas to the foreman environmental manager;
- Use only areas designated for certain construction activities;
- Do not access any stream or water body without permission;
- Report any headstones, graves or human remains you may find to the foreman environmental manager;

Impact management: Construction phase (general):

- Only eat, cook, sleep and recreate in the areas designated on site;
- Do not bathe anywhere except in the designated areas on site;
- Always use the toilet facilities provided;
- Only use the water provided on site- do not collect water from or dispose water into a natural water course;
- Always make use of the specified Prospecting site safety measures;
- Do not hunt, kill or injure any animals anywhere on site;

- Inform the foreman environmental of any dangerous or problem
- Do not leave any food or rubbish where scavengers can get at it. Impact management: Health and safety (general):
- Always use the toilet & hand washing facilities provided.
- Only use the water provided on site - do not collect water from or dispose water into a natural water course.
- Make use of the specified protective gear for noisy and dusty conditions.
- Always wear proper protective head and foot gear while on site.
- Know where to find a list of emergency numbers in the event of one.
- Report accidents, injuries and unsafe site conditions to the Safety Officer.

Impact management: Vegetation clearing (general):

- Do not damage, destroy or remove any significant tree that has been marked:
- No firewood may be harvested without permission;
- Newly planted trees may not be disturbed in any way;
- Do not excavate beneath the crown of any tree that has been marked;
- No conserved tree may be used to support or hang anything in;
- Report to the foreman environmental manager any damage to any significant tree that has been marked.

Impact management: Top Soil removal and storage (general):

- Only excavate soil, gavel, rock etc. from designated areas;
- Stockpile soil only as instructed and at the time it is instructed;
- Do not make new stockpiles without permission;
- Do not use soil or remove soil from any stockpile without permission;
- Do not walk. drive or store any equipment. machinery or material on any stockpile.

Impact management: Access and transport (general):

- Only drive on designated roads and tracks;
- Move obstacles out of the way rather than drive around them;
- Only cross drainage lines at designated points;

- Always drive within the specified speed limit.

Impact management: Storage of vehicles, equipment and material (general):

- Do not leave machinery and equipment standing around if not in use;
- Only park vehicles in designated areas;
- Do not park heavy vehicles or store equipment under or near trees
- Do not store machinery, vehicles or materials in undisturbed or rehabilitating areas.

Impact management Servicing. repair and refuelling of vehicles (general).

- Only service machinery and vehicles in designated areas;
- Regularly check your vehicle for fuel and oil leaks;
- Inform the foreman environmental manager of leaking vehicles and machinery so that he can schedule repairs;
- Only refuel by means of a pump and on the bund created for that purpose;
- Immediately clean any accidental fuel and oil spills - do not hose spills into the natural environment;
- Dispose of contaminated soil as hazardous waste in the correct location on site.

Impact management: Solid waste management (general):

- Do not litter - make use of refuse bins provided;
- Concrete may only be mixed in designated areas and not directly on the ground;
- Do not hose spills into the natural environment - inform the foreman environmental manager of spills you are unable to clean yourself;
- Dispose of construction rubble only in specified storage areas - if in doubt, ask;
- Do not bury, hide or burn any waste of any nature;
- Inform the foreman of any illegal litter or dumping site that you encounter.
- Impact management: Waste water management (general):
- Do not use any natural water course to wash machinery, vehicles or equipment;

- Only wash machinery, vehicles or equipment in designated areas;
- Conserve water and report any leaks and overflow to the foreman,

Impact management: Management of hazardous material (General):

- Make sure that you know how to handle all hazardous substances;
- Do not access stores for hazardous substances without permission;
- Immediately clean any minor accidental spills and leaks;
- Do not hose any leaks or spills into the natural environment;
- Dispose of all hazardous waste in specified storage areas - if in doubt, ask;
- Immediately report any major leaks and spills to the foreman environmental manager.

Impact management: Fire management (General)

- Do not make open fires except in permitted areas and at permitted times;
- Do not leave any fires unattended. Extinguish these before you leave the area;
- All cooking is to be done on gas / electric stoves and only in the areas provided;
- Ensure that you know where firefighting equipment is located.

APPENDIX 04: PUBLIC PARTICIPATION PROCESS REPORT