

# BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

PROSPECTING RIGHT APPLICATION FOR PROSPECTING RIGHT FOR COAL ON PORTION 45 & 46 OF THE FARM GOEDEHOOP 315 JS, SITUATED IN THE STEVE TSHEWETE MAGISTERIAL DISTRICT, MPUMALANGA PROVINCE.

DMRE REF NO.: MP 30/5/1/2/17089 PR

PREPARED FOR  
LIMMKHOLO INVESTMENT (PTY) LTD  
Office D1, Groundfloor  
President Park,  
Jeneatte Street, Del Judor,  
1034

PREPARED BY



Office No. 870, 5 Balalaika Street, Tasbet Park Ext 2,  
eMalahleni (Witbank), 1040  
Tel.: 013 692 0041  
Fax: 086-514-4103  
E-mail: [admin@singoconsulting.co.za](mailto:admin@singoconsulting.co.za)

COMPETENT AUTHORITY



Department of Mineral Resources & Energy, Saveways  
Crescent Centre, Mandela Drive, eMalahleni, 1035



# mineral resources & energy

Department:  
Mineral Resources and Energy  
**REPUBLIC OF SOUTH AFRICA**

## **DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

**NAME OF APPLICANT: LIMMKHOLO INVESTMENT (PTY) LTD**

**CONTACT PERSON:** Lucky Sambo

**TEL.:** +27 13 692 3052

**FAX:** +27 86 439 7969

**EMAIL:** [tebogo.naledi@gnf1.com](mailto:tebogo.naledi@gnf1.com)

**PHYSICAL ADDRESS:** Office D1 Groundfloor, President Park, Jeneatte Street,  
Del Judor, 1034

**DMRE REF: MP 30/5/1/1/2/17089 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 right if among others the prospecting “will not result in unacceptable pollution, ecological degradation or damage to the environment and an environmental authorisation is issued”.

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 conforms to the requirements of the EIA Regulations, any protocol or minimum information requirements relevant to the application as identified and gazetted by the Minister in a government notice or instruction or guidance provided by the competent authority to the submission of application.

**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.

## DOCUMENT CONTROL

**Project Title:** Prospecting Right Application on portion 45 & 46 of the farm Goedehoop 315 JS

**Minerals** Coal

**Site Location** Magisterial district of Steve Tshwete Mpumalanga Province

**Compiled on behalf of** Limmkholo Investments (Pty) Ltd

**Compiled By** Mr Abel Mojapelo

**Reviewed By** Dr Kenneth Singo

**Version 1** Draft BAR & EMPr

**Submission to** Department of Mineral Resources and Energy

**Date** 2022

## **DISCLAIMER**

The opinion expressed in this and associated reports are based on the information provided by Limmkholo Investment(Pty) Ltd to Singo Consulting (Pty) Ltd ("Singo Consulting") and is specific to the scope of work agreed with Limmkholo Investment(Pty) Ltd.

Singo Consulting acts as an advisor to the Limmkholo Investment (Pty) Ltd and exercises all reasonable skill and care in the provision of its professional services in a manner consistent with the level of care and expertise exercised by members of the environmental profession.

Except where expressly stated, Singo Consulting has not verified the validity, accuracy or comprehensiveness of any information supplied for its reports. Singo Consulting shall not be held liable for any errors or omissions in the information given or any consequential loss resulting from commercial decisions or acts arising from them.

Where site inspections, testing or fieldwork have taken place, the report is based on the information made available by the Limmkholo Investment(Pty) Ltd or their nominees during the visit, visual observations and any subsequent discussions with regulatory authorities. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Singo Consulting is both complete and accurate. It is further assumed that normal activities were being undertaken at the site on the day of the site visit(s), unless explicitly stated otherwise.

These views do not generally refer to circumstances and features that may occur after the date of this study, which were not previously known to Singo Consulting (Pty) Ltd or had the opportunity to assess.

## **i. EXECUTIVE SUMMARY**

Singo Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by Limmkholo Investment (Pty) Ltd to conduct Environmental Impact Assessment (EIA), Compile an Environmental Management Programme report (EMPr) and undertake Public Participation Process (PPP). This is done for processes of acquiring Environmental Authorization for the proposed prospecting right Application within portion 45 & 46 of the Farm Goedehoop 315 JS, under the Magisterial District of Steve Tshwete, Mpumalanga Province. (DMRE Ref: MP 30/5/1/1/2/ (17089) PR).

The proposed project will aim to ascertain if economically viable mineral deposit exists within the applied area. To undertake prospecting activities, Limmkholo Investment (Pty) Ltd will require a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act (MPRDA, Act No.28 of 2002). The Applicant is also required to obtain an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998) which involves the submission of a Basic Assessment Report (BAR) and Environmental Management Programme Report. Singo Consulting (Pty) Ltd has been appointed by Limmkholo Investment (Pty) Ltd to compile the BAR (this report) in support of the Prospecting Right application submitted by Limmkholo Investment (Pty) Ltd, which in turn will be submitted to the DMRE for adjudication.

This BAR has been designed to meet the requirements for a BAR and Environmental Management Programme report (EMPr) as stipulated in the 2014 EIA Regulations promulgated under the NEMA. The adjudicating authority for this Application will be the Department of Mineral Resources and Energy (DMRE), and this report has been compiled in accordance with the applicable DMRE guidelines and reporting template.

A newspaper was published in Middelburg observer and stakeholders were consulted through emails from 22<sup>nd</sup> of July 2022. During ground truthing, it was denoted that there are mining (Wescoal operations) activities taking place in both portions. A BID and a landowner notification letter were given to one of the mine employers Ms Seo. Documents (Maps, EA, etc) were also requested

Should the project be granted, the community or areas around Middelburg will benefit. Jobs are very scarce In that location, there will be creation of jobs and upliftment of living conditions.

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## ABBREVIATIONS

<b>CA</b>	Competent Authority
<b>CBA</b>	Critical Biodiversity Area
<b>DAFF</b>	Department of Agriculture, Forestry and Fisheries
<b>DEFF</b>	Department of Environmental, Forestry and Fisheries
<b>DMRE</b>	Department of Mineral Resources & Energy
<b>DWS</b>	Department of Water and Sanitation
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EIR</b>	Environmental Impact Report
<b>EMPR</b>	Environmental Management Programme report
<b>ESA</b>	Ecological Support Area
<b>ESM</b>	Environmental Site Manager
<b>GDP</b>	Gross Domestic Product
<b>GN</b>	Government Notice
<b>GIS</b>	Geographic Information System
<b>GPS</b>	Global Positioning System
<b>GVA</b>	Gross Value Added
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IDP</b>	Integrated Development Plan
<b>IEM</b>	Integrated Environmental Management
<b>Mamsl</b>	Meters above mean sea level
<b>MHSA</b>	Mine Health and Safety Act (Act No. 29 of 1996) [as amended]
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended)
<b>NEMA</b>	National Environmental Management Act, 1998 (Act no 107 of 1998) (as amended)
<b>NEMAQA</b>	National Environmental Management: Air Quality Act (Act No. 39 of 2004) (as amended)
<b>NEMBA</b>	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

<b>NEMWA</b>	National Environmental Management: Waste Act (Act No. 59 of 2008) (as amended)
<b>NHRA</b>	National Heritage Resource Act, 1999 (Act No. 25 of 1999)
<b>NVFFA</b>	National Veld and Forest Fire Act (Act No. 101 of 1998)
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998) (as amended)
<b>PM</b>	Public Meeting
<b>PPE</b>	Personal Protective Equipment
<b>PPP</b>	Public Participation Process
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SANS</b>	South African National Standards
<b>SAWS</b>	South African Weather Service
<b>SDF</b>	Spatial Development Framework
<b>SLP</b>	Social and Labour Plan
<b>SM</b>	Site Manager
<b>VAC</b>	Visual Absorption Capacity

## PART A:

# SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

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## 1 INTRODUCTION

Singo Consulting (Pty) Ltd on behalf of Limmkholo Investment(Pty) Ltd submitted an application for a Prospecting Right subject to Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) and an application for an Environmental Authorisation in terms to Chapter 6 of GNR 982 enacted under the National Environmental Management Act (Act 107 of 1998) (NEMA) for coal.

The proposed project will aim to ascertain if economically viable mineral deposits exist within the application area. In order to undertake the proposed prospecting activities, Limmkholo Investment(Pty) Ltd will require a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act (MPRDA, Act No.28 of 2002). The Applicant is also required to obtain an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998) which involves the submission of a Basic Assessment Report and Environmental Management Programme report (BAR & EMPr).

Singo Consulting (Pty) Ltd has been appointed by Limmkholo Investment(Pty) Ltd to manage the Environmental Authorisation process by conducting Environmental Impact Assessment, Public Participation for the proposed project and to compile the Basic Assessment Report and Environmental Management Programme report in support of the Prospecting Right application which in turn will be submitted to the Department of Mineral Resources and Energy for adjudication. This BAR & EMPr has been designed to meet the specifications as set out in the NEMA's 2014 EIA Regulations. Feedback received from stakeholders will form basis of this BAR & EMPr.

**Locality Description:** The proposed Prospecting Right Application covers portion **45 & 46** of the Farm **Goedehoop 315 JS**, covering a total area of 181.426 ha. The proposed project area is situated in the Steve Tshwete Magisterial District, Mpumalanga Province. The area of interest is situated approximately 10.14 km Southeast of Rockdale, 12.6 km North east of Middelburg and 13.80 km North Mhluzi .

### 1.1 Details of the Environmental Assessment Practitioner

Singo Consulting (Pty) Ltd was appointed by Limmkholo Investment (Pty) Ltd as an independent EAP to compile this report. The contact details of the consultants who compiled this report are as follows:

**Table 1: Details of the EAP that prepared the Report**

Name of the Practitioner	Abel Mojapelo
Designation	Consultant
Tel No.	+27 13 692 0041
Cell No.	+27 71 362 7894
Fax No.	+27 86 515 4103
Email	<a href="mailto:abel@singoconsulting.co.za">abel@singoconsulting.co.za</a>

**Table 2: Details of the EAP who reviewed the Report**

Name of the Practitioner	NK Singo
Designation	Principal EAP
Tel No.	(013) 692 0041
Cell No.	+27 78 2727 839
Fax No.	+27 86 515 4103
Email	<a href="mailto:kenneth@singoconsulting.co.za">kenneth@singoconsulting.co.za</a>

## 1.2 Qualifications of the EAP

Please refer to attached appendix for CV of the EAP.

### Summary of EAP's Past Experience

In the year 2008, Singo Consulting (Pty) Ltd was established as an Independent Consulting Company focused to create opportunities within the Mining and Environmental Industry. With time, Singo Consulting (Pty) Ltd has diversified its services, providing high value Geological, Hydrological, Environmental, Cleaning and Rehabilitation specialized services to clients across a range of industries that are primarily natural resource based.

The company aims to be a consulting firm that communicates sound environmental services solutions. Singo Consulting (Pty) Ltd takes pride in the fact that it holds no equity in any project which in turn permits it to offer clients objective support on crucial issues.



## 2 Locality of the overall Activity

Table 3: Location of the Overall Activity

<b>Farm Name:</b>	<b>Portion 45 &amp; 46 of the farm Goedehoop 315 JS</b>		
<b>Application area (Ha)</b>	181.426 ha		
<b>Magisterial district:</b>	Steve Tshwete		
<b>Distance and direction from nearest town</b>	<b>Town</b>	<b>Distance</b>	<b>Direction</b>
	Rockdale	10.14 km	North East
	Middelburg	12.86 km	North East
	Mhluzi	13.80 km	North
<b>21 digit Surveyor General Code for the Farm</b>	TOJS00000000031500045 TOJS00000000031500046		
<b>Locality map</b>	See Figure 1 & 2		

## 3 Locality map

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

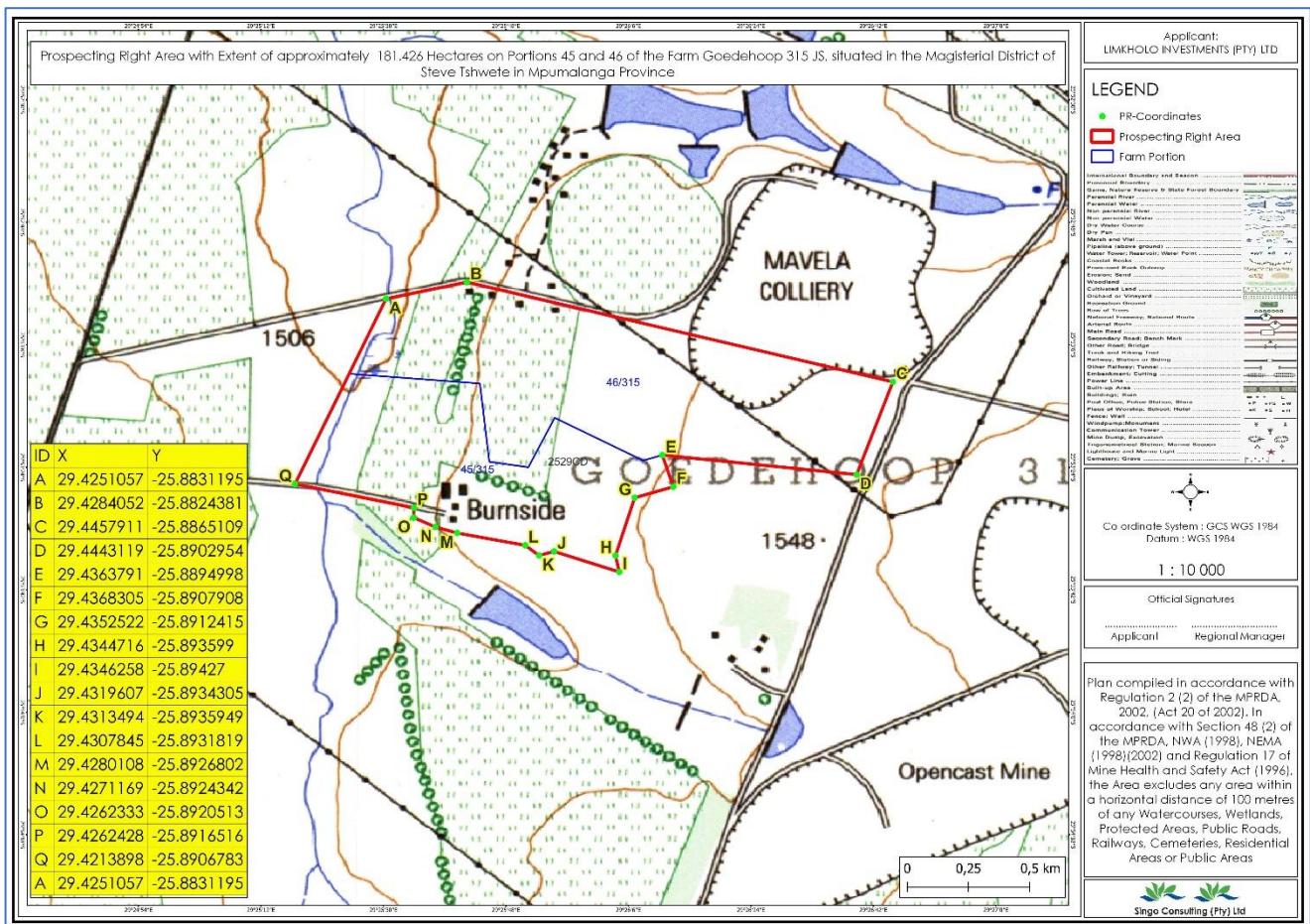
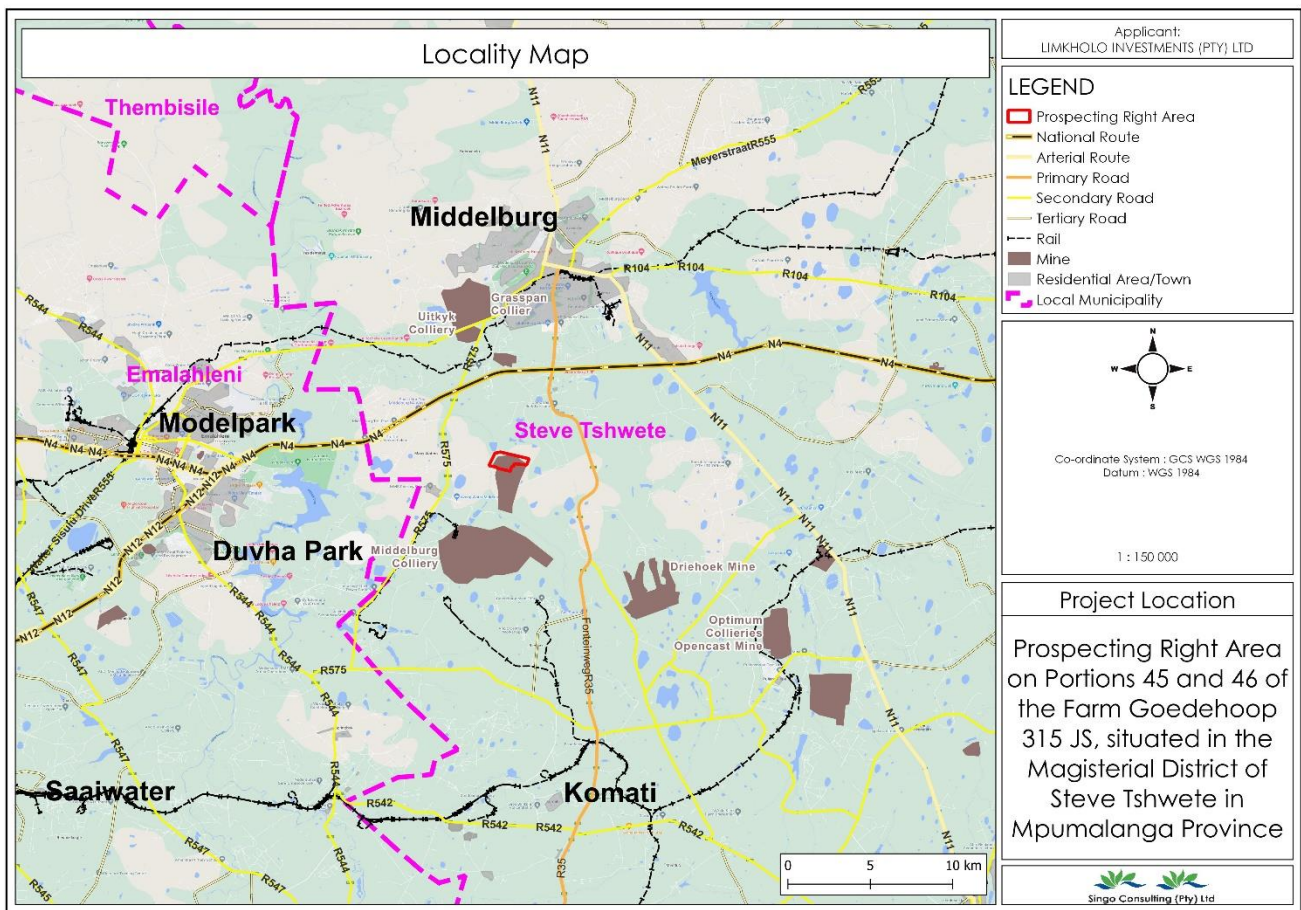


Figure 1: Regulation 2.2 plan of the project area



**Figure 2: Locality of the project area**

As seen on the above maps, the project area is within Steve Tshwete Local Municipality. The proposed project is located within Mpumalanga Province. The site may be reached using a gravel road connecting to R575 & R35. The project area comprises of mining activities taking and small portion of cultivated and natural land.

#### 4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

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

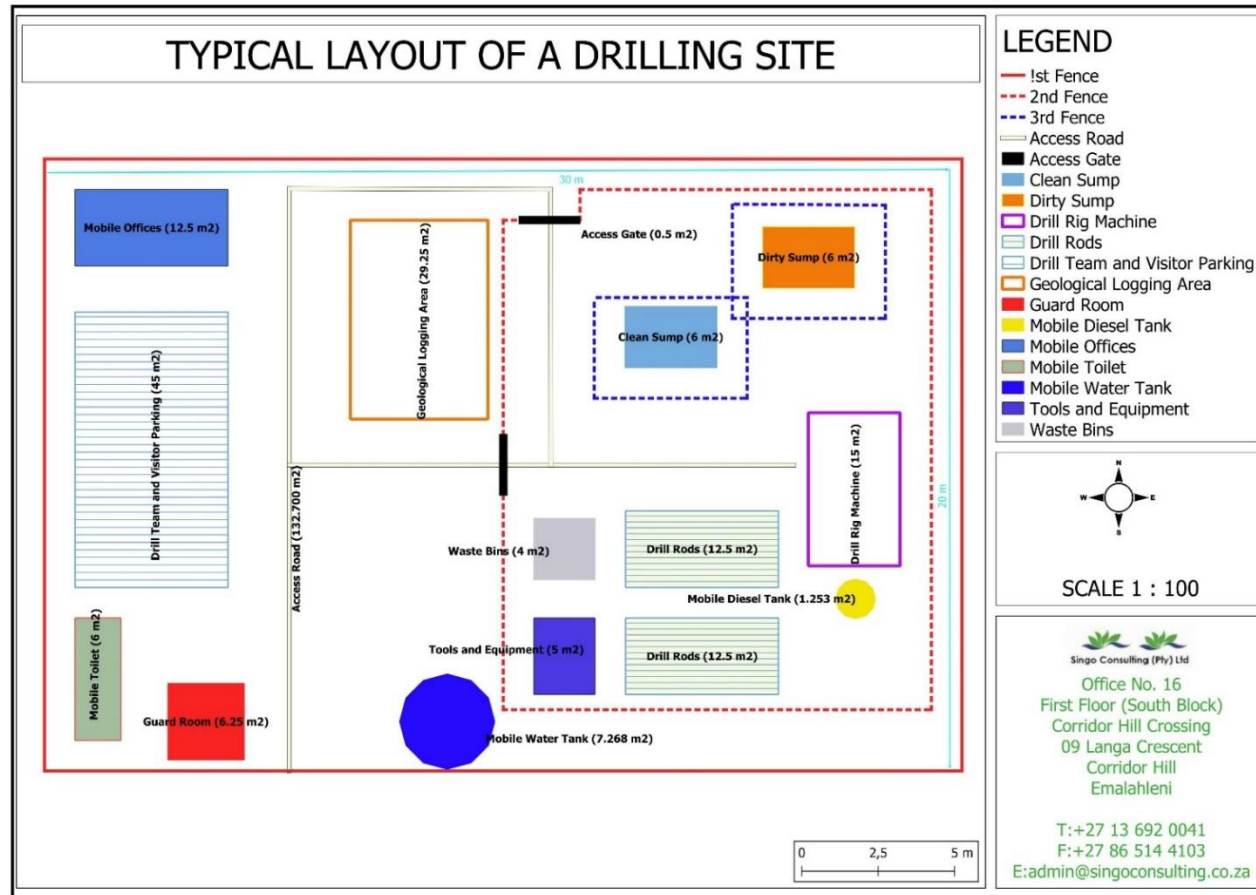


Figure 3: Typical Layout of a drill site

#### 4.1 Listed and specified activities

**Table 5: Listed and specified activities**

NAME OF ACTIVITY  (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc. E.g. for mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m <sup>2</sup>	LISTED ACTIVITY  (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE  GNR 517, June 2021	WASTE MANAGEMENT AUTHORISATION  (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
Prospecting Area	181.426 ha	X	GNR 517 Listing Notice 1, Activity 20.	Not required
Vegetation clearing	- 600m <sup>2</sup> * 20 = 12000m <sup>2</sup> - 1.2 ha		Not Listed	
Drilling	1.2 ha		Listed	
Access road	1913,79 m <sup>2</sup>		Listed	

**Table 6: Summary of drilling activities.**

<b>Drilling method</b>	Diamond core drilling
<b>Number of boreholes</b>	20
<b>Depth of boreholes</b>	110m
<b>Duration of drilling</b>	A borehole takes roughly about 2 days to complete; 20 will take at least 40 days.
<b>Demarcated working area</b>	1.2 ha for all 20 drilling sites
<b>Total area to be disturbed</b>	1.2 ha

## 4.2 Description of the activities to be undertaken

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

Activities for the prospecting of Limmkholo Investment (Pty) Ltd will be done in three phases. The Proposed Prospecting area is depicted by **Figure 1** and **Figure 2** above clearly showing the areas of interest.

A total number of proposed boreholes to be drilled for the operation is twenty (20). Vegetation will be cleared at each drilling site and progressing rehabilitation will take place after each drill site. The total vegetation clearing for the overall activities is 1.2 ha. The Proposed project area will be accessed through the currently existing roads and **only** where necessary and with the agreement of the landowner. Access within the farm will be communicated with the respective Landowner.

As part of the proposed Prospecting Work Program (PWP), both non-invasive and invasive prospecting activities will be conducted. The framework will adopt a staggered strategy, where the work program for prospecting is split into several sequential phases.

There will be a brief period at the end of each phase to compile and review outcomes. The findings will decide not only whether prospecting progresses but also how it will proceed. The applicant will only take action over the next prospecting phase once satisfied with the results obtained in the previous phases. Moreover, if need arises, smaller, non-core parts of the prospecting work program will be undertaken. A detailed descriptive of the invasive and non-invasive activities planned is presented below.

### **Phase 1 (Non-invasive)**

**Desktop study:** All historical geological data (including assays and mineralogy) will be gathered and evaluated. This will include assessments of any existing mining operations in the area, boreholes and any relevant data from any institution that may have done work in and around that specific area. As part of this phase, remote sensing studies will be carried out to prepare for the implementation of subsequent phases.

**Preliminary field work:** This allows the implementation of survey grids for geological and structural mapping as well as geophysical surveys. Following these activities, proposed drill sites for the drilling program will be pegged. At the end of this phase, a preliminary report with updated maps will be produced.

**Geophysics:** In smaller areas, a hand-held instrument is used to search for ore underground. In larger areas, an instrument is mounted on an aircraft, which is then used to survey the area for ore targets. The procedure is non-invasive.

## Phase 2: Invasive

**Field mapping:** This is the verification of on-site field lithology based on the geological map and geophysical data. This includes ground mapping of geological features, including rock outcrops, lithological contact zones, geological structural features, surface depressions and vegetation types. This may include collecting data from outcrops for analysis, as the outcrop also indicates what can be found underground.

### **Site establishment:**

This is the mobilisation of all project equipment to the site or a nearby location in order to conduct efficient prospecting. There is very little environmental impact with regards to this. Rehabilitation will take place progressively per drill site. Site Establishment includes

- **Ablution:** Portable chemical toilets
- **Temporary office area:** A temporary site office shaded area will be erected at the drill site. This will be used for daily project administration.
- **Accommodation:** No accommodation for staff and workers will be provided on-site; Workers will be transported to and from the prospecting site on a daily basis. Night security staff will be employed once equipment has been established on site.
- **Storage of dangerous goods:** During the drilling activities there will be no storage of diesel fuel, oil and lubricants on site. Trucks and other mobile transports will utilise the nearby filling station. Significant amount of diesel will be transported to site for the drill rig machine on a daily basis for the duration of the prospecting activities.



Figure 4: Typical example of mobile toilets to be adopted



Figure 5: Typical example of Gazebo as a usage for temporary offices/shaded Area.



**Figure 6: Typical example of portable diesel storage tank**

**Drilling:**

A core drilling program will be carried out, which will be informed by the results of the previous phased approach and will aid in the identification of areas to be drilled. To evaluate the area, logging and sampling of the borehole core will be performed. The drill core samples will be sent to an accredited laboratory for analysis and determination of the average mineral content.

At least fifteen holes will be drilled during this phase. The drill bit size is NQ (76.7 mm in diameter) and will drill to an average depth of 110 m, which will cover an area of 1.2 ha at any given drilling time (total area of disturbed area per drilled borehole).

**Pre-feasibility studies:**

Geological modelling of gathered existing geological data and prospecting data will be performed, if the results warrant it.

**Phase 3:**

Closure & rehabilitation: This includes progressive rehabilitation and closing borehole openings, re-vegetating, returning soil stockpiles, and removing any prospecting-related waste. This will restore the area to as good or better condition than it was before prospecting began.



## 5 POLICY & LEGISLATIVE CONTEXT

Table 7: Policy and Legislative Context

Applicable Legislation and Guidelines	Reference Where Applied (i.e. where in this document has it been explained how the development complies with and responds to the legislation and policy context)	How does this Development Comply with and Respond to the Legislation and Policy Context
National Environmental Management Act (No. 107 of 1998) (NEMA):	This entire report is prepared as part of the prospecting right application under the NEMA, section 24	In terms of the National Environmental Management Act an Application for Environmental Authorisation subject to a Basic Assessment Report. The application was lodged at the DMRE
Minerals and Petroleum Resources Development Act (No.28 of 2002) (MPRDA): In support of the Prospecting Right Application submitted by Limmkholo Investment (Pty) Ltd, the applicant is required to conduct a NEMA BAR process in terms of Section 5A and Chapter 16 of the MPRDA.	This entire report is prepared as part of the Prospecting Right Application under the MPRDA, section 16(2).	The application is for a prospecting right and therefore all regulations pertaining to the application process of a prospecting right and environmental management are applicable to this application.  DMRE REF: <b>MP 30/5/1/1/2/ 17089 PR</b>
National Water Act (No. 36 of 1998) (NWA): Water may not be used without prior authorisation by the DWS. Section 21 of the National Water Act (No.36 of 1996) the NWA water uses for which authorisation is required.	No Water Use Licence has been applied for this prospecting project.	No water use license is required for this Application. The water required will be bought from the municipality or licensed water supplier that sells potable water or treated industrial water for which a water sale agreement will be drawn and agreed upon before work commences. Appropriate dust extractions

		/suppression equipment will be a condition imposed on the drill contractor for their drill rigs.
The National Environmental Management: Biodiversity Act (Act No. 10 of 2004 – NEMBA) Section 57 and 87	Regulations published under NEMBA provides a list of protected species (flora and fauna), according to the Act (GN R. 151 dated 23 February 2007, as amended in GN R. 1187 dated 14 December 2007) which require a permit in order to be disturbed or destroyed	No applications have been submitted in terms of the National Environmental Management: Biodiversity Act.
Steve Tshwete Local Municipality Integrated Development Plan (IDP)  Strategic Development Framework (SDF)	Needs and Desirability, socio-economic needs.  Land use	Incorporated in Section 6 of this BAR.  The applicant acknowledges the need to maximize economic benefit from mining, industrial, business, agricultural and tourism development in the area and promote a climate for economic development in line with the municipal development frameworks.
Municipality By-Laws: Waste Management by-law Act 59 of 2008, Air Quality Management By-law Act 39 of 2004, Noise control by-law, Spatial Planning and Land Use Management act no 16 of 2013 (SPLUMA).	Environmental Management measures awareness plan	Best practice guidelines will be followed for any by-law's management and the development of the mine environmental and other legislative management.
Constitution of South Africa,  Specifically, everyone has the right:  a) to an environment that is not harmful to their health or	BAR & EMPr	Prospecting activities will only proceed after effective consultation. All activities will be conducted in a manner that does not violate the Constitution

<p>wellbeing; and</p> <p>b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that</p> <p>i) prevent pollution and ecological degradation;</p> <p>ii) promote conservation; and</p> <p>iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p>		<p>of the Republic of South Africa.</p>
<p>National Heritage Resources Act, 1999</p>	<p>Management measures</p>	<p>Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and SAHRA notified in order for an investigation and evaluation of the find(s) to take place.</p>

## 6 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

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

Modern life is unimaginable without electricity. It lights houses, buildings, and streets; provides domestic and industrial heat; and powers most equipment and machinery used in homes, offices and factories. Coal is the most abundant source of electricity worldwide, currently providing more than 36% of global electricity. Coal-fired power plants provide affordable, reliable and constant power that is available on demand to meet energy consumption needs. As much of the world lacks access to modern, clean energy, coal is still essential to alleviating worldwide energy poverty ([www.smenet.org](http://www.smenet.org)).

The applicant has identified this opportunity upon the **portion 45 & 46** of the farm **Goedehoop 315 JS** which are both owned by Wescoal (Pty) Ltd. Based on the location of the proposed site, prospecting

is favoured and most likely to yield positive feedback. The activities taking place are mining (Wes Coal). Drilling activities (searching for commodity) will yield minimum impacts on the drill sites to the surrounding land uses (Cultivation & mining).

**Table 8: Need and desirability considerations**

<b>NEED AND DESIRABILITY OF THE PROPOSED PROJECT</b>	
<b>PART I: NEED</b>	
Questions (Notice 792, NEMA, 2012)	Answers
1. Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	Prospecting is an integral part of its rationale to make use of the abundant natural resources in the area to create strong, resilient, and prosperous district. The land use is not associated with prospecting.
2. Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Should a mining right be applied for and be approved in future, the integrity of the existing environmental management priorities of the area may be compromised, and a full Environmental Impact Assessment must then be conducted to determine the sustainability of the mining activities. The proposed project has the potential to have a positive impact on the socio-economic conditions of the local communities involved as well as for gathering information about the geographical layout of the area. Should the results of the prospecting show that feasible reserves are present to mine, a mining right may be approved. This is proven by the existing mining activities (Wes Coal Mining).
3. Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	<p>According to the IDP (2007/2022), the unemployment rate of economically active population as of 2016 was 21.6% according to Census.</p> <p>High unemployed is also due to the influx of job seekers into the municipal area. The Covid-19 pandemic has resulted to further job losses.</p> <p>The Limmkholo Investment(Pty) Ltd prospecting will yield positive impact on the socio-economic conditions especially if it graduates to mining, by</p>

		<p>creating more jobs and providing developments to the local communities.</p> <p>In the last few years whilst Community Services has increased and Mining as an employer has grown and now contributes 12, 7%.</p>
4.	Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development?	All infrastructure for services and capacity will be temporary and will be provided for the proposed prospecting/drilling activities. Temporary Infrastructure includes i.e Mobile toilets, temporary shaded area (in a form of Gazebo). Drilling mechanisms to be employed will be of diamond core drilling. The road networks are fully intact, and the project will not have a major impact on road congestion. Thus, additional capacity does not need to be created for the development.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	The development is not provided for in the infrastructure planning of the municipality as it is a small development of local importance. Thus, the proposed project will not have any implications for the infrastructure planning, as no services and/or infrastructure needs to be upgraded or created to cater for this project. The proposed project will be making use of mobile structures.
6.	Is the project part of a national programme to address an issue of national concern or importance?	The mining sector is a significant contributor to the National GDP as well as a massive employer of people. This project will contribute to the National Development Plan of eradicating poverty/unemployment. Chapter 6 of the National Development Plan highlights an "inclusive rural economy" and the objectives of this plan are to create jobs in mining and industry and activating rural economies through service to small and micro mining.

## PART II: DESIRABILITY

7.	Is the development the best practicable environmental option for this land/site?	The project area lies on heavily modified land. The activities currently present on site have already had an impact on environmental management. The disturbed areas (drill sites) will be rehabilitated immediately after
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		prospecting activities.
8.	Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	The approval of this prospecting application will not compromise the integrity of the existing environmental management priorities of the area provided that sensitive areas are avoided and the mitigation measures as recommended in this report and in the EMPr are implemented.
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	The integrity of the existing environmental management priorities for the area will not be compromised by this development.
10.	Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	The coalfield lithology comprises sediments of the Dwyka and Vryheid Formations of the coal-bearing Eccca Group, Karoo Supergroup thus providing the ideal geological formation for the presence of the mineral applied for. The current infrastructure suffices for the process of prospecting. The planned drilling activities does not need any new infrastructure.
11.	How will the activity of the land use associated with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	As far as the Basic Assessment on the area of question, there is no known heritage or cultural significance. Should the standings change, the relevant authority will be notified immediately and information will be included into the BAR & EMPr.
12.	How will the development impact on people's health and well-being? (E.g. In terms of noise, odours, visual character and sense of place, etc.)?	<p>The impacts on well-being, following mitigation, will be as follows:</p> <ul style="list-style-type: none"> <li>• Visual: Medium to low</li> <li>• Dust: Low</li> <li>• Noise: Low</li> <li>• Vibrations: Low</li> </ul> <p>Strict adherence to the recommendations &amp; mitigation measures identified will be ensured.</p>

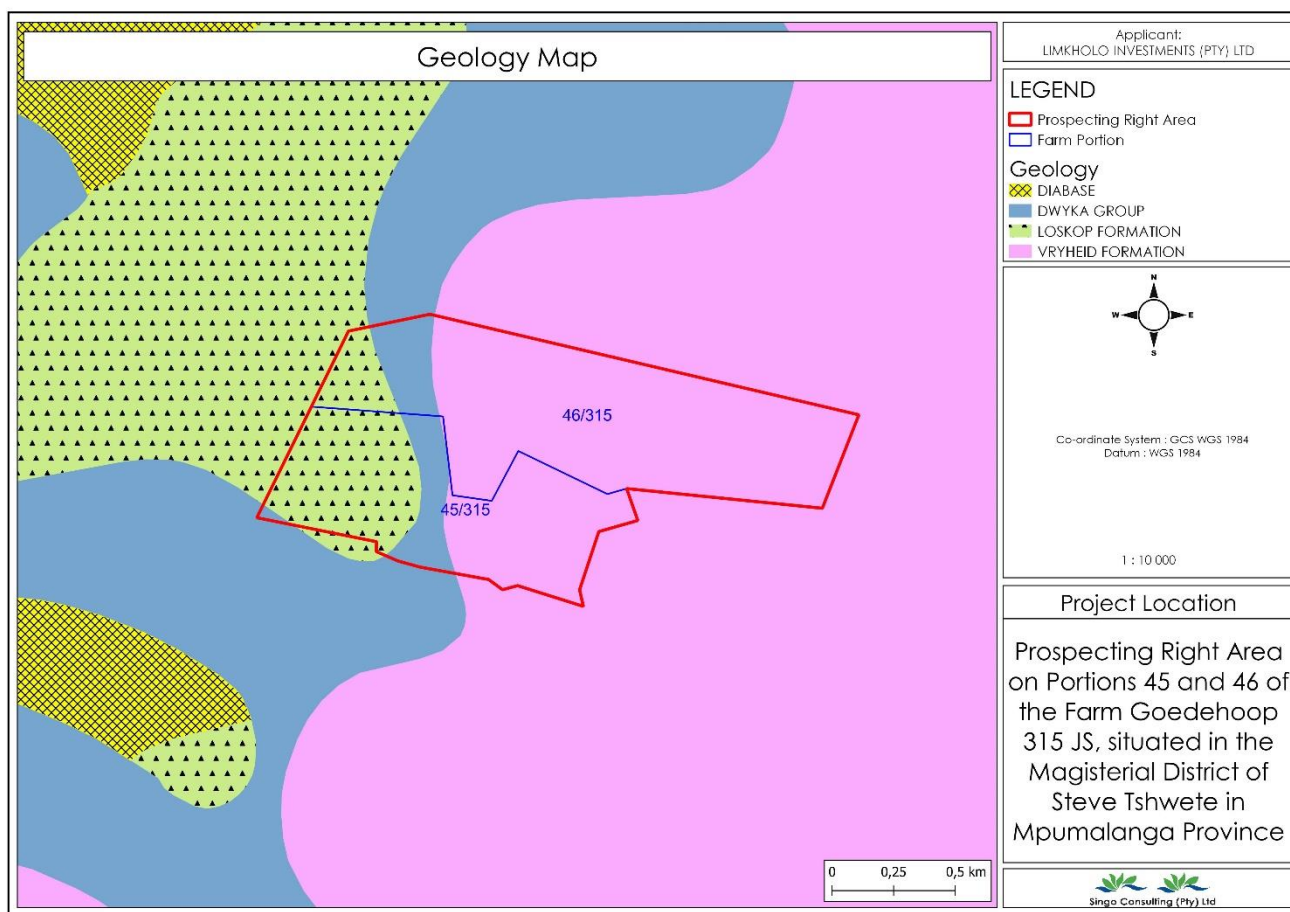
13.	Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?	The mining industry in Mpumalanga has been a cornerstone of the economy for a long period of history. South Africa offers ongoing proof that mineral revenues can create sizeable benefits to the economy in countries where they are sourced. The applied commodity contribute significantly towards the Municipal's GDP.
14.	Will the proposed land use result in unacceptable cumulative impacts?	The proposed project has only been identified to have minimal cumulative impacts that can be mitigated to an acceptable level. The measures outlined in the EMP attached will serve as a method to keep the proposed project from having any serious long term cumulative impacts on the receiving environment.

## **7 MOTIVATION OF THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE**

The proposed project is designed at exploring in-situ coal seams and the majority of South Africa's coal resources originate within the Ecca group belonging to the Karoo Super Group. The project is located within Karoo Super Group; this facilitates the process of Prospecting Right application.

The geology of the area south and southeast of Middelburg is mainly underlain by sediments of the Ecca Formation of the Karoo Supergroup. The lithology of the Ecca Formation consists of shale, shaly sandstone, griff, sandstone, conglomerate, coal (in places near the base and top). The area located south of Middelburg falls within the so-called Springs Witbank Coalfield, which extends over a distance of some 180km from the Brakpan and Springs areas in the west, to Belfast in the east and about 40km in a north south direction. The irregular northern margin of the coalfield is defined by the sub-outcrop of the Vryheid Formation against the Pre-Karoo rocks of the Transvaal sequence, the Waterberg Group and volcanics associated with the Bushveld Igneous Complex. North of this margin there are few coal bearing outliers of Karoo sediments. The southern margin of the coalfield is clearly defined over the central portion of the area by pre-Karoo granite and felsite hills, which separate the Witbank Coalfield from the Highveld Coalfield. To the east and the west of the central portion, the southern boundary is poorly defined and the separation in the vicinity of Delmas, Leslie and Hendrina is rather arbitrary. The Selons River Formation of the Rooiberg Group, Transvaal Supergroup, is indicated to be present within the area south and southeast of Middelburg. It consists of a bed of sandstone or quartzite at the base as well as massive, red

rhyolite of which the top shows flow bedding. It contains a few intercalations of sandstone, tuff, black rhyolite and breccia. A bed of dark, fine-grained mudstone is present approximately in the middle of the sequence. (see **Figure 7** for the project geology).



**Figure 7: Geological map**

## **8 FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE**

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

### **8.1 Details of all alternatives considered**

(With reference to the site plan provided and the location of the individual activities on site, provide details of the alternatives considered with respect to:

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and



(f) the option of not implementing the activity)

### **8.1.1 The property on which or location where it is proposed to undertake the activity**

The prospecting Right application directly affects portion 45 & 46 of the farm Goedehoop 315 JS. The development footprint encircles 181.426 ha.

### **8.1.2 The type of activity to be undertaken**

No bulk sampling work will be carried out during this prospecting program. Invasive prospecting activities such as drilling as well as non-invasive activities will be conducted during prospecting due to the unavailability of extensive historical borehole datasets.

### **8.1.3 Design or Layout**

No permanent structures will be constructed since exploration is temporary in nature. Landowners will be consulted duly for access and usage of the existing access roads.

- Portable ablution facilities will be used.
- It is planned to use one drill rig for all 20 drill holes.
- Rehabilitation will closely be controlled and supervision will be focussed.
- No changes to the layout are considered, however, the holes can be orientated to match the shape of the good quality of resource with the geophysical survey information.
- Buffer zones will apply to all the sensitive areas on site

### **8.1.4 Technology Alternatives**

The technology chosen is deemed effective for exploring deposits of this type, resource definition and evaluation. This is inclusive of the non-invasive and invasive technology. The non-invasive includes desktop studies, geological file mapping and geophysical survey whilst invasive includes the prospecting boreholes for resource estimation. Prospecting will be done in interrelated phases. Alternatives will be considered once the preceding phase necessitate reasonable changes and adaptations.

### **8.1.5 The operational aspects of the activity**

A prospecting period of five years has been applied for. No permanent services including water supply, electricity, or sewerage facilities are required. All infrastructure to be developed will be mobile and temporary including portable toilets and water tanks.

### **8.1.6 The option of not implementing the activity**

This is a low biologically sensitive area, there are heavily Modified area, other natural area and PA: wetlands .

The proposed prospecting activities have the potential to have a negative impact on the ecological environment as well as the social environment of the area. These impacts, however, can potentially be prevented, minimised, mitigated and managed to low and very low levels, as shown through the impact assessment.

### **8.2 Details of the Public Participation Process Followed**

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

The Public Participation is the basis of any EIA process. The Public Participation Process (PPP) seeks to provide the opportunity for all stakeholders including potential players and all applicable I&APs, state departments, state bodies and the competent authority (CA) to register so that they can raise concerns, contribute to local knowledge, comment on the Draft Basic Assessment Report (DBAR) & Environmental Management Programme report (EMPr) but most importantly provide suggestions for enhanced benefits. Comments received during the Public Participation Process are incorporated into the Final BAR & EMPr to be submitted to the competent authority being the Department of Mineral Resources & Energy for adjudication.

#### **Defining Stakeholders**

The term public can be taken to mean any individual or group in society, including the government and business sector. Who or what is included in the "public" depends very much on activities under consideration. The term "stakeholder" helps clarify the meaning or "public" in the context of development activities.

A stakeholder is any person, group of institution that has an interest in an activity, project or program. This includes both intended beneficiaries and intermediaries, those positively affected, and those involved and/or those who are generally excluded from the decision-making process.

Stakeholders can usefully be categorized in five main types:

- Directly affected people (who live or work where the project will be located)
- indirectly affected people (who live nearby or use resources from the project area)

- public sector agencies (ministries, provincial or local government, government mandated mass organizations)
- private developers (private companies with a direct investment in the project) and their subcontractors and financiers
- others (donors, NGOs with a stake in the project, external advisors, the business sector).

### **Objectives of the Public Participation**

- Main objectives for involving the public are:
  - the identification of key issues of concern to the public, addressing public perceptions,
  - the provision of local expertise and knowledge,
  - the identification of possible alternatives/options,
  - ensuring that affected groups are involved at the very beginning of project design, and
  - the critical review of documentation.

The separation of these objectives is somewhat artificial as the achievement of one will often depend upon the achievement of another.

### **Identification of Interested and Affected Parties**

#### **Interested and Affected Parties Identification Procedure**

The Interested & Affected Parties for this particular project were identified through e-mail media communications. Other means of Identification & notification adopted was through the print media (in a form of newspaper) and placement of notices in public spaces.

#### **Newspaper Advertisements**

Newspaper advertising is used to target particular demographics that are traditionally much harder to reach through other media such as the internet and other social networks. A newspaper advertisement was published on the 1<sup>st</sup> of July 2022 in the *Middelburg observer* to notify all the Interested & Affected Parties of the proposed development. See **Figure 8** for the published newspaper Advertisement.





Figure 9: Site notice placement.

Table 9: Windeed Search Results

Windeed results were obtained from the internet. It is denoted that both portions are owned by Wescoal Mining (Pty) Ltd see table the below.

Any personal information obtained from this search will only be used as per the Terms and Conditions agreed to and in accordance with applicable data protection laws including the Protection of Personal Information Act, 2013 (POPI), and shall not be used for marketing purposes.

**SEARCH CRITERIA**

Search Date	2022/06/24 12:24	Farm Number	315
Reference	-	Registration Division	JS
Report Print Date	2022/06/24 12:26	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	WinDeed Database

**PORTION LIST**

Portion	Owner
	LTD
45	WESCOAL MINING PTY LTD
46	WESCOAL MINING PTY LTD

**Draft Basic Assessment Report (BAR) and Environmental Management Programme report (EMPr)**

The Draft BAR and EMPr will be released for a period of 30 days from **1<sup>st</sup> August 2022 to 31<sup>st</sup> August 2022**.

Hard copies of the Draft BAR and EMPr will be submitted to organs of state and relevant authorities that have requested it i.e. Mpumalanga Tourism Parks Agency (MTPA), Department of Agriculture, Land Reform and Rural Development (DALRRD), South African National Roads Agency Ltd (SANRAL) & Department of Water and Sanitation (DWS). Additionally, copies will be placed at Gerard Sekoto Public Library & another copy submitted at the Steve Tshwete Local Municipality. Electronic copies will be made available upon request from Singo Consulting (Pty) Ltd via email; Dropbox link; Google drive; WeTransfer, etc.

**Consultation and Correspondence with I & Ap's and Stakeholders**

All comments received from I&APs and organs of state and responses sent will be included in this BAR and EMPr.

## 9 Issues and Response Register.

### 9.1 Summary of issues raised by I&As.

The table below will be completed after the 30-day review and comments period of the Draft BAR and EMPr. The comments received will form part of the Final BAR and EMPr to be submitted to the DMRE for decision making.

**Table 10: Summary of issues raised**

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

<b>Municipal councillor</b>					
<b>Municipality</b>					
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS</b>					
<b>Communities</b>					
<b>Dept. Land Affairs</b>					



<b>Traditional Leaders</b>					
<b>Dept. Environmental Affairs</b>					
<b>Other Competent Authorities affected</b>					
<b><u>OTHER AFFECTED PARTIES</u></b>					
<b><u>INTERESTED PARTIES</u></b>					

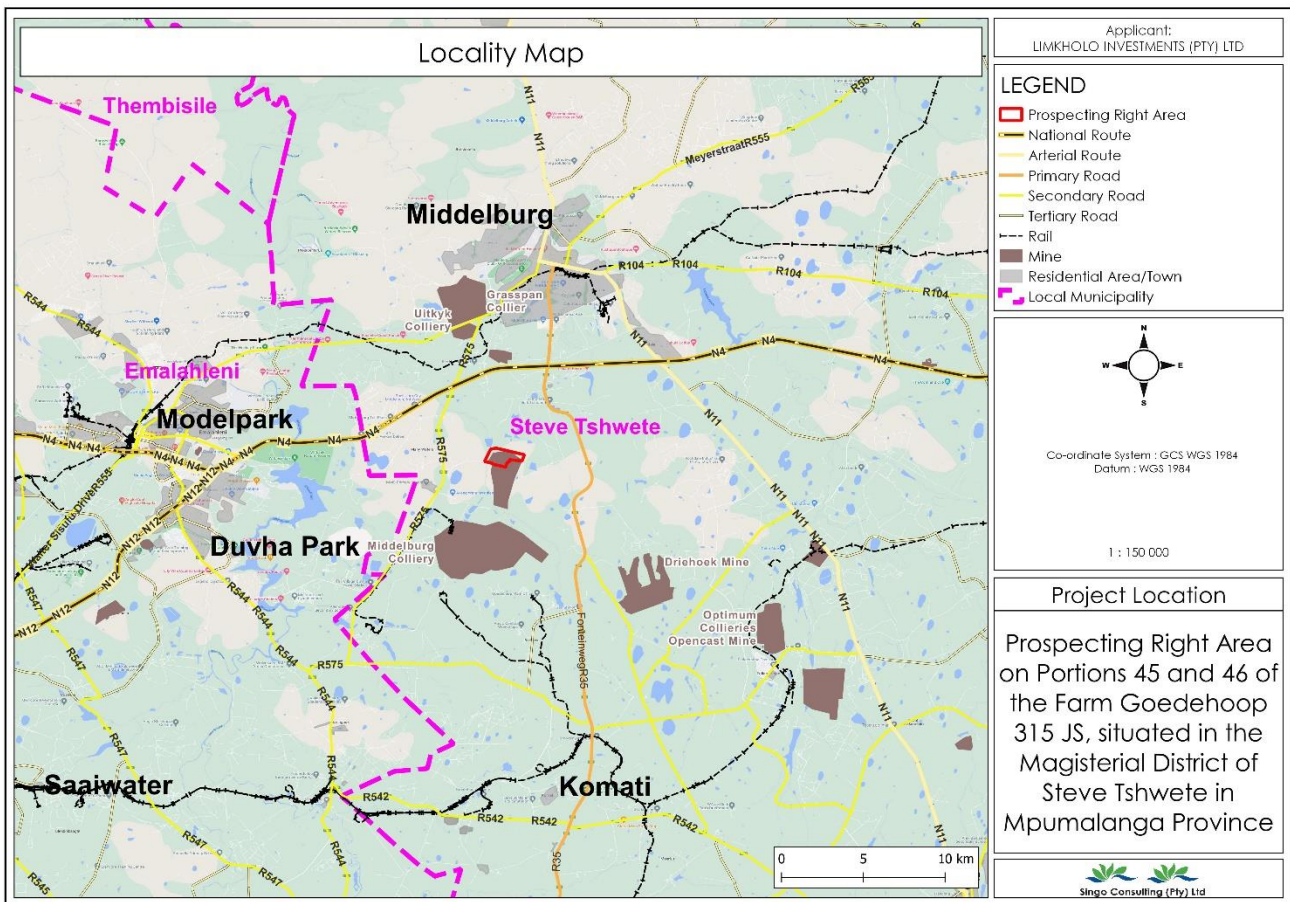
## 10 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

(The environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

### 10.1 BASELINE ENVIRONMENT

#### Socio Economic Context

The proposed Prospecting Project is located within the Magisterial District of Steve Tshwete, situated within the Nkangala District Municipality. See **Figure 10** for ease of reference.



**Figure 10: Project location**

The Mpumalanga Department of Economic Development and Tourism (MDEDT) has developed a Strategic Plan for the years 2015 to 2020 that is based on the Mpumalanga administration's new priorities and aims to accelerate growth, support priority sectors, create jobs, and promote economic participation for all citizens. The Department's mission is to "advance economic growth that generates decent jobs and supports sustainable development via cooperation," with the goal of creating an "inclusive, internationally competitive economy." The plan's implementation is

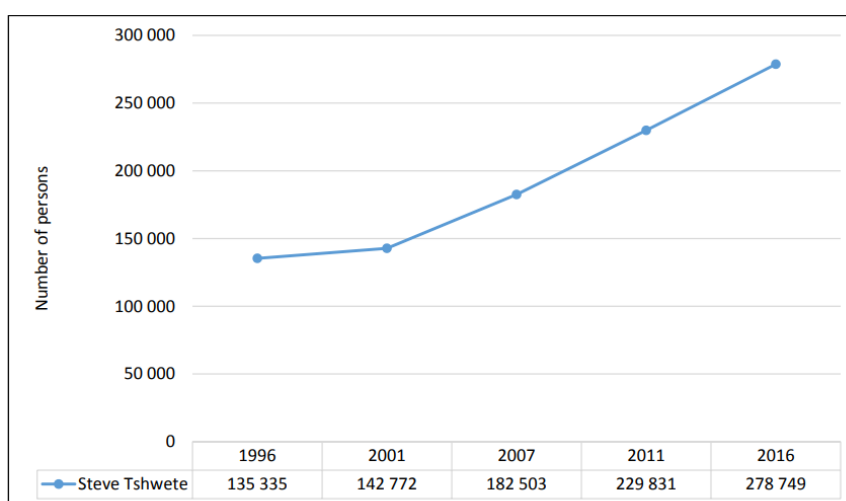
guided by Outcome 4 of the national government's Medium Term Strategic Framework (MTSF) for the years 2015 to 2010, which is "Decent employment through inclusive growth."

The province possesses at least 80% of South Africa's Coal resources, according to the strategy. There is also a substantial forestry and agriculture sector, both of which may absorb low-skilled labor. In the active mining, agricultural, and forestry industries, beneficiation is also conceivable. The province is strategically located, with access to inland regions and proximity to Swaziland and Mozambique, particularly the Maputo port. Roads, transportation and logistics, energy, water, telecommunications, and medical services are all considered solid infrastructure, but rural infrastructure is acknowledged as deficient. The natural landscape of the province is ideal for boosting tourism. With its stakeholders, the Department has built strong working ties. It does, however, recognize the need for greater coordination among provincial stakeholders.

Mpumalanga Premier Mtshweni remarked in her State of the Province Address on February 22, 2019 (Mpumalanga Provincial Government, 2019) that the provincial economy increased at a rate of 3% in 2014, but only 1% last year. The Mpumalanga Strategy specifies five priority economic sectors in the province: agriculture for agro-processing, mining for value addition through beneficiation and energy generation, manufacturing, ICT, and tourism and cultural industries for job creation and SME growth (SMMEs). To put together a comprehensive assistance package for SMMEs and cooperatives, the department is encouraging collaboration among departments from all levels of government as well as the private sector.

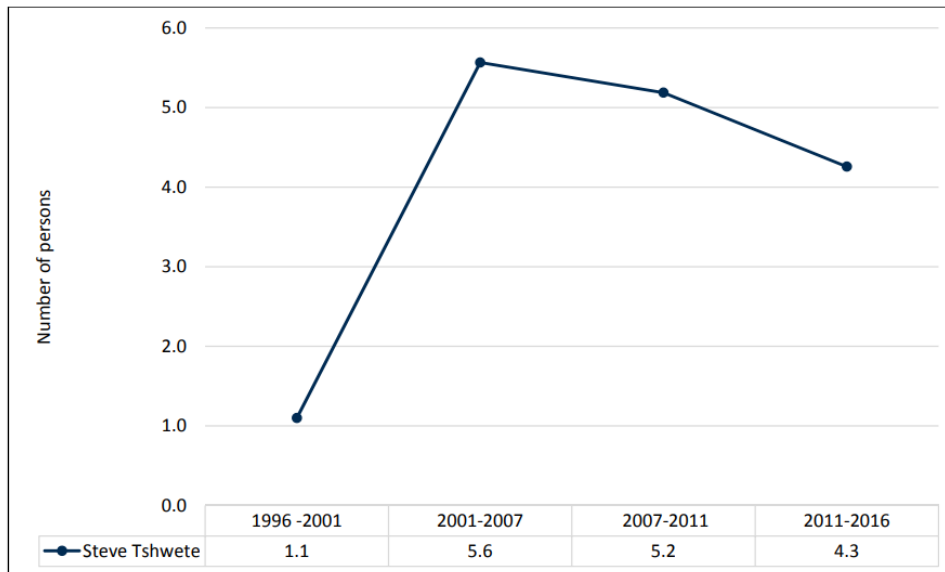
## 10.2 Population demographics

Municipal Population from 1996, 2001,2007,2011 and 2016. This represents an increasing in population densities.



Source: Stats SA Community Profile (1996, 2001, 2007, 2011 & 2016)

**Figure 11: Population Size.**



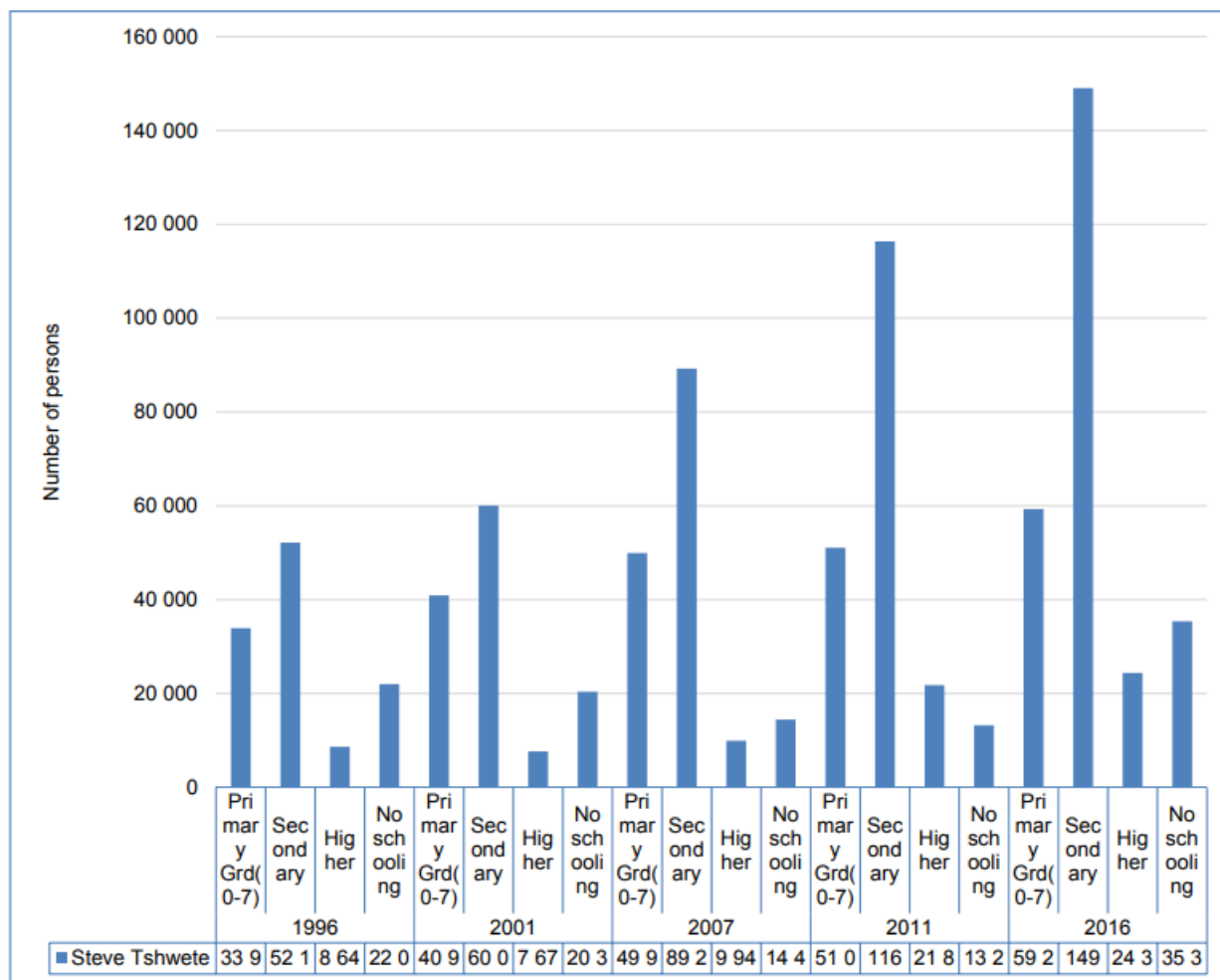
Source: Stats SA Community Profile (1996, 2001, 2007, 2011 & 2016)

**Figure 12: Population growth rate (%).**

The figure 11 and 12 indicate that Steve Tshwete is increasingly under pressure due to population growth. In 2016, the total population in Steve Tshwete was approximately was 278 749. Population grew by 4.4 %. Over the nine year period from 2007 to 2016, STLM's population increased by 9.7%. The municipality is now ranked the 7th largest population in the province and 19.3% of total population of Nkangala as per the 2016 community servuey.This could be attributed to the number of industries that were opened within the 10 years (2001-2011) that attracted workers into Middelburg. It is estimated that the population number for 2030 will be at more or less 509 355 people given the historic population growth per annum which will put pressure on the infrastructure and basic service delivery and eventually also sustainable job creation in the long run.

### **Education**

In terms of education, the majority of the population of the municipality have some form of education with only 14.4. % of the population having no schooling as depicted in the diagram below (Census 2011). According to the 2016 Community Survey, the population in Steve Tshwete aged 20+ completed grade 12, increased from 73 793 in 2011 to 97 943 (increase of 24 150) in 2016 which translate to an increase of 32.7% in the relevant period.Steve Tshwete's grade 12 pass rate improved from 74.4% in 2011 to 86.3% in 2015 and became the 2nd highest of the municipal areas of the Province.The area achieved an admission rate to university/degree studies of 30.5% in 2015. A joint effort is needed between the municipality, department of education and private sector to ensure that the 66.3% learners who didn't qualify for university admission get accommodated in other institutions such as TVET colleges and technikons.



Source: Stats SA Community Profile (1996, 2001, 2011 & 2016)

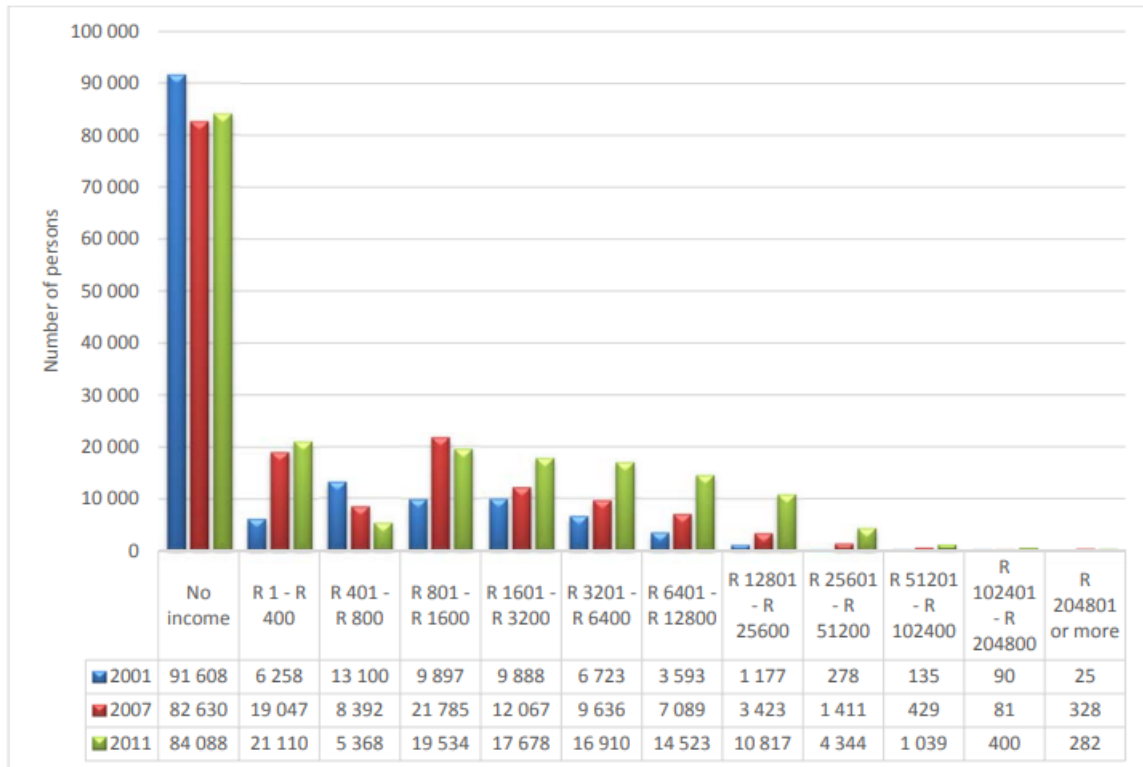
Figure 13: Highest Educational attainment (20+ years).

### Employment and income

Steve Tshwete economy is one of the biggest economic areas and it is therefore expected that a significant number of employment opportunities are being provided in the area. Mining, trade and manufacturing are the major leading employment drivers in Steve Tshwete LM. The unemployment rate of Steve Tshwete decreased slightly from 19.7% in 2011 to 16.4% in 2015 and was the lowest among all the municipal areas of Mpumalanga. Unemployment rate for females 21.8% and that of males 12.9%. Youth unemployment rate according to the 2011 Census figures 27.1% - challenge with especially very high youth unemployment rate of females. The largest employing industries in Steve Tshwete are trade (including industries such as tourism), community/government services and mining. High labour intensity in industries such as agriculture, trade and construction.

According to the census, the number of people without an income has decreased from 91608 to 84088 between 2001 and 2011. The majority (63690) of Steve Tshwete individual earn within the R1-R 3200 followed by about 47 633 individuals who earn from R3200-R102 400 in 2011 There has been

an increase This could be attributed to the number of mines and manufacturing industries located in STLM. Individual income distribution in Steve Tshwete is detailed in the table below:



Source: Statistics South Africa Census 2001 and 2011

Figure 14: Individual income distribution in Steve Tshwete 2007.

## 11 GEOLOGY

### Karoo Supergroup

The proposed project area follows under the main Karoo supergroup, under Eccca group. The sedimentary part of the Karoo Supergroup is subdivided into four main lithostratigraphic units, which from the base up are the Dwyka, Eccca, Beaufort and Stormberg (Molteno, Elliot and Clarens formations) groups (Johnson et al., 1996; SACS, 1980;). These are capped by some 1.4 8 km of basaltic lavas of the Drakensberg Group (Johnson et al., 1996; Veevers et al., 1994), the extrusion of which is related to the break-up of Gondwana (Cox, 1992). The basement to the Karoo Supergroup fill in both the MKB and in the northern basins is heterogeneous (Bordy et al., 2004a; Hancox, 1998; Rutherford, 2009) and this heterogeneity plays a significant control on the nature of the fill, particularly during the early phases of the deposition of the Karoo Supergroup.

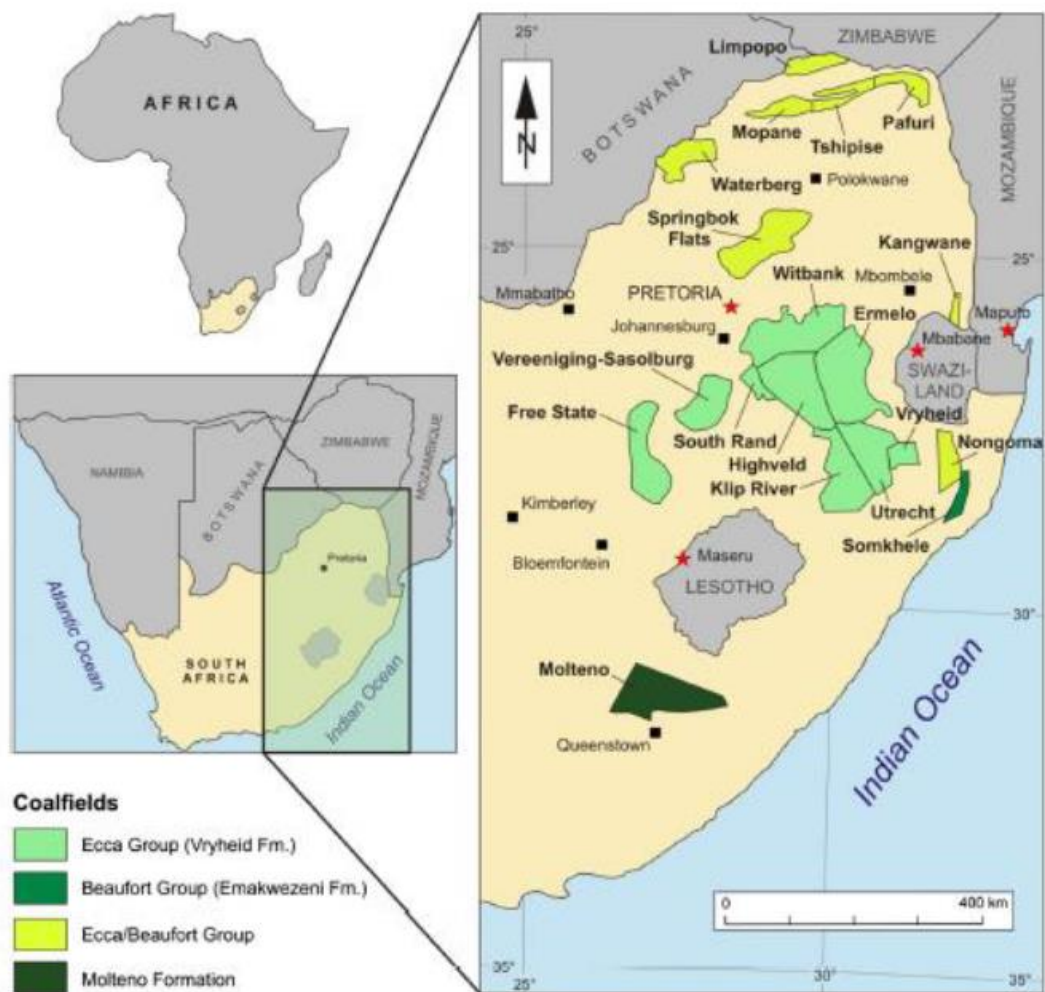


Figure 15: Coal field of South Africa (adopted from Hancox and Gotz, 2014).

### Dwyka Group

The rocks of the Dwyka Group in South Africa are amongst the most important glaciogenic deposits from Gondwana. This Group is named for exposures along the Dwyka River east of Laingsburg and forms the basal succession of the Karoo Supergroup. Dwyka Group strata are mostly contained within bedrock valleys incised into Archean to lower Palaeozoic bedrock (Visser, 1990; Visser and Kingsley, 1982; Von Brunn, 1996). The lithologies in the areas underlying the coalfields of South Africa consist of a heterolithic arrangement of massive and stratified polymictic diamictites, conglomerates, sandstones and drop stone-bearing varved mudstones. The easily identifiable lithologies form a good marker below the coal bearing Ecca Group. In the distal sector of the MKB these sedimentary strata accumulated largely as ground moraine associated with continental ice sheets and is generally composed of basal lodgement and supraglacial tills. These deposits are generally massive, but crude horizontal bedding occurs in places towards the top (Tankard et al., 1982).

## **Ecca Group**

In the 1970s a number of studies (Cadle, 1974; Hobday, 1973, 1978; Mathew, 1974; Van Vuuren and Cole, 1979) showed that the Ecca Group could be subdivided into several informal units based on the cyclic nature of the sedimentary fills. In 1980 the South African Committee for Stratigraphy (SACS, 1980) introduced a formal lithostratigraphic nomenclature for the Ecca Group in the northern, distal sector of the MKB, which replaced the previously used informal Lower, Middle and Upper subdivisions with the Pietermaritzburg Shale Formation, the Vryheid Formation and the Volksrust Shale Formation.

## **Local Geology**

### **Witbank Coalfield**

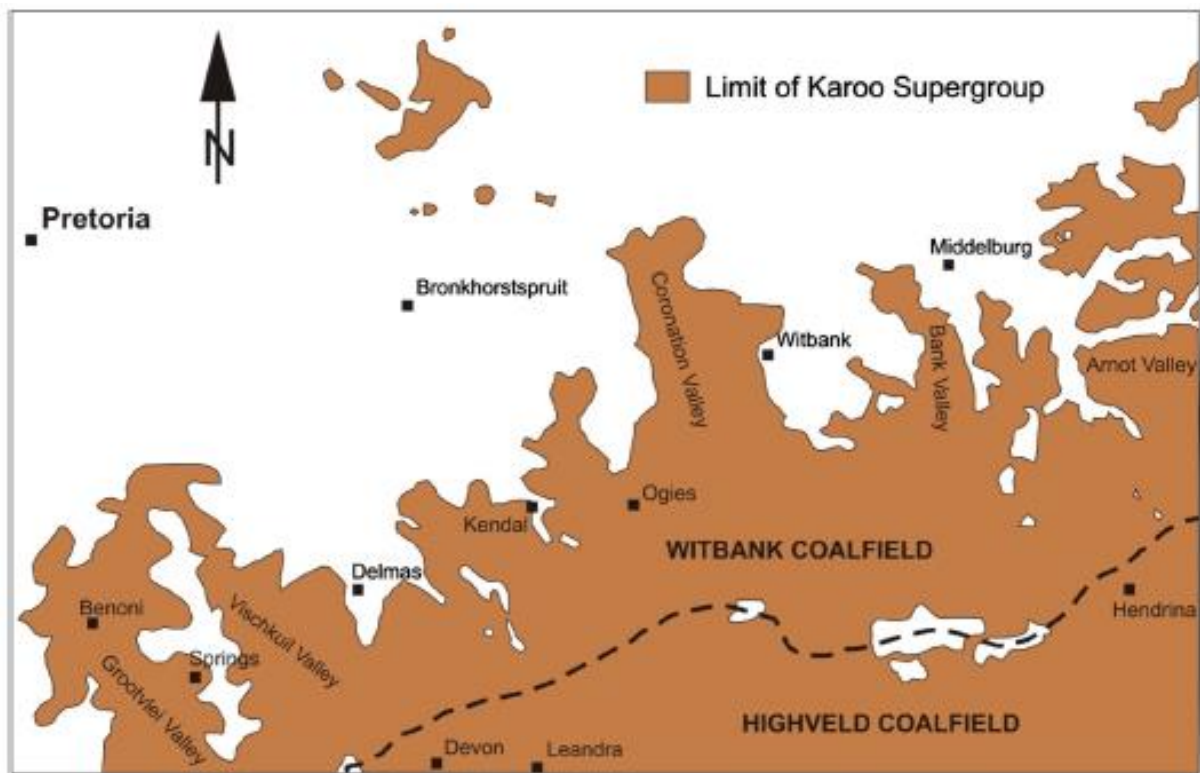
The Witbank Coalfield is elongated over 180 km in a west to east direction, it is not surprising that the basement to the Karoo Supergroup succession is varied. From west to east the basement rocks include metasedimentary, metavolcanic and dolomitic rocks of the Neoproterozoic Transvaal Supergroup, metasedimentary and metavolcanic rocks of the Palaeoproterozoic Waterberg Group and BIC age intrusives (felsites and granites).

The changing nature of the basement plays a major role in the nature of the palaeotopography created. For example, in the far east of the Witbank Coalfield, where dolomites of the Transvaal Supergroup form the basement, abnormally thick coals filling karst

topography are known. A similar but more extreme case is documented at the Syferfontein Colliery in the West Rand outlier (Stuart-Williams, 1986). In some areas close to the north-western basin margin, the stratigraphic column is reduced to only 80 m. It was also the focus of much

of the academic research, including the works of Cairncross (1979) in the Van Dykes Drift area, Le Blanc Smith and Eriksson (1979) to the west of Witbank, and Holland et al. (1989) to the east of Witbank. Cadle and Cairncross (1993) described a sandy bedload dominated system with lateral accretion surfaces from the southern part of the central sector. More recently it has been covered in the regional geological model of Grodner (2002) and Grodner and Cairncross (2006) and various Competent Persons' Reports available on various companies' websites (Goldschmidt et al., 2010a).





**Figure 16: Geographic extent of Witbank Coalfield**

### **Vryheid Formation**

The majority of the economically extracted coal in South Africa occurs in rocks of the Vryheid Formation, which ranges in thickness in the MKB from less than 70.0 m to over 500.0 m. It is thickest to the south of the towns of Newcastle and Vryheid, where maximum subsidence took place (Du Toit, 1918; Cadle, 1975; Whateley, 1980a; Stavrakis, 1989; Cadle et al., 1982) and where the basin was the deepest.

The No. 2 Seam Sequence includes the succession from the top of the basement to the top of the No. 2 Seam, which may be up to a maximum development of 60 m in places (Le Blanc Smith, 1980a). It incorporates the rocks of the Dwyka Group, as well as the overlying No. 1 and No. 2 coal seams. It should be noted that we accept that the Dwyka has separate Group status, but that it is described as the basal part of the No. 2 Seam Sequence. The thickness of the Dwyka Group in the Witbank Coalfield also varies considerably dependant on the nature of the underlying topography. It ranges from being thin or absent over the most prominent pre-Karoo topographic highs, to over 25 m thick in the central part of the Witbank Coalfield (Le Blanc Smith and Eriksson, 1979) to 30 m thick (Glasspool, 2003) in the deeper palaeo valleys. Le Blanc Smith and Eriksson (1979) note that the fill consists of poorly sorted matrix rich diamictites, laminated sandstones and siltstones, stratified pebbly mudstones and cross-stratified conglomerates.

In the western Witbank Coalfield, the No. 2 Seam Sequence tends to be much more variable in nature than it is in the central part. This is mainly due to the irregular nature of the Transvaal Supergroup (Malmani Group) dolomite floor. The Dwyka Group outcrops in the area around Delmas and is also well known from borehole core, which show the succession to be between 0 and 10 m in

thickness. The base of the No. 2 Seam Sequence is usually formed by poorly sorted matrix rich diamictites, with angular to rounded basement clasts, set in a matrix of fine- to medium-grained sandstone, which may be highly carbonaceous in places. Maximum clasts sizes documented by the authors are in the region of 30 cm. According to Le Blanc Smith (1980a) the Dwyka Group diamictites may in turn be overlain by a succession up to 36 m thick of mudstone and siltstone, which grades upwards to sandstone and conglomerate that form the floor of the No. 1 Seam or its carbonaceous mudstone equivalent.

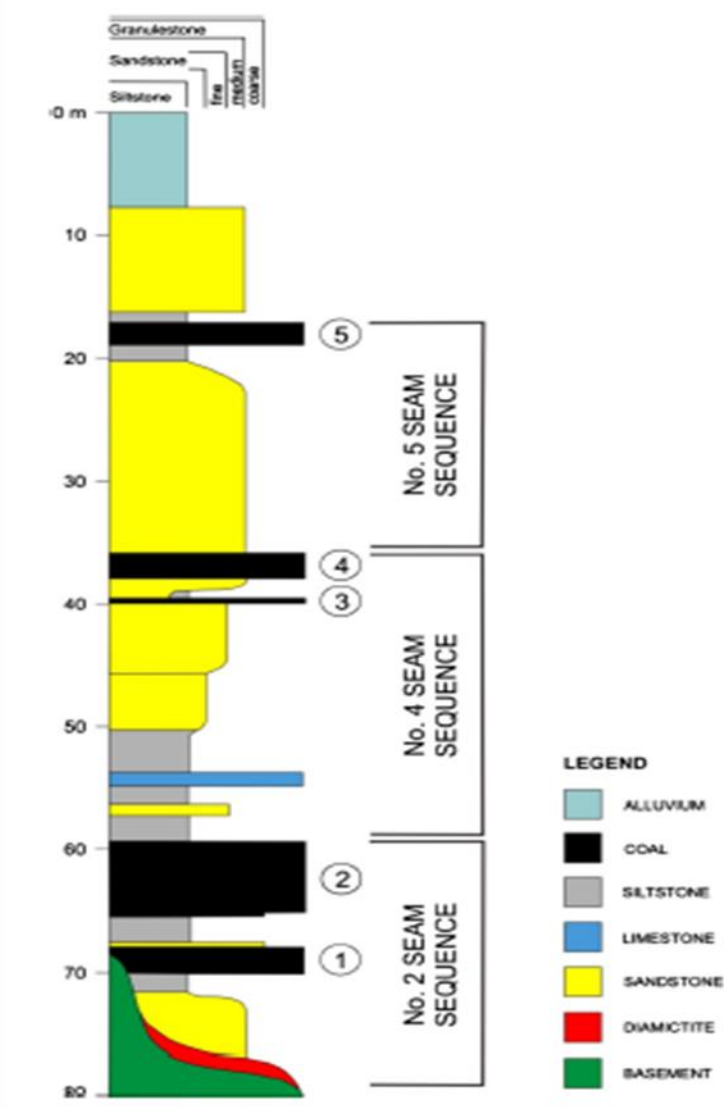
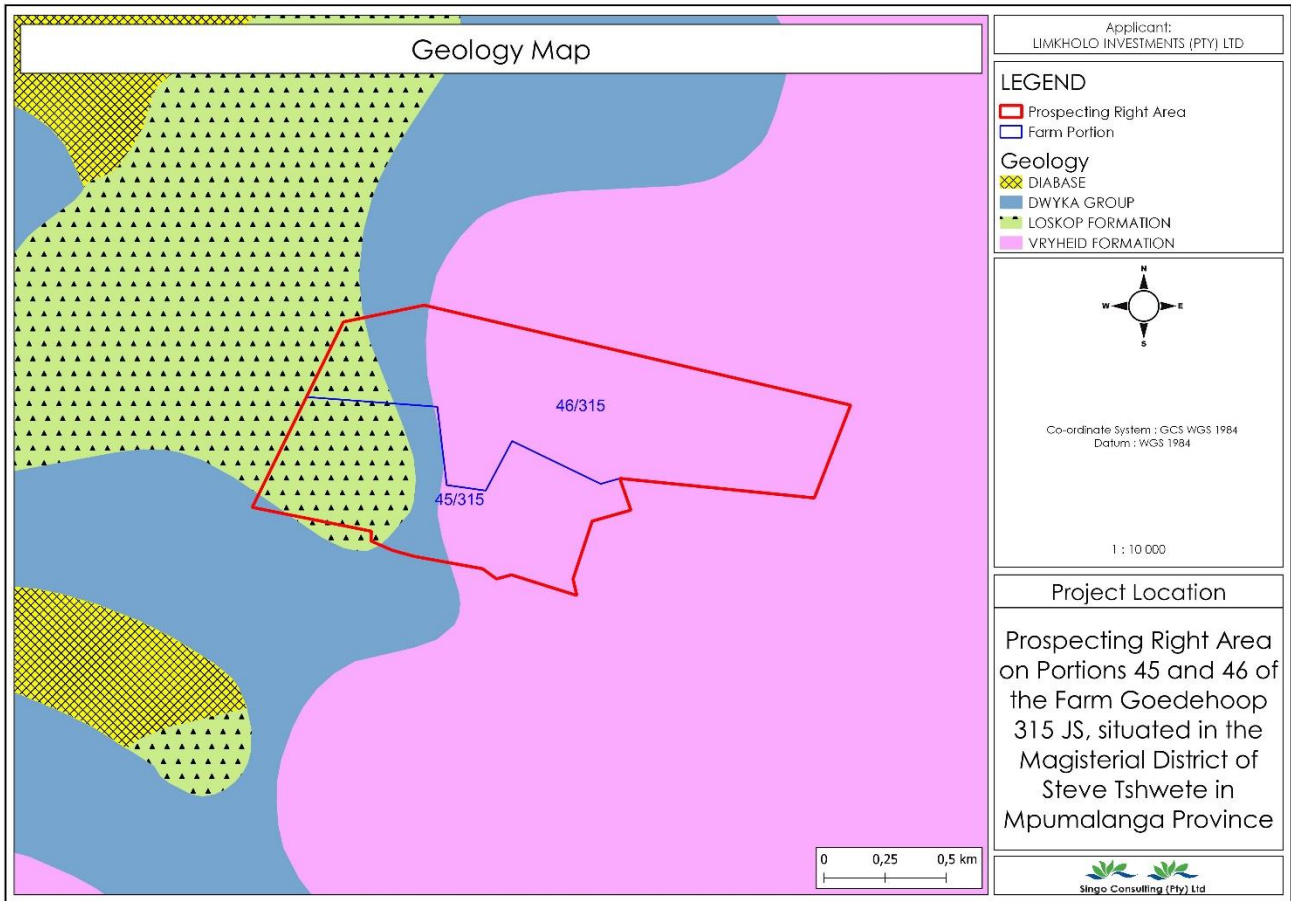


Figure 17: The stratigraphy of the Witbank coal field under Vryheid formation.



**Figure 18: Geology of the application area**

## **SOIL**

From a basic study that was conducted in house which is attached as **appendix 6**, a map in **Figure 19** was produced. This map shows that the areas is covered with freely drained structureless soils.

The Freely drained, structureless soils can be defined based on their soil depth, Soil Drainage, erodibility, and natural fertility.

### **Soil depth**

Depth of the soil profile is from the top to the parent material or bedrock. This type of soil can be classified as a restricted soil depth. A restricted soil depth is a nearly continuous layer that has one or more physical, chemical, or thermal properties.

### **Soil Drainage**

Soil drainage is a natural process by which water moves across, through, and out of the soil because of the force of gravity. The soils in the proposed area have an excessive drainage due to the soils having very coarse texture. Their typical water table is less than 150.

### **Erodibility**

Erodibility is the inherent yielding or non-resistance of soils and rocks to erosion. The freely drained structureless soils have high erodibility. A high erodibility implies that the same amount of work exerted by the erosion processes lead to a larger removal of material.

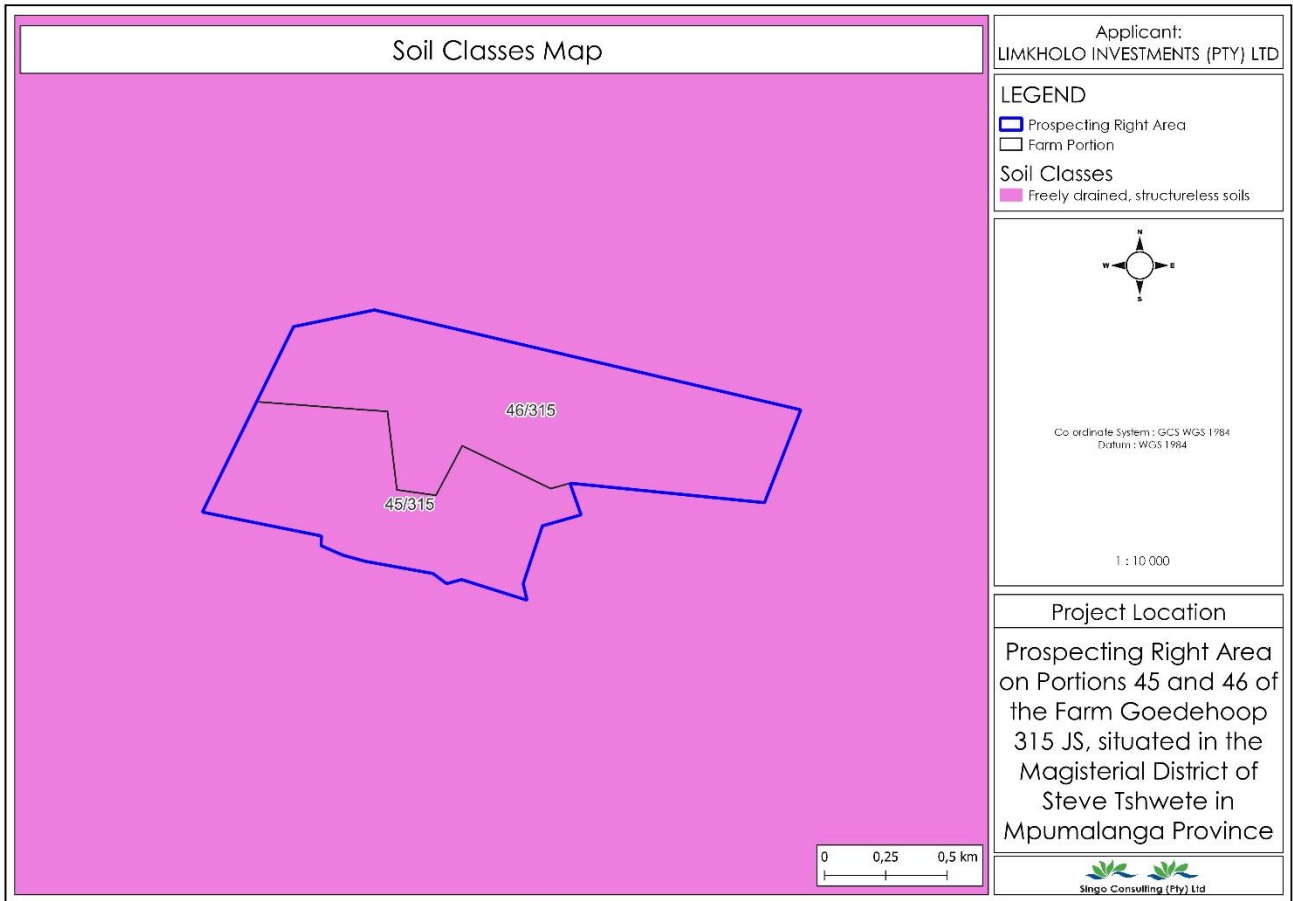


Figure 19: Soil classes map within the study area.



**Photo 1: Pictorial depiction of soil type captured.**

## Recommendations

- It is anticipated that the coal prospecting activities will not lead to severe loss of soils and degradation of agricultural potential.
- The exploration geologist will be advised to drill and sample away from the waterbody on site.
- The prospecting boreholes must be cased after drilling and properly rehabilitated by cap sealing the borehole after drilling. The core of coal on the drilled boreholes, should be cleared from the ground immediately after logging by a geologist, to prevent washing and leaching on the water resources during precipitation events.
- Absorbent Spill kits will be made available near the drill rigs during drilling activities.

## LAND CAPABILITY

According to the map produced by the GIS technician (see **Figure 20**), the land capability of the area as seen on the following page is said to be arable. The site assessment conducted on the 11<sup>th</sup> of July 2022 correlates to the current land use on site. Majority of the proposed project area is comprised of mining activities.

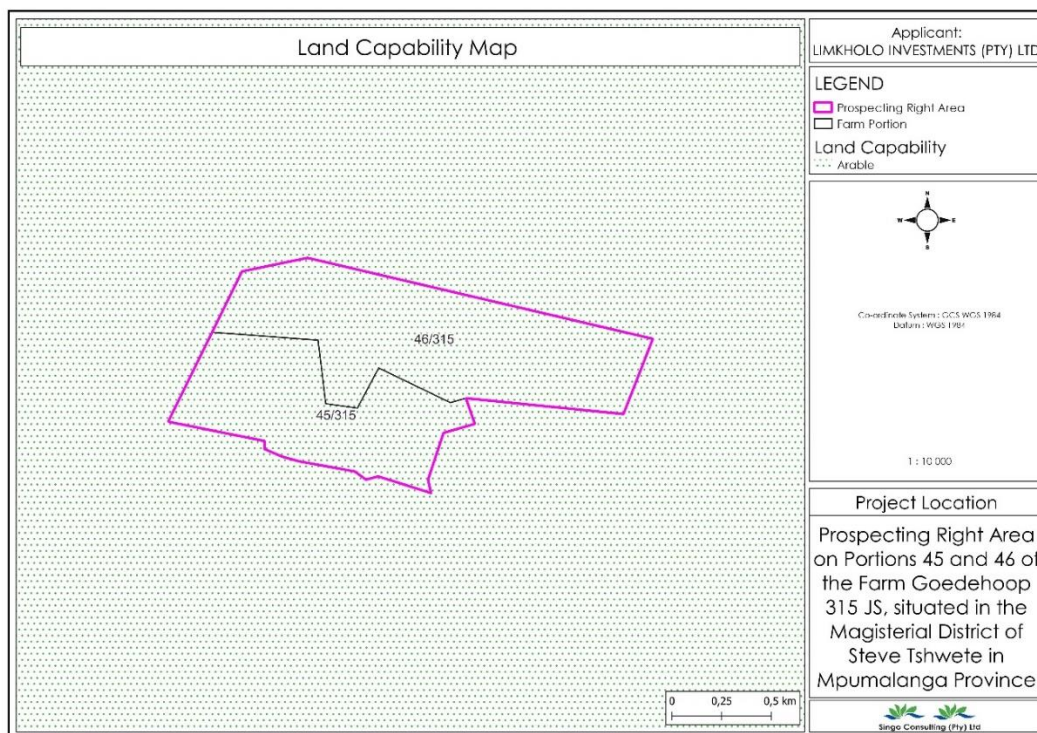
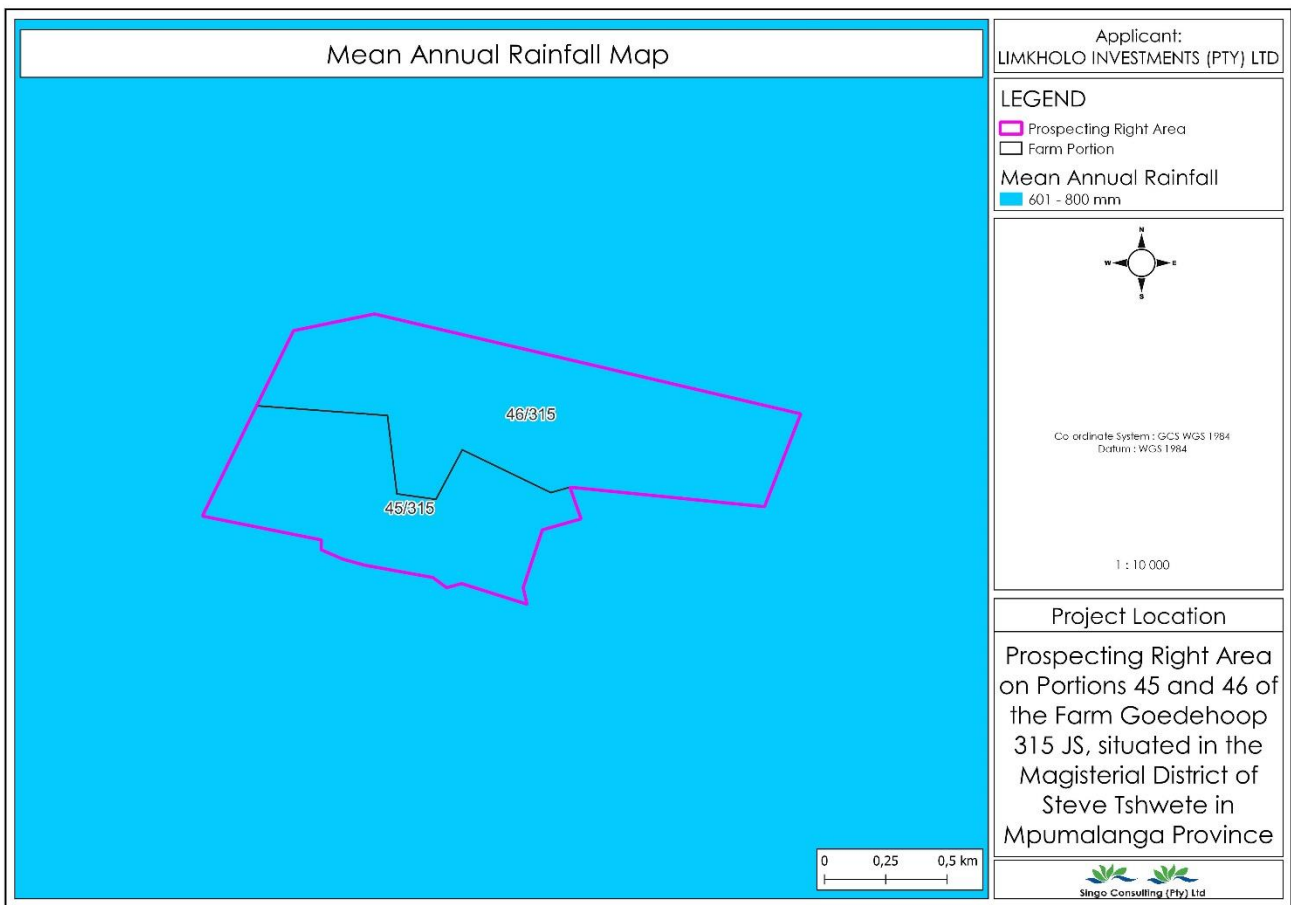


Figure 20: Land capability map.

## CLIMATE

In Middelburg, the climate is warm and temperate. In winter, there is much less rainfall in than in summer. In Middelburg, the average annual temperature is 15.5 °C. The rainfall here averages 683 mm. The driest month is July. There is 5 mm of precipitation in July. With an average of 115 mm, the most precipitation falls in November. With an average of 20.3 °C, January is the warmest month. June has the lowest average temperature of the year. It is 8.5 °C. The precipitation varies 110 mm between the driest month and the wettest month. During the year, the average temperatures vary by 11.8 °C.

## Rainfall



**Figure 21: Mean annual rainfall for the project area**

## TOPOGRAPHY

The topology of the area is illustrated below by **Figure 22**. A topographical map shows the physical features of the land. Besides just showing landforms such as mountains and rivers, the map also shows the elevation changes of the land. The topographical map illustrates that the proposed project area



is situated in a region generally characterized by a gentle undulating to flat-lying topography with a project area situated at 1600-1605 mamsl as depicted on the topography map below.

Elevation is shown using contour lines. When a contour line is drawn on a map it represents a given elevation. Every point on the map touching the line should be the same elevation. On some maps, numbers on the lines will let you know what the elevation is for that line. Contour lines next to each other will represent different elevations. The closer the contour lines are to each other, the steeper the slope of the land.

In this environmental project, topography is used to determine how soil can be conserved and how water will flow over the land. Data from topography can help to conserve the environment. By understanding the contour of the land, scientists can determine how water and wind may cause erosion. They can help to establish conservation areas such as watersheds and wind blocks. In this project contour lines indicates a gentle slope and a lower chance of soil erosion as they are sparsely packed.

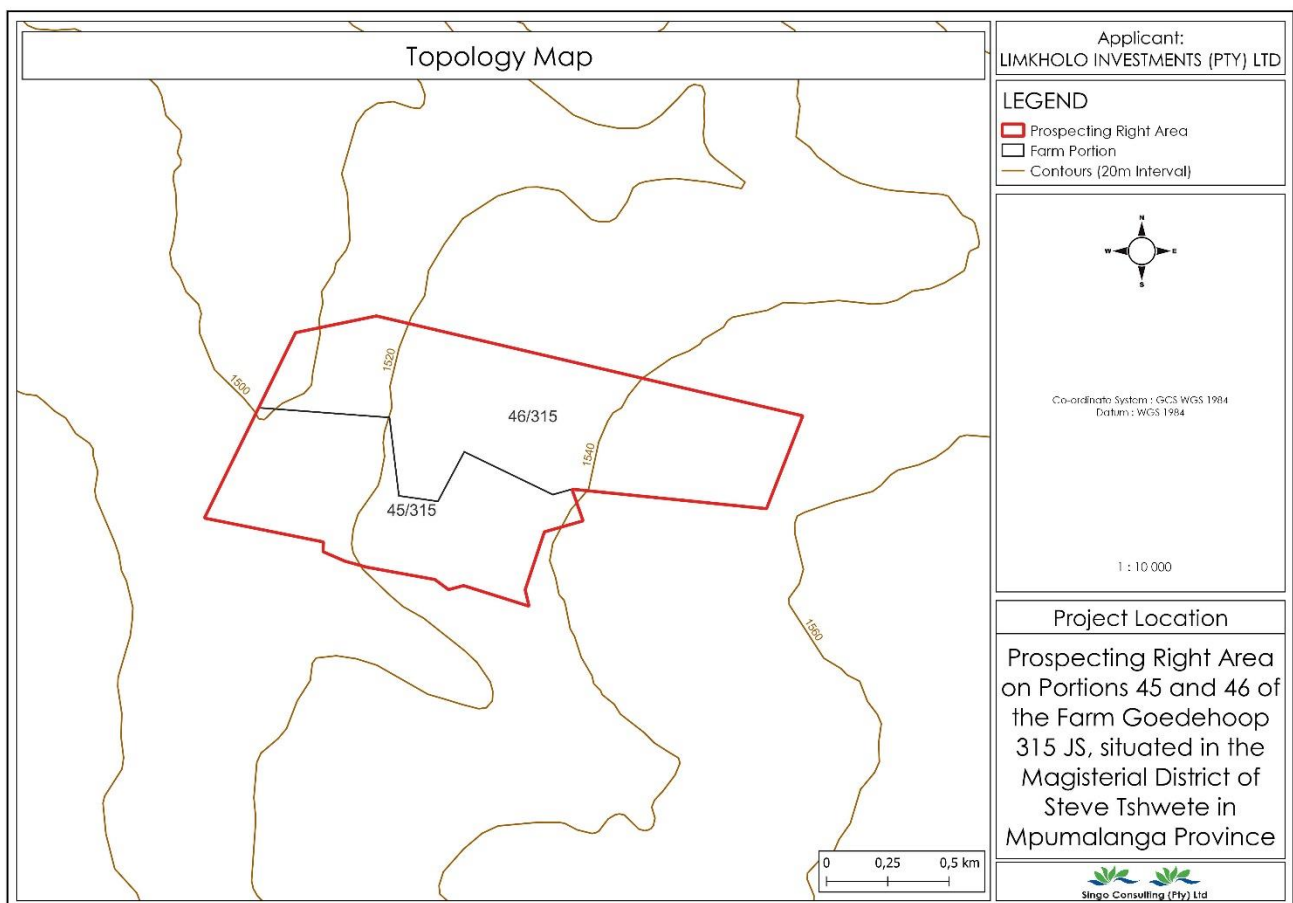




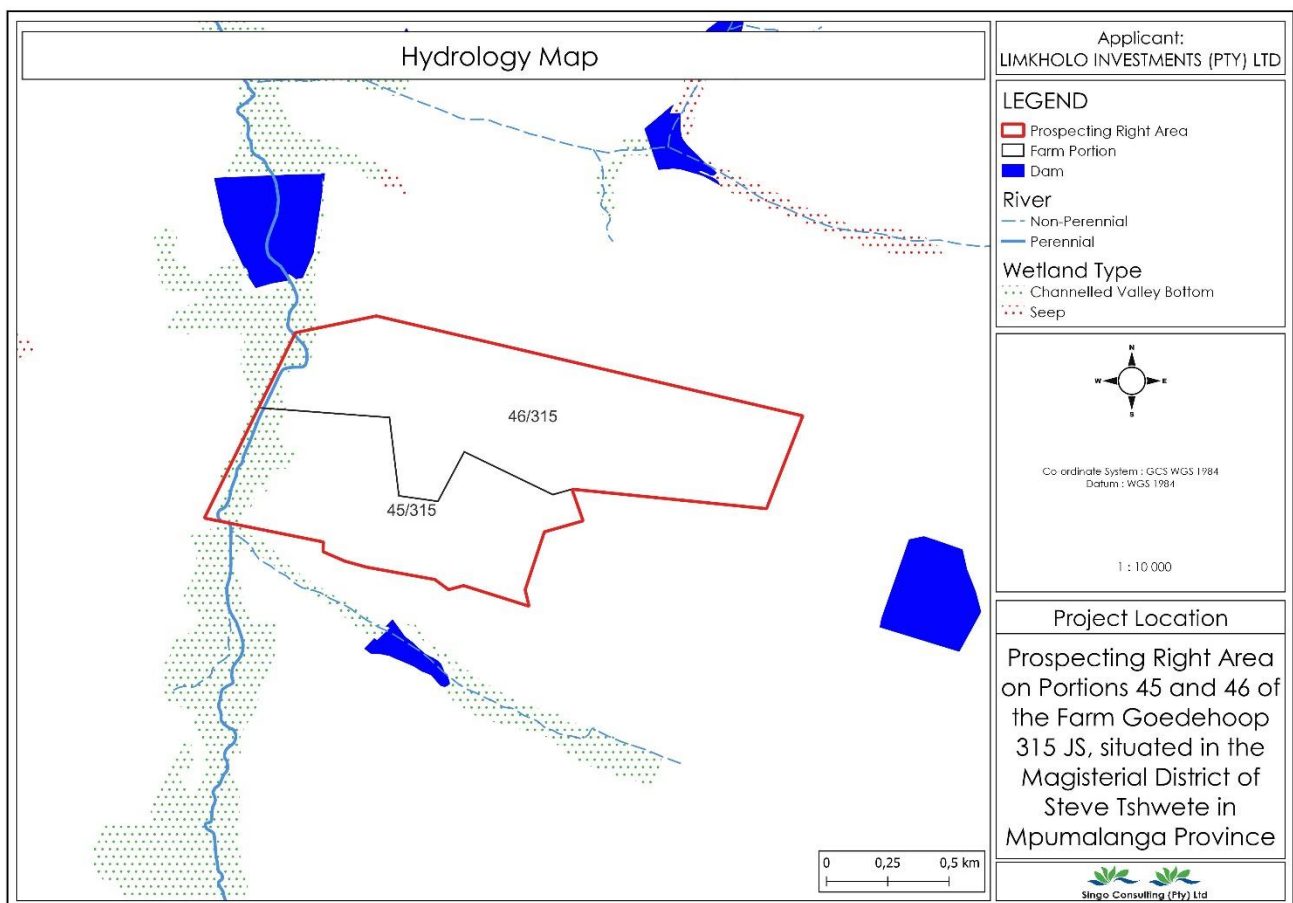


Figure 22: Topology of the application area.

## SURFACE WATER

The hydrology surrounding the proposed area is of vital importance. In this context hydrology is all the surface waters appearing within and nearby the proposed project area, where a potential to be impacted upon by the project exist. Site visit is the most significant part of the investigation. A site survey was conducted on the 11<sup>th</sup> of July 2022 as part of environmental assessment, to confirm the water bodies observed on the hydrological map and to take pictures of the current environmental condition before the commencement of the proposed prospecting. The hydrology map, illustrates that no water bodies are found within the proposed prospecting area and the following water bodies exists outside the project area:

-  Perennial river
-  Non – perennial river
-  Channelled Valley Bottom
-  Seep



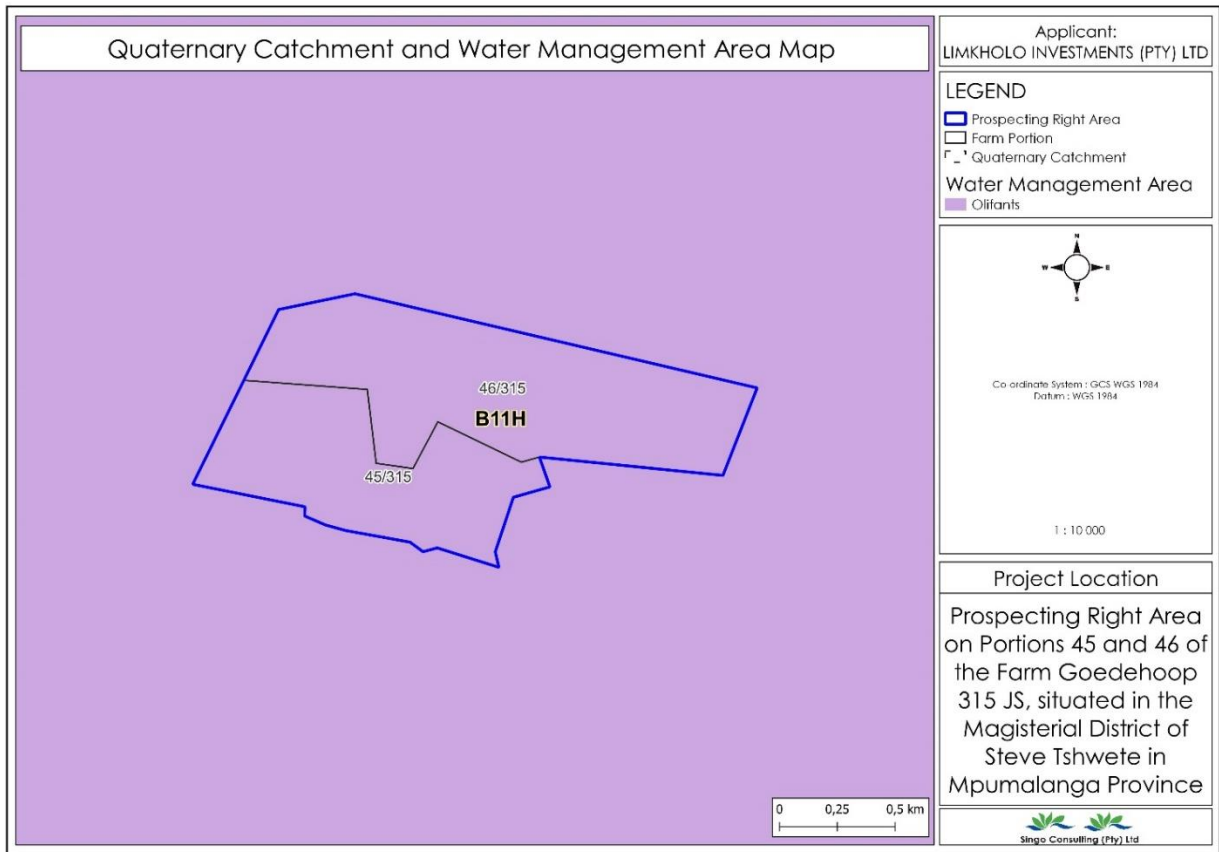
**Figure 23: Hydrology map of the proposed project area.**

These are important natural water resources that should not be disturbed by anthropogenic activities. For this project where prospecting right poses a risk on them, measures and guidelines will be put in place that will protect the water resources in this area to ensure optimal conservation of water. The wetland found on the boundary of the project area will be buffered and categorized as a no-go zone and prospecting will only occur on open land. In addition, prospecting will occur during dry seasons where the water percentages are low in the water bodies and the exploration geologists will be advised to drill and sample away from wetlands. During site inspection, there was water present in the wetland.

## **CATCHMENT DESCRIPTION**

South Africa's water resources are divided into quaternary catchments, which are the country's primary water management units (DWAF 2011). In a hierarchical classification system, a quaternary catchment is a fourth order catchment below the primary catchments. The primary drainages are further classified as Water Management Areas (WMA) and Catchment Management Agencies (CMA) (CMA). In accordance with Section 5 subsection 5(1) of the National Water Act, 1998, the Department of Water and Sanitation (DWS) has established nine WMAs and nine CMAs as outlined in the National Water Resource Strategy 2 (2013). (Act No. 36 of 1998). The purpose of establishing these WMAs and CMAs is to improve water governance in various regions of the country, ensuring a fair and equal distribution of the Nation's water resources while ensuring resource quality is maintained.

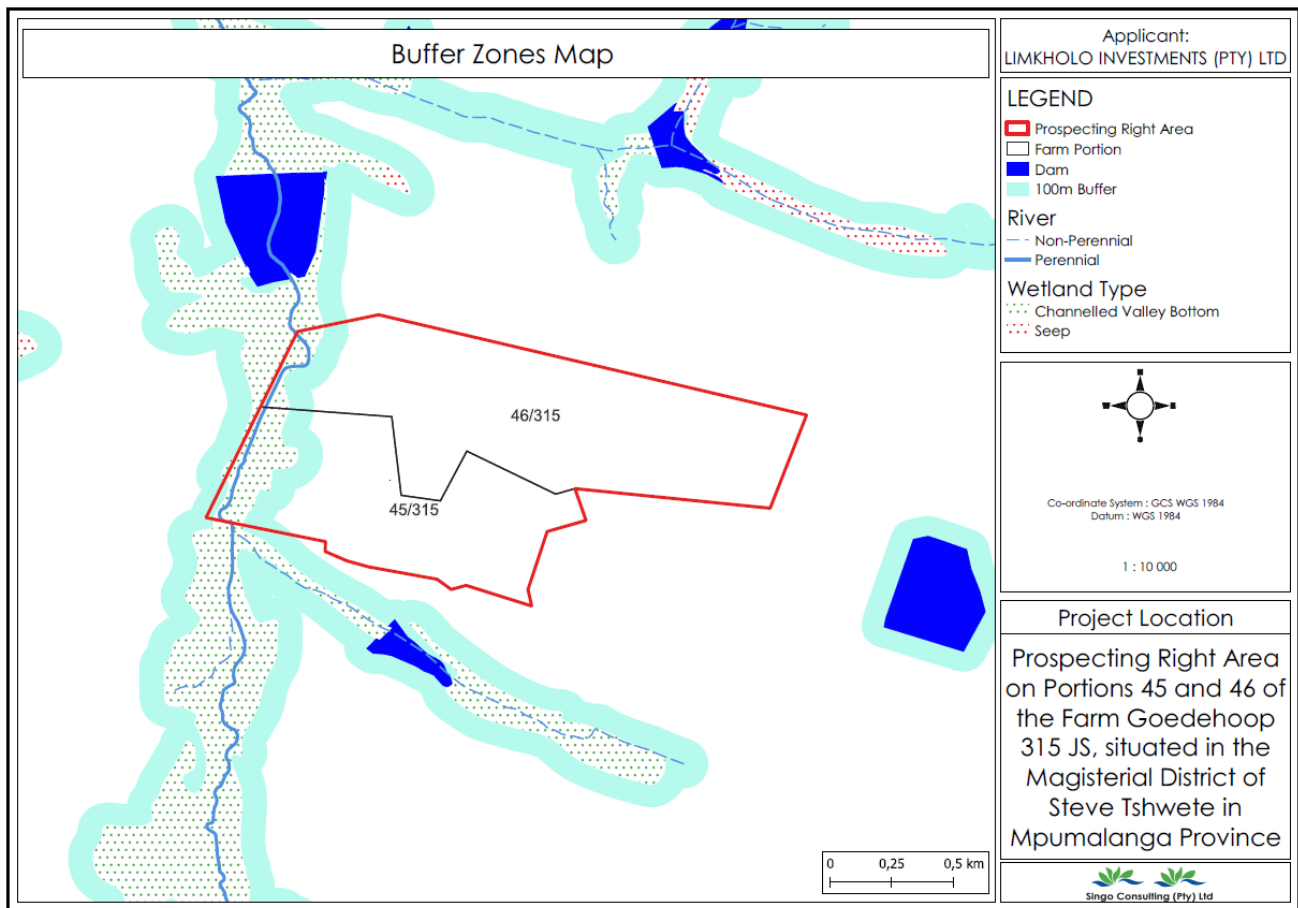
From the study conducted in house (appendix), the prospecting right application area falls under Olifants Water Management Area (WMA). The main quaternary catchment is B11H.



**Figure 24: Quaternary catchment map.**

### **Drilling and siting of boreholes.**

The exploration boreholes will be drilled one at a time at various locations within the proposed project area. The depths of the drill holes will average to 110 m and will be confirmed onsite whilst the drilling programme is underway as influenced by the depths and dips measured in other holes. A buffer of 100m will be kept from identified wetlands and rivers subject to Regulation 48 (2) of MPRDA, NWA (1998), NEMA (1998) (2000) and Regulation 17 of Mine Health & Safety Act (1996).



**Figure 25: Hydrological buffer Map**

**Figure 25** illustrates the buffer that will be applied to in order to protect the integrity of the water body.

## Potential contaminants

The potential contaminants for the prospecting of coal are minimal and can be controlled easily as this activity will only take place for a short period of time. Fuel and oil handling facilities are likely sources of hydrocarbon related contaminants. Oils, grease, and other hydrocarbon products (such as petrol and diesel) handled in these areas may contaminate the environment by spillages and leakages (e.g., from drill rigs).

Absorbent Spill kits will be made available near the drill rigs during drilling activities. The oil absorbent chemicals will ensure that no oils infiltrate down to the underground to cause any groundwater contamination.



Figure 26: Examples of Absorbent spill kit to be used.

## Aquifer Classification

The figure below illustrates aquifer classification of different areas in South Africa. It can be deduced that the project area pointed by the red arrow comprises of poor aquifers and the dominant water source is a surface water. Minor aquifers are said to be Moderately yielding aquifers of acceptable quality or high yielding aquifers of poor-quality water.

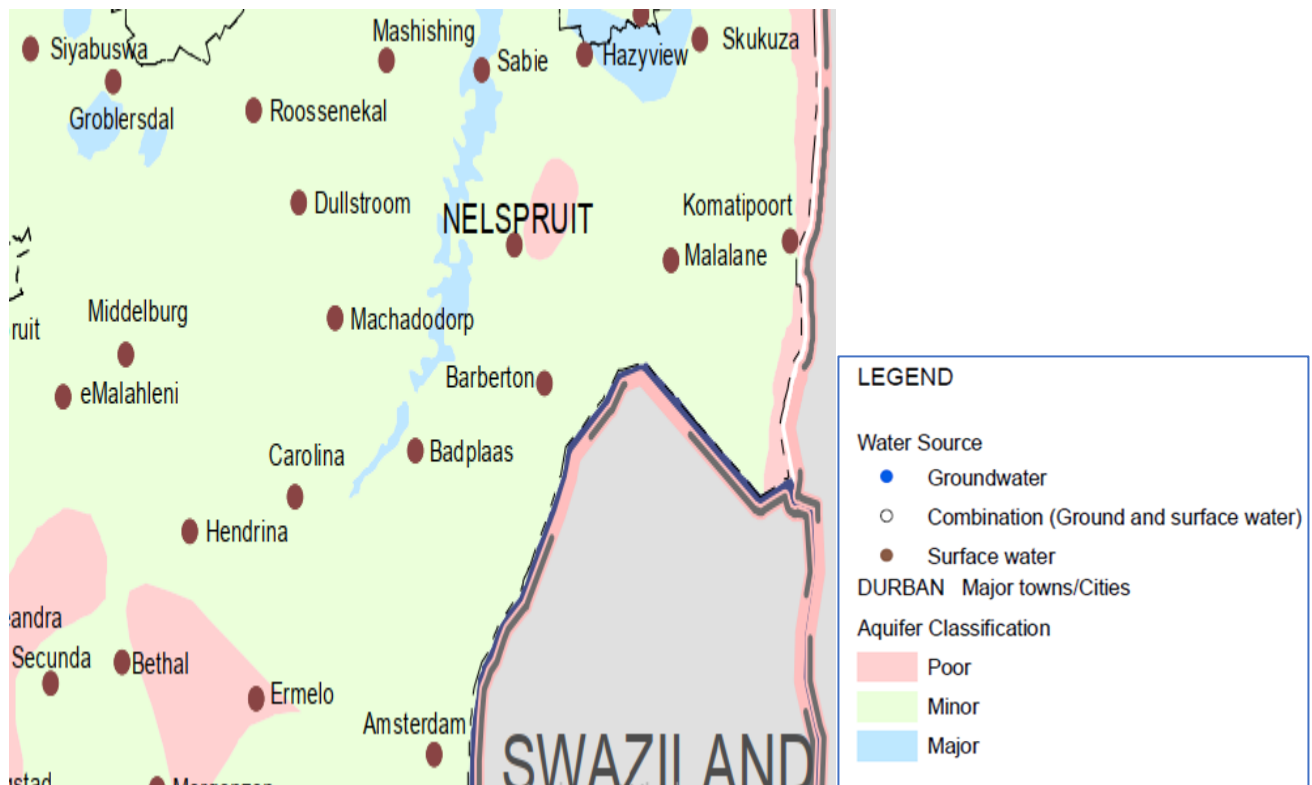


Figure 27: Aquifer classification of South Africa.

## Recommendations

- The area is made up of fractured aquifers, it is recommended that during drilling, a map with fracture zones should be used so that the drilling process does not interact with water in fracture zones.
- Clearing of vast amount of vegetation should be avoided, this is to preserve infiltration.
- Constant availability of waste bins; Compliance of National Environmental Management: Waste Management Act 59 of 2008.
- Compliance of GN 704 4(b) and 7(a) and National Water Act 36 of 1998 (Chapter 3 – Part 4, Section 1 (a)(b)).
- No onsite vehicle or machinery repairs such as changing oil.
- No onsite storage of oil, diesel, or petrol.

- A 100 meters buffer should be followed to preserve the surface water resources as the area mostly depends on surface water.
- It is recommended that a plan on how surface water will be managed as this area is of steep slope, meaning that there is likely to be leaching in the borehole if not properly rehabilitated.
- It is recommended that during the drilling process, the team should use fracture zone map, to clearly point areas of fracture zones, this will help them not to drill at that point as it will contribute to groundwater contamination.
- On the southern, western, and eastern direction, the contours are decreasing in value, which clearly shows that from the boundary of the study area, it is downhill, mitigation measures on how water will be managed on these areas should be clearly defined.
- The area has presence of floodplains, which shows that there is occasional flooding, it is recommended that the phases of the project be scheduled during the time when there is little to no rainfall (June- July), this is to protect the water resources and financial aspect of the prospecting company.
- It is recommended that the drill rig operates while standing on a non-permeable material, to avoid spillages from entering the soil and eventually the water resources.
- It is recommended that there should be monitoring boreholes and regular monitoring should be implemented.

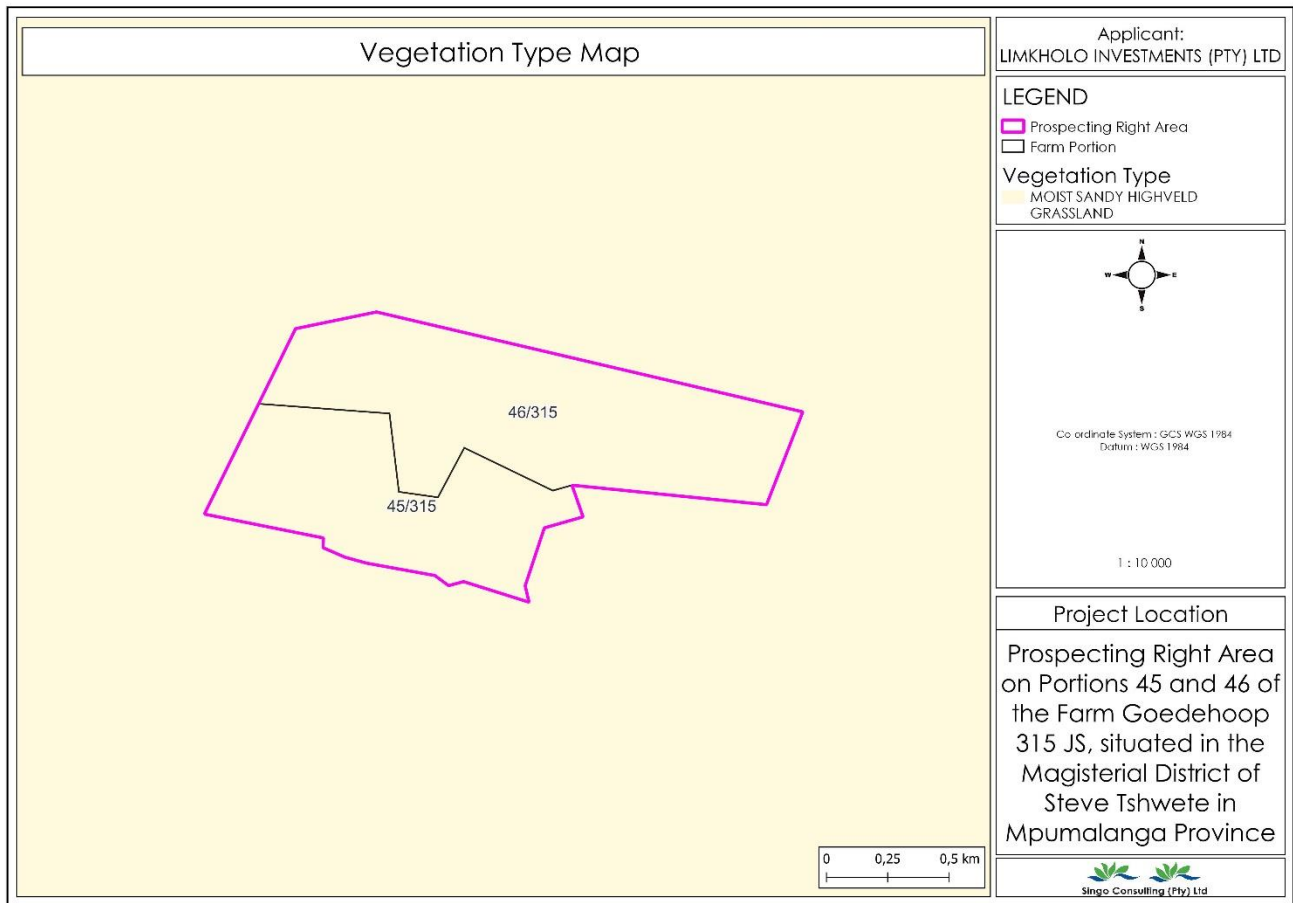
## **BIODIVERSITY**

### **Vegetation**

The proposed project area is located within the grassland biome. The grassland biome is one of the nine biomes in Southern Africa and is the largest biome after the Savanna Biome accounting to 28% of the terrestrial surface area of Southern Africa (Mucina and Rutherford 2006).

(Low & Rebelo 1996) further classifies the project area as characterised by the moisty sandy Highveld; The vegetation comprises predominantly short montane grasslands on the plateaus and the relatively flat areas, with short forest and Leucosidea thickets occurring along steep, mainly east facing slopes and drainage areas. *L. sericea* is the dominant woody pioneer species that invades areas as a result of grazing mismanagement.

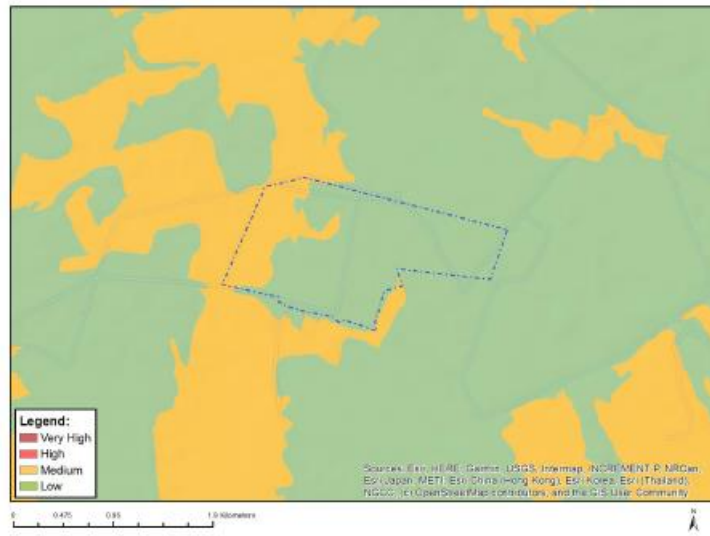




**Figure 28: Vegetation type map.**

The screening report illustrates medium sensitive plant species within and around the application area. Possible species that can be found are as follows: **(Source: Screening Report)**

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Sensitive species 601
Medium	<i>Pavetta zeyheri</i> subsp. <i>middelburgensis</i>
Medium	Sensitive species 933
Medium	Sensitive species 41
Medium	Sensitive species 691
Medium	<i>Pachycarpus suaveolens</i>
Medium	<i>Brachycorythis conica</i> subsp. <i>transvaalensis</i>

Figure 29: Relative plant species sensitivity map (source: screening report)

Subsequent to conducting a brief once-off field survey of the study area on the 11<sup>th</sup> of March 2022, the site was recorded to have been modified. There is a wetland on the boundary of the project area. As though it might be, the likelihood of occurrence of the sensitive vegetation will not be overlooked. The proposed development will involve the drilling a total of twenty (20) prospecting boreholes, which will be distributed across the study area in areas where accessibility via a drilling rig will be possible. The only visible activity was natural land. Drilling is proposed to occur during dry seasons and drilling will also be a measurable distance from the poultry houses. No protected trees or indigenous trees were seen during the initial ground truthing.

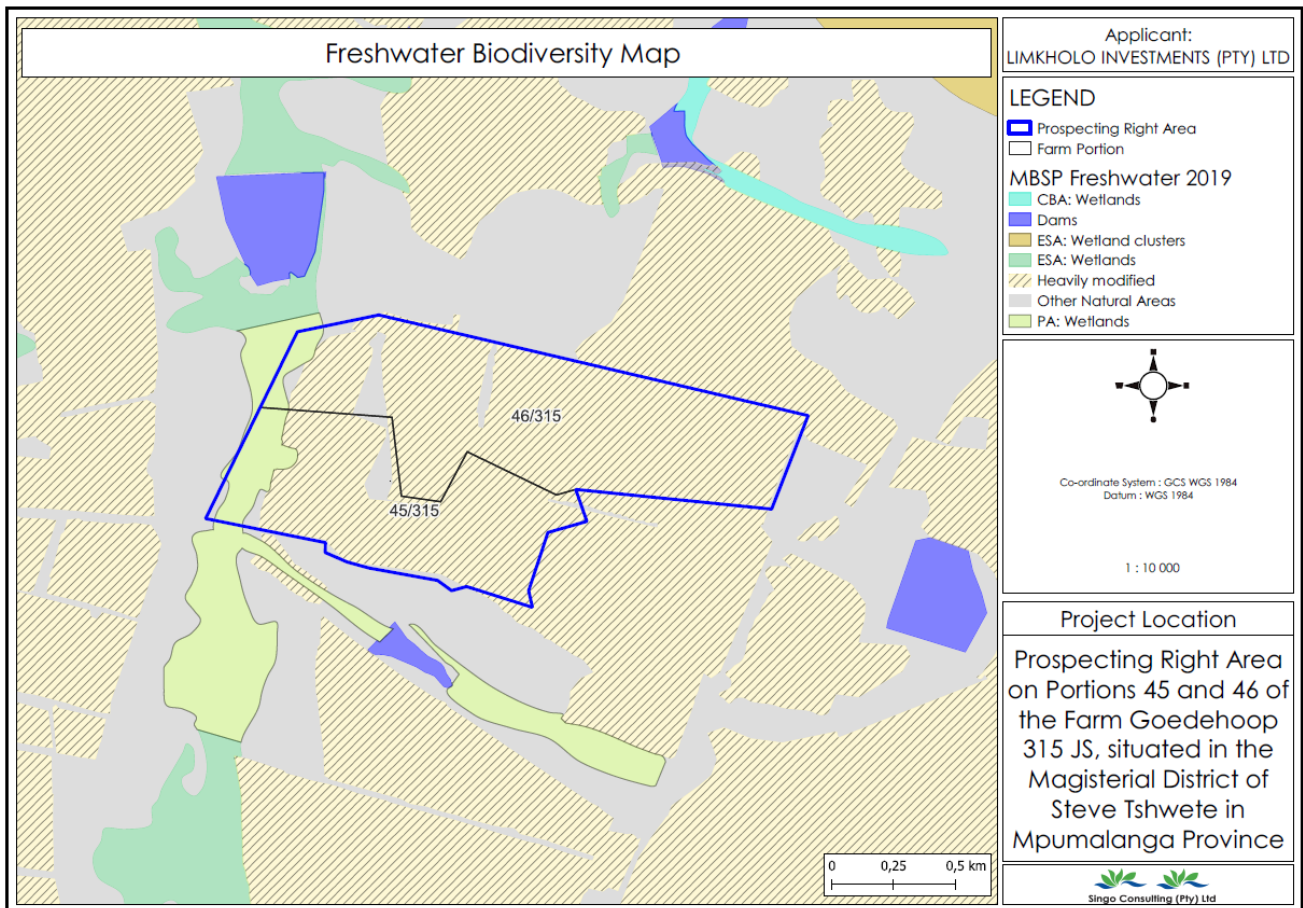
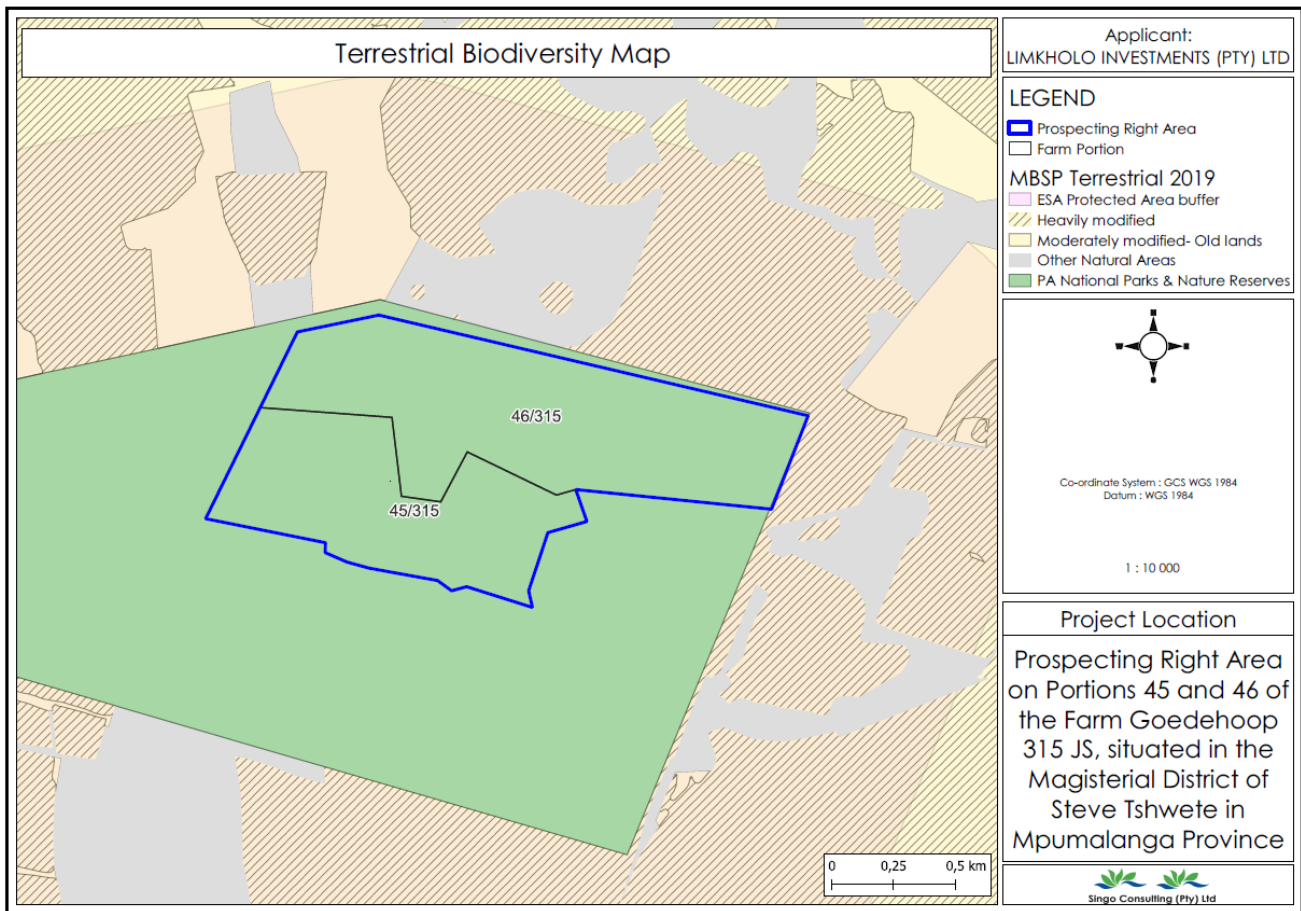
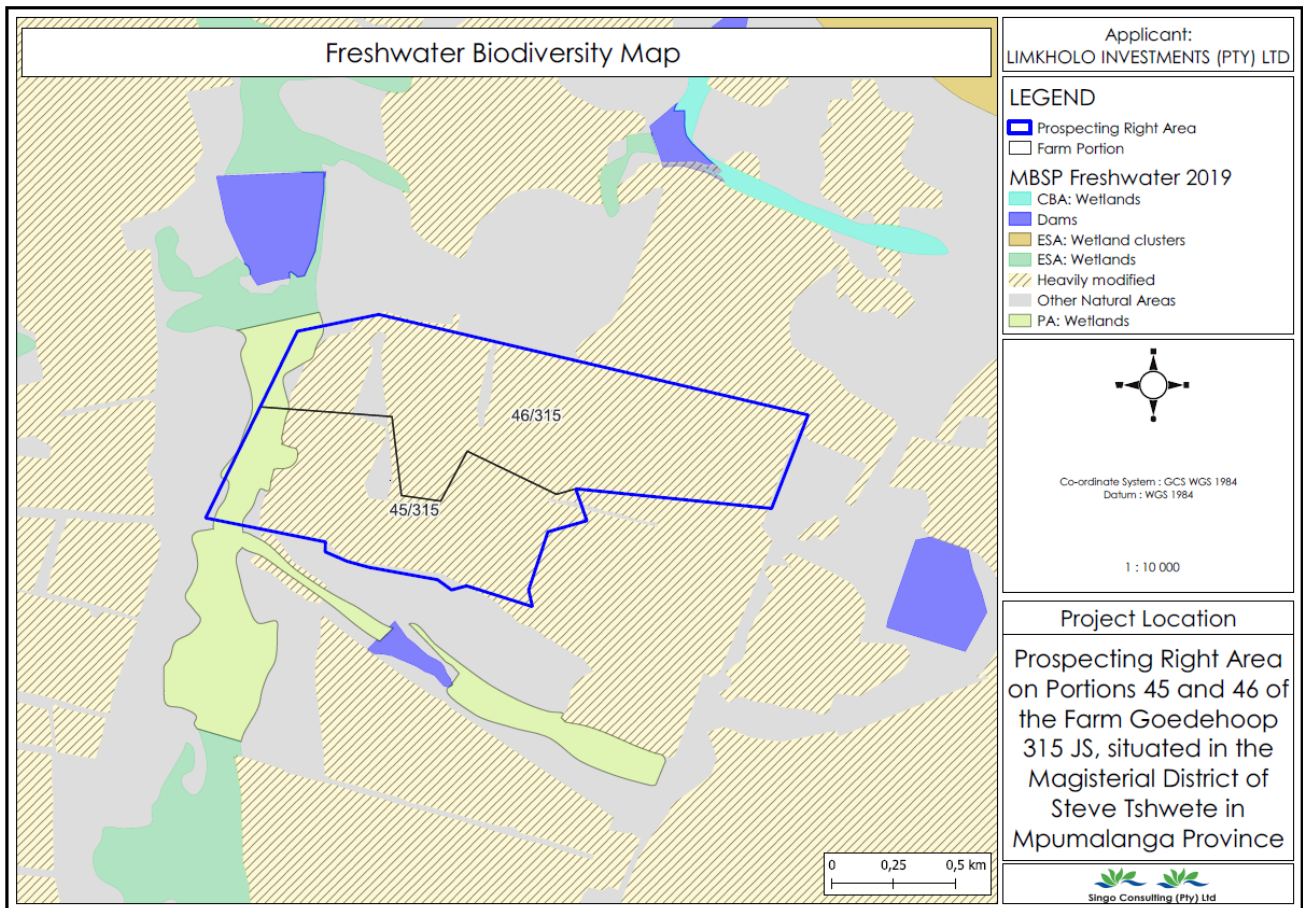


Figure 30: Biodiversity map



**Figure 31: MBSP Terrestrial map.**

The map above (**Figure 31**) sourced from MTPA illustrates the CBA of the proposed project area. This map along with the freshwater map (see **Figure 32**) influenced the positioning of the proposed boreholes. Boreholes have been placed strategically on open spaces within the field. According to the maps obtained from MTPA as well as the borehole map produced by the inhouse GIS technician, no boreholes will be placed near the wetland and infrastructure that is found within the proposed project area.



**Figure 32: MBSP Freshwater map.**

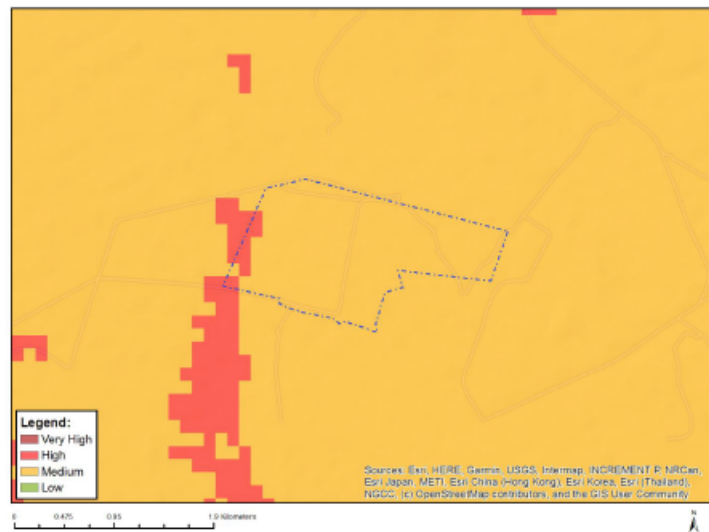


**Photo 2: Site vegetation around the proposed project area.**

**Fauna**

No fauna was observed during ground truthing.

**MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY**



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

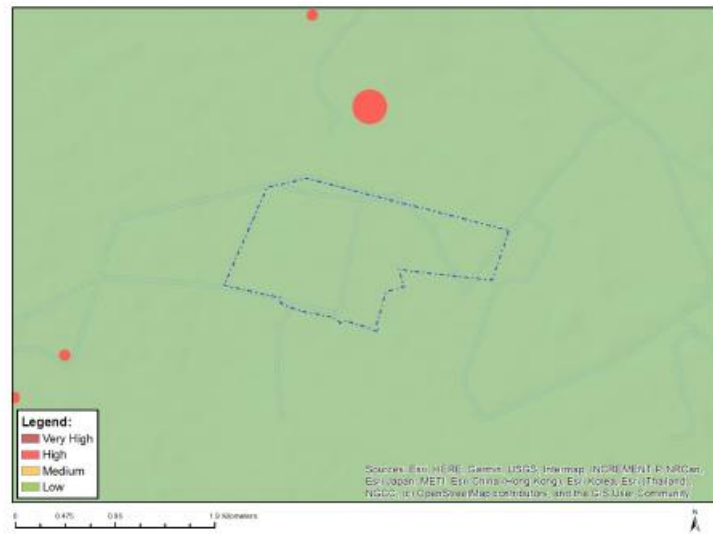
**Figure 33: Relative animal species sensitivity (source: screening report).**

**Cultural and Heritage**

Heritage resources are according to the National Heritage Resources Act 25 of 1999, any place or object of cultural significance. In one familiar aspect, heritage resources refer to buildings, monuments, landscapes and artefacts. These resources are relatively permanent, though somewhat very tenuous, environmental features; if they are present, their integrity is highly susceptible to construction and ground disturbance activities like prospecting and mining activities.

With reference to the Map of Relative Archaeological and Cultural Heritage theme sensitivity above sourced from the screening report, the proposed project area has a low sensitivity for Archaeological and Cultural Heritage. At the time the survey was undertaken, there were no observations of any heritage resources nor grave sites, however, should it happen that for some reason, any heritage resources have been missed during the survey or significantly be exposed during the rather operational phase of the project, the South African Heritage Resources Authority (SAHRA) should be notified immediately.

**MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY**



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

**Sensitivity Features:**

Sensitivity	Feature(s)
Low	Low sensitivity

**Figure 34: Relative Archeological and cultural heritage theme sensitivity (source: screening report)**

**Noise**

Prospecting and related activities frequently produce high levels of noise, which can become a nuisance or a health hazard if not adequately controlled. This has the potential to affect not just the prospecting area, but also the nearby land users and occupiers. The landowners and lawful occupiers of the study area, as well as neighbouring communities including land users and permanent small holding homesteads and villages, have been identified as the most sensitive receptors for the project area. Agricultural and residential land uses predominate in the surrounding area.

Noise generation can be expected on the proposed site as a result of a variety of activities & actions, such as loading and off-loading of moveable infrastructure during the rather operational phase and vehicles moving in and out of the project area. Noise will be generated by the existing mine i.e Mobile plants, Blasting and Blasting.

## 11.1 Environmental aspects which may require protection and/or remediation

A single wetland has been identified outside the proposed project area and is approximately 500 m from the nearest proposed boreholes (15). A buffer of 100 m has been applied to the water bodies within and around proposed prospecting area.

In addition, no drill site will be positioned within any of these watercourses. Furthermore, no drill site will be located within 100 meters of any properties, buildings, or homes located within and around the project area's boundaries. Existing access roads will be utilised to access the drill sites. Drill sites will overall be aimed at avoiding sensitive areas.

## 11.2 Description of the current land uses

Land uses within a 3 km radius are inclusive of the following:

- Natural Vegetation
- Mine
- Waterbodies
- Cultivated & natural land
- 

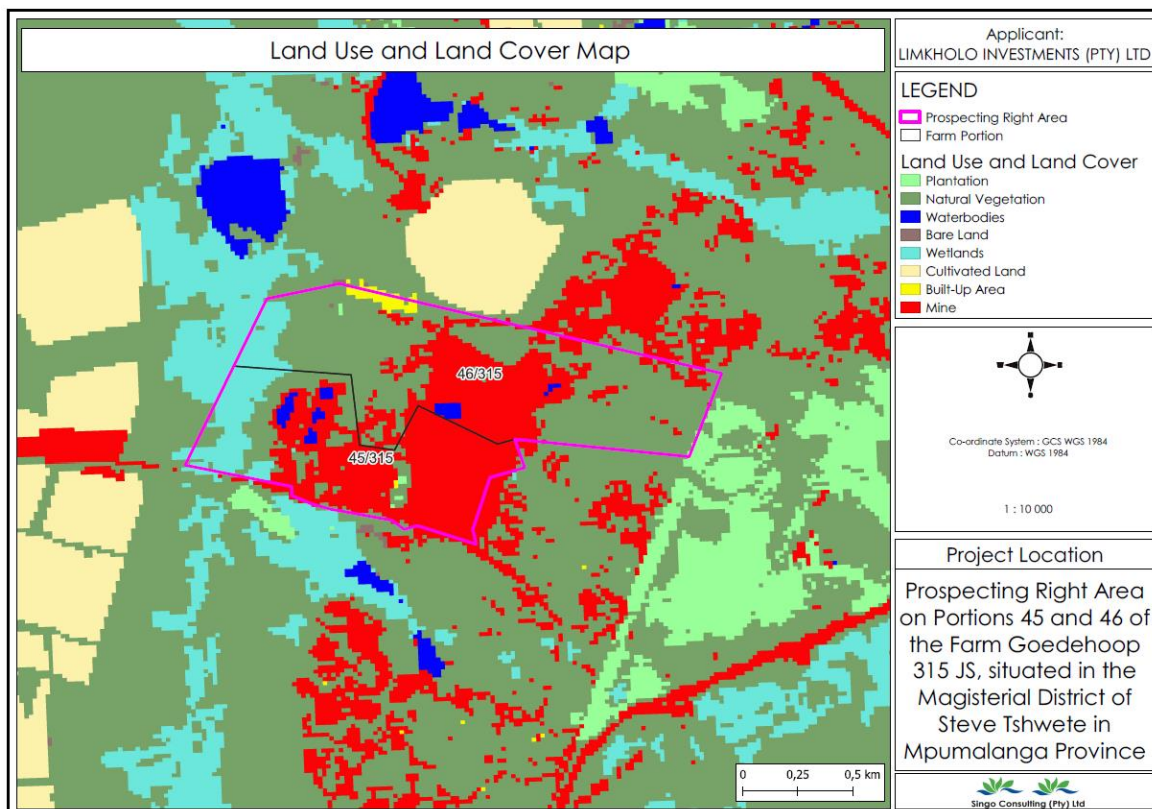


Figure 35: Land use map



**11.3 Description of specific environmental features and infrastructure on the site**

The application area is served by gravel roads which are in reasonable condition. The noticeable environment features and infrastructure on site, includes but not limited to the Wescoal Mining.



**Photo 3: Current land use.**

## 11.4 Environmental and current land use map

(Show all environmental, and current land use features)

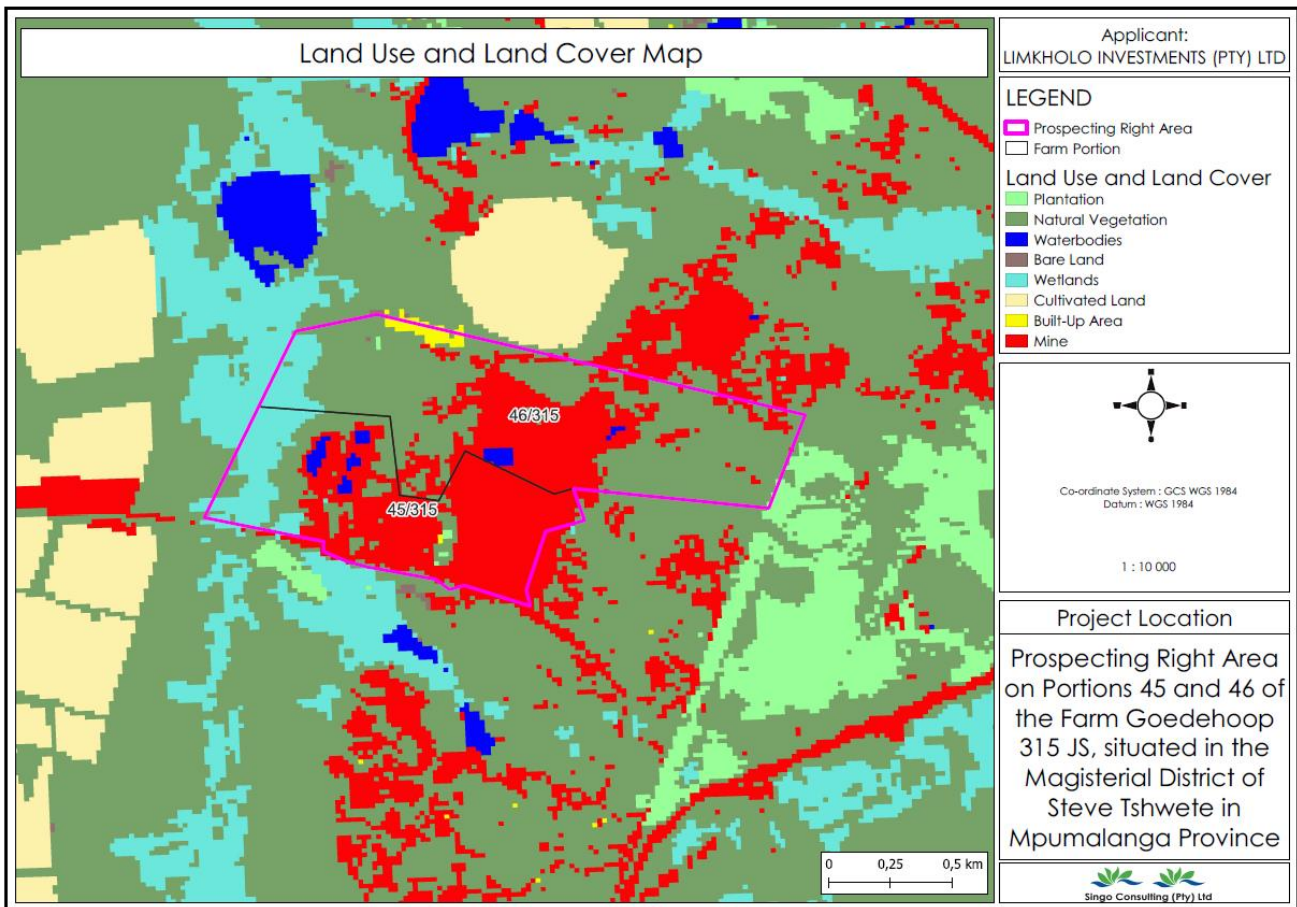


Figure 36: Land use map.

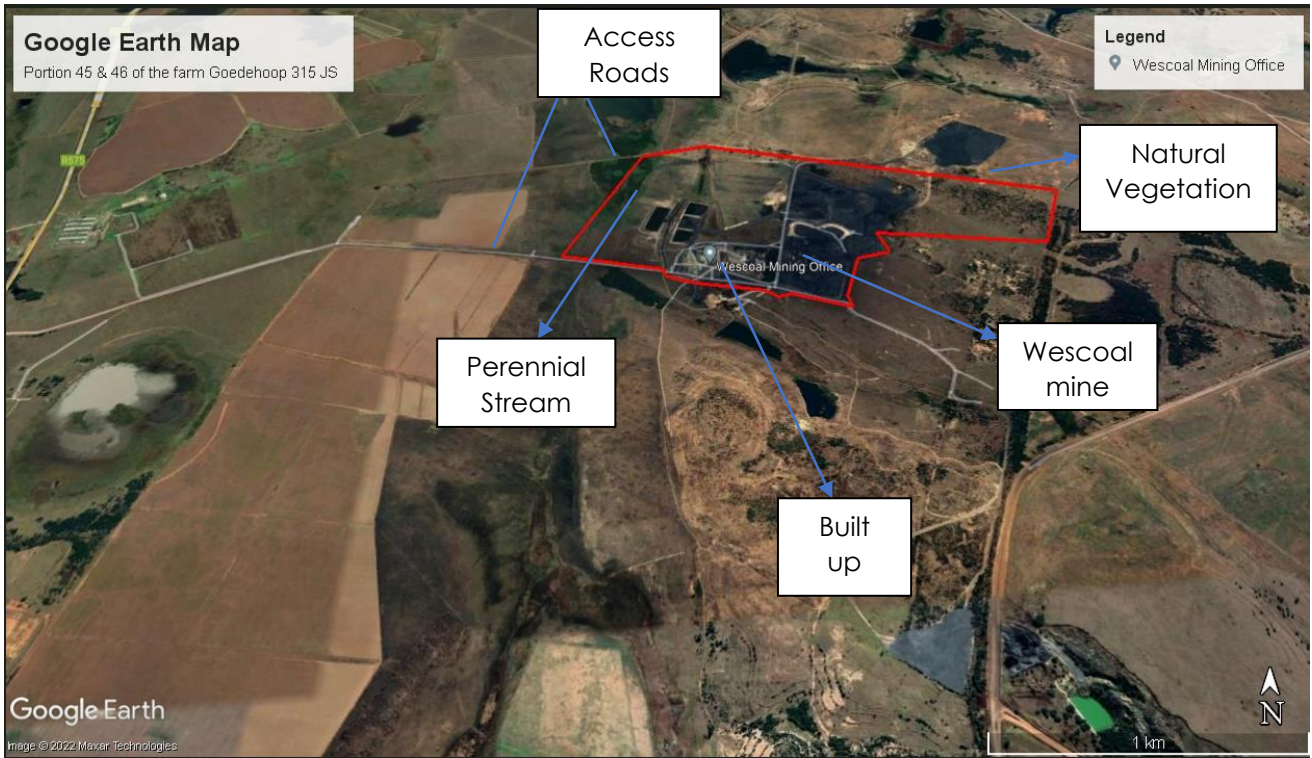


Figure 37: Google Earth view of current land use.

## **12 IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS, INCLUDING THE DEGREE TO WHICH THESE IMPACTS**

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

The following potential impacts were identified of each main activity in each phase. The significance rating was determined using the methodology as explained under vi) Methodology Used in Determining and Ranking the Significance. The impact rating listed below was determined for each impact prior to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
1,0	Employment of workers and procurement of materials	Social	Creation of employment	3	3	5	1	1,0	3,7	2,3	2,3	Moderate	<p>Emphasis to employ local individuals must be maximized, reducing the need for migrant labour;</p> <p>the mine should prioritize employment of the local community members and contracts must include employment targets as part of their contractual agreements;</p> <p>Employment requirements should be broadly publicized to ensure that job-seekers do not have unrealistic job expectations;</p> <p>Liaison structures with the local police and community policing forums must be established and development of informal settlements within the proposed mining areas to be communicated to the forums for potential monitoring and addressing</p>
2,0	Site clearance and topsoil removal as a result of the proposed Project.	Air Quality	Dust generation emanating from the activities associated with the Mining Project areas	4	4	4	2	1,0	4,0	3,0	3,0	Moderate	<p>The area of disturbance must be restricted to the required footprint size;</p> <p>Ensure that only vegetation within the designated areas is removed;</p> <p>The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and</p> <p>Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.</p>

e Nu mb			Acti vity	Asp ect	Impact	Significance Rating Before Mitigation Measures	Mitigation Measures
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						I	F	D	E	P	S	C	IS	SIGNIFICANCE	
				Topography and Visual Environment	<p>Topography change and the disruption of surface water flow.</p> <p>Soil erosion and topsoil loss.</p> <p>Visual impact caused by vegetation and topsoil removal.</p>	3	3	4	1	0,8	3,3	2,2	1,7	Low	<p>Ensure vegetation and topsoil is only be cleared when necessary and within the demarcated areas;</p> <p>Ensure topsoil stockpiles are vegetated as soon as possible; and</p> <p>Ensure topsoil stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment.</p> <p>Topsoil stockpiles that will be kept for more than a year are to be vegetated to sustain ecological components and further prevent dust emissions and growth of alien vegetation.</p>

				Soil	<p>Soil contamination and degradation during soil stripping and management</p> <p>Soil erosion and generation of dust.</p>	3	4	4	1	0,8	3,7	2,3	1,9	Low	<p>Excavation and long-term stockpiling of soil should be limited within the demarcated areas as far as practically possible;</p> <p>Ensure all stockpiles (especially topsoil) are clearly and permanently demarcated and located in defined no-go areas;</p> <p>Restrict the amount of mechanical handling, as each handling event increases that compaction level and the changes to the soil structure;</p> <p>Soil stripping should be done in line with a topsoil stripping plan;</p> <p>Where possible, separate stockpiling of different soil to obtain the highest post-mining land capability;</p>
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																		<p>Stockpiles should be revegetated to establish a vegetation cover as an erosion control measure. These stockpiles should also be kept alien vegetation free at all times to prevent loss of soil quality;</p> <p>and Temporary berms can be constructed, around stockpile areas whilst vegetation cover has not established to avoid soil loss through erosion.</p>
					Soil compaction.	4	5	4	1	1,0	4,3	2,7	2,7	Moderate				<p>If possible, vegetation clearance and commencement of mining related activities (construction of haul road), can be scheduled to coincide with low rainfall conditions when soil moisture is anticipated to be relatively low such that the soils are less prone to compaction;</p>

Unite Number			Activity	Aspect	Impact	Significance Rating Before Mitigation Measures										Mitigation Measures
						I	F	D	E	P	S	C	IS	SIGNIFICANC E		
					Loss of land capability and land use potential	2	1	4	1	0,8	2,3	1,7	1,3	Low	<ul style="list-style-type: none"> <li>• Any compacted soils must be ripped to alleviate compaction;</li> <li>• Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface;</li> <li>• The landscape should be backfilled and reprofiled to mimic the</li> </ul>	



																	loss during the rainy season.
					Loss of vegetation communities.	4	1	5	1	0,8	3,3	2,2	1,7	Low			<ul style="list-style-type: none"> <li>• Ensure site clearing is restricted to the footprint of the designated areas to limit the degradation and destruction of natural habitats;</li> <li>• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</li> <li>• Restrict access and avoid areas of identified faunal and floral SSC, that are adjacent to the mining activities;</li> <li>• Floral and faunal SSC within the mining activities must be rescued and relocated;</li> <li>• Restrict access and avoid sensitive landscapes, such as wetlands and ridges, that are adjacent to the mining operations; and</li> <li>• Topsoil that will be used for rehabilitation within one year must be</li> </ul>

																stockpiled according to the Rehabilitation Plan. Compaction of stockpiled topsoil must be avoided to ensure the seed bank is viable.
					Influx and establishment of alien invasive vegetation.	3	3	4	2	0,8	3,3	2,7	2,1	Moderate	Alien invasive vegetation to be identified and removed throughout the LoM.	
				Wetlands and Aquatic Ecology	Sedimentation of wetland areas downstream of the stockpiles.	3	3	4	1	0,8	3,3	2,2	1,7	Low	<ul style="list-style-type: none"> <li>Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>Implement and maintain alien vegetation management programme;</li> <li>Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be</li> </ul>	

																		removed to an appropriate waste facility.
					Contamination of soils as a result of the ingress of hydrocarbons	3	5	4	1	1,0	4,0	2,5	2,5	Moderate				<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• Limit the footprint area of the construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils;</li> <li>• All erosion noted within the construction footprint should be remedied immediately and included as part of</li> </ul>







e	Nu	mb	Acti	Asp	Impact	Significance Rating Before Mitigation Measures						Mitigation Measures		
			vity	ect										

															<p>ingress of hydrocarbons into topsoil;</p> <ul style="list-style-type: none"> <li>All spills should be immediately cleaned up and treated accordingly; and.</li> </ul>
					Loss of catchment yields and surface water recharge, potential loss of biodiversity, impaired water quality, potential loss of instream integrity, potential impacts to freshwater resources further downstream of this point.	3	5	4	3	0,6	4,0	3,5	2,1	Moderate	<ul style="list-style-type: none"> <li>Ensure that as far as possible all infrastructures are placed outside of delineated watercourse areas and their associated zones of regulation;</li> <li>Ensure that sound environmental management is in place during the planning phase;</li> <li>Design of infrastructure should be environmentally and structurally sound and all possible precautions taken to prevent spillage and/or seepage to the surface and groundwater resources present;</li> <li>It must be ensured that the design and construction of all infrastructures prevents failure.</li> </ul>

				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
			Destruction of natural habitat and animal life within the development area and to maintain ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.	4	5	4	1	1,0	4,3	2,7	2,7	Moderate	<ul style="list-style-type: none"> <li>• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</li> <li>• Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas.</li> <li>• Ensure safe speed limits in the development area and no open fires.</li> <li>• Do not feed wild life and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site.</li> <li>• Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services to prevent the attraction of rats and other alien scavenging species to the site.</li> <li>• Regularly (daily) inspect the haul road and clear Coal spills and clear Coal fines to reduce Coal dust contamination to the neighboring wetland areas.</li> </ul>
		Flora	Loss of vegetation and/or declining species, alteration, and loss of microhabitats,	4	5	4	1	1,0	4,3	2,7	2,7	Moderate	<ul style="list-style-type: none"> <li>• Keep the clearing of vegetation / impacts to vegetation for any activity to a minimum and locate such activities in already modified areas or secondary grassland.</li> <li>• No building of temporary infrastructure should be allowed in moist grasslands without a WUL.</li> <li>• Prevent spillage of hazardous material and other pollutants, contain, and treat any spillages immediately, strictly</li> </ul>



					I	F	D	E	P	S	C	IS	SIGNIFICANCE	
														<p>activities should be prevented at all cost.</p> <ul style="list-style-type: none"> <li>• Pollution of the surface and groundwater.</li> </ul> <p>Mitigation for this potential impact includes:</p> <ul style="list-style-type: none"> <li>o In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs must be informed immediately;</li> <li>o Store all litter carefully so it cannot be washed or blown into the water course;</li> <li>o Storage of potentially hazardous materials should be above any 100-year flood line or the functional wetland boundary (and its associated buffer zone). These materials include fuel, oil, cement, bitumen etc.;</li> <li>o Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a sump which will separate these chemicals and oils;</li> <li>o No uncontrolled discharges of water from the mine to any surface water resources shall be permitted. Any discharge points need to be approved by the relevant authority.</li> </ul>



			Erosion and subsequent sedimentation or pollution of proximate moist grassland (watercourse).	4	5	4	1	0,8	4,3	2,7	2,1	Moderate	<ul style="list-style-type: none"> <li>• Make use of existing roads and tracks where feasible, rather than creating new routes through grassland areas.</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).</li> <li>• Runoff from access roads must be managed to avoid erosion and pollution problems.</li> <li>• Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated (erosion management plan required)</li> <li>• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. The grassland can be removed as sods and re-established after construction is completed.</li> <li>• Colonisation of the disturbed areas by plants species from the surrounding natural vegetation must be monitored to ensure that vegetation cover is sufficient within one growing season. If not, then the areas need to be rehabilitated with a grass seed mix containing species that naturally occur within the study area.</li> <li>• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.</li> <li>• Prevent spillage of construction material, oils or other chemicals, strictly prohibit other pollution. Ensure there is a method statement in place to remedy any accidental spillages immediately.</li> <li>• After construction clear any</li> </ul>
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Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
		water courses	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure site clearing is limited to the designated areas, and</li> <li>• Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs).</li> </ul>
			invasive species.										<ul style="list-style-type: none"> <li>• Area in the</li> <li>• If re-s</li> </ul>
			Contamination of groundwater resources	4	5	5	3	1,0	4,7	3,8	3,8	High	<ul style="list-style-type: none"> <li>• Ensure that a stormwater management plan is in place to separate clean and dirty water; and</li> <li>• Groundwater monitoring of the water quality and levels must take place quarterly, especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.</li> </ul>
		Noise	Noise emanating from the construction machinery and vehicles impacting on surrounding sensitive receptors.	3	5	5	1	1,0	4,3	2,7	2,7	Moderate	<ul style="list-style-type: none"> <li>• Ensure site clearing activities are only undertaken during daylight hours;</li> <li>• Mining related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g. installed exhaust mufflers); and</li> <li>• Ensure equipment and machinery is switched off when not in use.</li> </ul>
					4	5	4	2	1,0	4,3	3,2	3,2	High

3,0	Stripping and stockpiling of topsoil	Air Quality	Dust generation emanating from the disturbance of soil.	4	1	1	1	1,0	2,0	1,5	1,5	Low	Ensure that dust suppressants are applied regularly  Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;  Vehicles should obey speed limits
		Topography and Visual Environment.	Topographical change Negative visual impact caused by vehicular activity.	4	4	4	1	0,8	4,0	2,5	2,0	Low	Ensure liaison with the local authorities for the maintenance and upkeep of roads; Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; and Vehicles will obey speed limits.
		Noise pollution	Noise nuisance caused by machinery	3	5	4	1	1,0	4,0	2,5	2,5	Moderate	Avoid through preventative measures (e.g. communication with landowners and timing of activities).  Control through implementation of EMPr mitigation measures (e.g. noise abatement measures).
		Traffic	The degradation of the road structures	5	5	4	1	1,0	4,7	2,8	2,8	Moderate	Adhere to the Mine's Traffic Management Plan; and  Gravel roads used must be graded and compacted regularly, should the roads remain unpaved.
4,0	development and operation of the mine	Soil	Soil contamination and degradation.	4	5	5	2	0,8	4,7	3,3	2,7	Moderate	In case whereby contractors bring on site mobile bowsers and lubricants, these are to be stored in a bunded area when parked at the construction areas;



																<p>All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</p> <p>Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</p> <p>All vehicles and machinery to be serviced in a hard park area or at an off-site location;</p> <p>Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and</p> <p>Vehicles with leaks must have drip trays in place.</p>
		Surface Water	Impacts on surface water resources as a result of hydrocarbon spills.	3	3	4	2	0,8	3,3	2,7	2,1	Moderate	<p>In case whereby contractors bring on site mobile bowsers and lubricants, these are to be stored in a bunded area when parked at the construction areas;</p> <p>All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</p> <p>Spillage control kits will be readily available on site to contain the</p>			

															<p>mobilisation of contaminants and clean up spills;</p> <p>All vehicles and machinery to be serviced in a hard park area or at an off-site location;</p> <p>Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and</p> <p>Vehicles with leaks must have drip trays in place.</p>
		Groundwater	Groundwater contamination	4	4	4	3	1,0	4,0	3,5	3,5	High			<p>In case whereby contractors bring on site mobile bowsers and lubricants, these are to be stored in a bunded area when parked at the construction areas;</p> <p>All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</p> <p>Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</p> <p>All vehicles and machinery to be serviced in a hard park area or at an off-site location;</p> <p>Storage of hydrocarbons must be</p>

						I	F	D	E	P	S	C	IS	SIGNIFICANCE	
															Vehicles with leaks must have drip trays in place.

5,0	Mining operations	Social	safety and security risks to landowners and lawful occupiers	3	5	4	1	0,8	4,0	2,5	2,0	Low	<p>The area of disturbance must be restricted to the required footprint size;</p> <p>Ensure that only vegetation within the designated areas is removed;</p> <p>The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and</p> <p>Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.</p>
			interference with existing land uses Crime and violence	3	4	4	1	0,6	3,7	2,3	1,4	Low	<p>Ensure vegetation and topsoil is only be cleared when necessary and within the demarcated areas;Ensure topsoil stockpiles are vegetated as soon as possible; andEnsure topsoil stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment.Topsoil stockpiles that will be kept for more than a year are to be vegetated to sustain ecological components and further prevent dust emissions and growth of alien vegetation.</p>
6,0	Drilling and Blasting	Air Quality	Fugitive dust generation emanating.	4	2	1	1	0,8	2,3	1,7	1,3	Low	<ul style="list-style-type: none"> <li>• Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; and</li> <li>• Ensure that dust suppressants are applied to exposed surfaces.</li> </ul>

		Topography and Visual Environment	Topography change and disruption of surface water flow.	4	2	5	3	0,8	3,7	3,3	2,7	Moderate	<ul style="list-style-type: none"> <li>• Limit the footprint areas of the of the surface infrastructure, where possible, especially the width of the link road to be within the servitude;</li> <li>• Ensure that access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography;</li> <li>• Establish vegetation, where possible, to aid in screening infrastructure;</li> <li>• Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape; and</li> <li>• Limit construction activities at night and down lighting must be used to minimise light pollution.</li> </ul>
		Soils	Soil contamination and degradation.	2	5	4	1	0,8	3,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure areas;</li> <li>• Implement Stormwater Management designs to prevent erosion.</li> </ul>
		Fauna and Flora	Loss of vegetation communities.	2	5	5	2	0,8	4,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</li> <li>• Ensure a Storm Water Management Plan is implemented; and</li> <li>• Alien invasive vegetation to be identified and removed throughout the LoM.</li> </ul>
			Influx and establishment of alien invasive vegetation.	2	5	5	2	0,6	4,0	3,0	1,8	Low	

		Fauna	Destruction of natural habitat and animal life within the development area and to maintain ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions.</li> <li>• Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas.</li> <li>• Ensure safe speed limits in the development area and no open fires.</li> <li>• Do not feed wild life and ensure that all food and food waste, including domestic waste, is placed in sealed containers and not exposed on site.</li> <li>• Ensure that the outside areas are kept clean and tidy and provide adequate waste removal services to prevent the attraction of rats and other alien scavenging species to the site.</li> <li>• Regularly (daily) inspect the haul road and clear Coal spills and clear Coal fines to reduce Coal dust contamination to the neighbouring wetland areas.</li> </ul>
		Flora	Alien invasive plant species.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Areas cleared of invasive to be monitored in the growing season (summer).</li> <li>• If re-sprouting or reseedling is noted, follow-up control to be initialised.</li> <li>• Cleared and denuded areas to be rehabilitated as soon as possible with indigenous grass species.</li> <li>• Monitor the establishment of invasive species and remove as soon as detected,</li> </ul>

																whenever possible before regenerative material can be formed. <ul style="list-style-type: none"> <li>• Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge.</li> <li>• Monitoring should continue for at least two years after such activities cease.</li> </ul>
		Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems.	2	5	4	1	0,8	3,7	2,3	1,9	Low				<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be removed to an appropriate waste facility.</li> </ul>
		Surface Water	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate				<ul style="list-style-type: none"> <li>• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation;</li> <li>• Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction;</li> <li>• Implement and maintain alien vegetation management programme;</li> <li>• Limit the footprint area of the construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils;</li> </ul>

												<ul style="list-style-type: none"> <li>• All erosion noted within the construction footprint to be remedied immediately and included as part of an ongoing rehabilitation plan;</li> <li>• All delineated watercourses and their associated 100 m zones of regulation in terms of GN704 must be designated as "No-Go" areas and be off limits to all unauthorised vehicles and personnel, with the exception of approved construction and operational areas;</li> <li>• No unnecessary crossing of the watercourses to take place and wherever possible, existing infrastructure should be utilised;</li> <li>• Suitably designed culverts to be installed under road crossings where any watercourses are anticipated to be crossed;</li> <li>• The number of culverts installed must be suitable for the gradient, width and flow profiles of the watercourses being crossed so as to avoid upstream inundation, erosion and incision, and alterations to the natural channel;</li> <li>• Crossings to make use of existing roads wherever possible and should either utilise or be constructed downgradient of barriers associated with impoundments on the affected systems;</li> <li>• No material may be dumped or stockpiled within delineated watercourses;</li> </ul>
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				I	F	D	E	P	S	C	IS	SIGNIFICANCE	
		Noise	Increased noise levels.	4	2	3	1	0,8	3,0	2,0	1,6	Low	<ul style="list-style-type: none"> <li>• Ensuring that all construction equipment operators receive proper training in the use of the equipment and that the equipment is serviced regularly.</li> <li>• All blasting and piling driving, if required, should only occur during the day.</li> <li>• An environmental noise monitoring survey should be conducted during the construction phase to assess the impact and recommend further actions if required.</li> <li>• A public complaints and actions registry should be established to capture public perceptions and complaints regarding noise impacts, track investigation actions, and introduce corrective measures for continuous improvement.</li> <li>• Noise complaints should be reported through the community liaison officer and include an effective follow-up process.</li> <li>• Noise reduction techniques should be considered as additional mitigation measures to the project design. Selecting equipment with lower sound power levels. Installing silencers on fans.</li> <li>• Ensure construction activities are only undertaken during daylight hours;</li> <li>• All the diesel-powered equipment should</li> </ul>





											<p>maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis;</p> <ul style="list-style-type: none"><li>• Traffic and access to the stockpiles will be restricted;</li><li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and</li><li>• Implement Stormwater Management designs to prevent erosion.</li></ul>		
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Fauna and Flora	Loss of vegetation communities	2	5	5	2	0,6	4,0	3,0	1,8	Low	<p>Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</p> <p>Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.</p>		
Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems.	2	5	4	1	0,8	3,7	2,3	1,9	Low	<p>Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the</p>		

											<p>IWUL;</p> <p>Ensure a Storm Water Management Plan is implemented; and</p> <p>Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.</p>		
Surface Water	Siltation of surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<p>Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; Implement Stormwater Management designs to prevent erosion and divert dirty</p>		

												water to the appropriate storage dams (PCDs); andThe design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.		
Noise	Increase Noise Levels	2	2	2	2	0,8	2,0	2,0	1,6	Low	Noise levels in the area are already well within 70dBA for the industrial areas during the day and 60 dBA at night as may be associated with mining. Therefore, it is expected that additional noise levels			

												<p>contributed by Khutala Mine will be insignificant.</p> <p>Trucks, machinery, and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Silencers will be utilised where possible.</p>		
Groundwater	Contamination of groundwater resources Seepage through and runoff from the Coal stockpile.	4	4	5	2	1,0	4,3	3,2	3,2	High	<ul style="list-style-type: none"> <li>A groundwater monitoring system must be implemented and test the water on a quarterly basis for changes in water quality and water levels. Should impacts be</li> </ul>			



											identified, management measures must be implemented based on the contaminant or water level change; <ul style="list-style-type: none"><li>• Implement a Surface Water Management Plan to minimise the volume of dirty water produced, as well as the effectiveness of the containment of dirty water, thereby reducing the probability of contamination of groundwater from infiltration of dirty surface water;</li><li>• Refine and update the</li></ul>		
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											conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality; and		
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- All contaminant, waste and hazardous waste storage facilities and other contaminated water storage areas (PCD) must be lined to pro-actively prevent

														infiltration of contaminated seepage water.		
Soil	Soil contamination and degradation	4	4	5	2	0,8	4,3	3,2	2,5	Moderate				<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons and</li> </ul>		

												explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);		
Groundwater	Groundwater contamination	5	5	5	3	1,0	5,0	4,0	4,0	High	<ul style="list-style-type: none"> <li>Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</li> <li>Vehicles with leaks must have drip trays in place.</li> </ul>			
												<ul style="list-style-type: none"> <li>All potential hydrocarbon leaks must be repaired immediately and spillages be cleaned up immediately and the soils remediated;</li> </ul>		

											<ul style="list-style-type: none"><li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li><li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li><li>• Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);</li><li>• Hydrocarbons and</li></ul>		
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												explosives storage facilities must be in a hard park bunded facility; and		
												<ul style="list-style-type: none"> <li>• Vehicles with leaks must have drip trays in place; and</li> <li>• Groundwater monitoring of the water quality and levels must take place quarterly especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.</li> </ul>		
Air Quality	Fugitive dust generation emanating the RoM Stockpile operational	2	3	4	1	0,8	3,0	2,0	1,6	Low		<ul style="list-style-type: none"> <li>• Ensure that the areas of disturbance are minimised and restricted to the</li> </ul>		

	activities.										<p>required footprint areas;</p> <ul style="list-style-type: none"> <li>Public complaints and actions registry should be established to capture public perceptions and complaints regarding increased air quality impacts;</li> <li>Dust fallout monitoring must be conducted throughout the life of operation of Khutala Colliery to confirm model predictions;</li> <li>control and manage the height of material drops (e.g.,</li> </ul>		
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												Transfer chute to RoM Stockpile); and <ul style="list-style-type: none"> <li>• Increase moisture content of material by using water sprays prior to or during conveying, crushing, and screening material.</li> </ul>		
Topography and Visual Environment	Topography change and disruption of surface water flow;To minimise soil erosion and topsoil loss;	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that the stockpile is constructed within the proposed planned disturbed areas;</li> <li>• Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and maintenance</li> </ul>			



Unit Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures								Mitigation Measures	
				I	F	D	E	P	S	C	IS		SIGNIFICANCE

			Soil degradation.	3	3	3	1	1,0	3,0	2,0	2,0	Moderate	<ul style="list-style-type: none"> <li>• Minimise topsoil stockpile heights as far as possible;</li> <li>• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations;</li> <li>• Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis;</li> <li>• Traffic and access to the stockpiles will be restricted;</li> <li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and</li> <li>• Implement Stormwater Management designs to prevent erosion.</li> </ul>
		Fauna and Flora	Loss of vegetation communities.  Influx and establishment of alien invasive vegetation.	2	3	3	2	0,6	2,7	2,3	1,4	Low	<ul style="list-style-type: none"> <li>• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation;</li> <li>• Ensure a Storm Water Management Plan is implemented; and</li> <li>• Alien invasive vegetation to be identified and removed throughout the LoM.</li> </ul>
		Wetlands and Aquatic Ecology	Contamination and sedimentation of the downstream wetland systems and aquatic	3	3	4	1	1,0	3,3	2,2	2,2	Moderate	<ul style="list-style-type: none"> <li>• Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL;</li> <li>• Ensure a Storm Water Management Plan is implemented; and</li> <li>• Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be</li> </ul>

			ecosystems.												required.
		Surface Water	Siltation of downstream surface water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion;</li> <li>• Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs); and</li> <li>• The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.</li> </ul>		
		Groundwater	Contamination of groundwater resources	3	3	3	3	0,8	3,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>• A groundwater monitoring system must be implemented and test the water on a quarterly basis for changes in water quality and water levels. Should impacts be identified, management measures must be implemented based on the contaminant or water level change;</li> <li>• Implement a Surface Water Management Plan to minimise the volume of dirty water produced, as well as the effectiveness of the containment of dirty water, thereby reducing the probability of contamination of groundwater from infiltration of dirty surface water;</li> <li>• Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on groundwater monitoring results. This will help to better quantify impacts to water quantity and quality; and</li> <li>• All contaminant, waste and hazardous waste storage facilities and other contaminated water storage areas</li> </ul>		

														(PCD) must be lined to pro-actively prevent infiltration of contaminated seepage water.
12,0	Transportation of Coal via R42 road	Soil	Soil contamination and degradation due to potential hydrocarbon spillages.	3	5	4	1	0,8	4,0	2,5	2,0	Moderate	<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and</li> <li>• Vehicles with leaks must have drip trays in place.</li> </ul>	
		Wetland and aquatic environment	Increased movement of heavy vehicles	2	5	4	1	0,8	3,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• Clean and dirty water separation systems to be implemented prior to the commencement of activities and to be maintained throughout the life of the proposed project;</li> <li>• Ensure that as far as possible all operational infrastructures are placed outside of wetland/riparian areas and their associated 32 or 100m zones of regulation respectively;</li> <li>• Limit the footprint area of the operational activities to what is absolutely essential in order to minimise impacts as a result of subsidence;</li> <li>• Ensure that no incision and canalisation of the wetland features present takes place as a result of the proposed operational activities;</li> <li>• All erosion noted within the operational footprint as a result of either subsidence or any</li> </ul>	



															<ul style="list-style-type: none"> <li>• Areas across watercourses where cross-sectional subsidence is observed should be rehabilitated in such a way as to maintain stream connectivity in a downstream direction.</li> </ul>
		Surface water and groundwater	Contamination of surface water due to potential hydrocarbon spillages.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and</li> <li>• Vehicles with leaks must have drip trays in place.</li> </ul>		
13,0	Vehicular activity.	Air Quality	Fugitive dust generation emanating.	4	5	4	3	1,0	4,3	3,7	3,7	High	<ul style="list-style-type: none"> <li>• Ensure the area of disturbance during the mining activities is restricted to the to the identified mining strips;</li> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;</li> <li>• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent Coal dust generation; and</li> <li>• Vehicles will obey speed limits. Maintenance equipment and heavy vehicle speeds should be reduced, where possible, to prevent dust emissions.</li> </ul>		

	Topography and Visual Environment	Topography change and disruption of surface water flow	2	5	5	2	0,6	4,0	3,0	1,8	Low	<ul style="list-style-type: none"> <li>• Ensure that access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography;</li> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; and</li> <li>• Vehicles will obey speed limits.</li> </ul>
	Soil	Soil contamination and degradation.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;</li> <li>• Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;</li> <li>• All vehicles and machinery to be serviced in a hard park area or at an off-site location;</li> <li>• Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);</li> <li>• Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and</li> <li>• Vehicles with leaks must have drip trays in place.</li> </ul>
	Fauna and Flora	Loss of biodiversity and minimise impacts on floral species	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;</li> <li>• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent Coal dust generation; and</li> <li>• Vehicles will obey speed limits.</li> </ul>
	Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems	2	2	4	3	1,0	2,7	2,8	2,8	Moderate	<ul style="list-style-type: none"> <li>• Ensure a Storm Water Management Plan is implemented;</li> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use and exposed surfaces;</li> <li>• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent Coal dust generation;</li> </ul>

												<ul style="list-style-type: none"> <li>• Vehicles will obey speed limits; and</li> <li>• Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.</li> </ul>
	Surface Water	Contamination and sedimentation of clean water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use and exposed surfaces;</li> <li>• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent Coal dust generation;</li> <li>• Vehicles will obey speed limits; and</li> <li>• Monitor surface water resources up and downstream of the Project area to identify potential contamination.</li> </ul>



Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures										Mitigation Measures
				I	F	D	E	P	S	C	IS	SIGNIFICANC E		
		Noise	noise emanating from mining and vehicular activities impacting on surrounding sensitive receptors.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Mining related machines and vehicles should be serviced on a regular basis to ensure noise suppression mechanisms are effective (e.g., installed exhaust mufflers); and</li> <li>• Ensure equipment and machinery is switched off when not in use.</li> <li>• The gravel roads must be graded and compacted on a regular basis and as when required, should the roads remain unpaved; and</li> <li>• Adhere to the set speed limit in accordance to the Traffic Management Plan.</li> </ul>	
		Traffic	Degradation of the road structures resulting in potential	3	4	5	2	0,8	4,0	3,0	2,4	Moderate	<ul style="list-style-type: none"> <li>• The gravel roads must be graded and compacted on a regular basis and as when required, should the roads remain unpaved; and</li> <li>• Adhere to the set speed limit in accordance to the Traffic Management Plan.</li> </ul>	

			health and safety risks and soil erosion.											
14,0	Dirty water management.	Wetlands and Aquatic Ecology	Contamination of the wetland systems and aquatic ecosystems	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Ensure a Stormwater Management Plan is implemented;</li> <li>• Ensure that no incision and canalisation of the watercourses;</li> <li>• Dirty water from the infrastructure areas must be diverted by channels and berms and separated from clean water. The dirty water must be stored in the existing PCDs;</li> <li>• No waste and/or contaminated material may be dumped or stockpiled within any watercourses;</li> <li>• The operation and maintenance of the PCD must be in accordance with the NWA Regulations set out in GN R704 and must have a minimum freeboard of 0.8 m and be able to contain a 1:50 year, 24-hour storm event; and</li> <li>• Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.</li> </ul>	
			Contamination of clean water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Continue with water quality monitoring at the existing sample at the current monitoring locations and frequency. Increase monitoring frequency for those monitoring points that show constant non-compliances;</li> <li>• The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitoring and recorded for evaluation of additional future capacity and/or treatment requirements;</li> <li>• Pipelines used for dewatering activities need to be sized based on the dewatering rates and</li> </ul>	



															and levels must take place quarterly especially for the water supply boreholes to ensure a sustainable resource and identify impacts on local users.
15,0	Waste and sewage generation and disposal.	Topography and Visual Environment	Topography change	2	3	3	2	0,8	2,7	2,3	1,9	Low	<ul style="list-style-type: none"> <li>• Waste must be stored away from surface water and drainage lines; and</li> <li>• General and hazardous waste must be removed and disposed of frequently at a registered disposal site.</li> </ul>		
		soil	Degradation and contamination of soil	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• Burying of any waste including rubble, domestic waste, empty containers on the site must be strictly prohibited;</li> <li>• Proper waste storage facilities should be available and used for the correct separation and storage of waste prior to collection and disposal; and</li> <li>• Generated waste must be removed to an approved disposal facility.</li> </ul>		
		Surface Water	Contamination of clean water resources.	4	4	5	2	0,8	4,3	3,2	2,5	Moderate	<ul style="list-style-type: none"> <li>• The sewer waster collected from the workings must be disposed of at a licensed sewage treatment facility;</li> <li>• Monitor surface water resources up and downstream of the Project area to identify potential contamination;</li> <li>• Ensure that a stormwater management plan is in place to separate clean and dirty water; and</li> <li>• Waste must be separated at source and stored in appropriately designated areas for disposal at a licensed facility or by a reputable contractor.</li> </ul>		



### 13 METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS & RISKS.

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

Assigning significance to potential impacts requires integration of the severity (magnitude of the potential impacts), type of the impact, extent to which the impact will occur, probability of the impact (the likelihood of the impact occurring) and the duration of the impact. This is the best way to determine whether the impact is important or not, once the mitigation is considered.

Impacts have been assigned a rating of high (H), medium/moderate (M), low (L), very low (VL) or no impact. A significance rating is assigned twice to the impact. Firstly, to indicate significance without mitigation or optimization and secondly, to indicate significance after mitigation or optimisation. This is done to highlight the importance of mitigation or optimisation of potential impacts.

**Table 11: Impact Severity rating**

Category	Description/definition
<b>High</b>	Impacts will be of high significance if one of the following applies: <ul style="list-style-type: none"> <li>• The extent is national to international</li> <li>• The duration is long term to permanent</li> <li>• The severity will be high</li> <li>• Probability is definite</li> </ul>
<b>Moderate</b>	Impacts will be of moderate significance if one of the following applies: <ul style="list-style-type: none"> <li>• The extent is local to regional</li> <li>• The duration is medium to long term</li> <li>• The severity is major</li> <li>• The probability is highly probable</li> </ul>
<b>Low</b>	Impacts will be of low significance if one of the following applies: <ul style="list-style-type: none"> <li>• The extent is local</li> <li>• The duration is temporary to permanent</li> <li>• The severity is low</li> <li>• The probability is probable</li> </ul>

<b>Very low</b>	<p>Impacts will be of very low significance if one of the following applies:</p> <ul style="list-style-type: none"> <li>• The extent is site-specific</li> <li>• The duration is temporary to permanent</li> <li>• The severity is very low</li> <li>• The probability is improbable</li> </ul>
<b>No impacts</b>	A potential concern of impact which, upon evaluation, is found to have no impact.

This section provides a description of the methodology that was applied to assess the significance of environmental and heritage impacts. The significance rating process follows the established impact/risk assessment formula:

- Significance = Consequence x Probability, WHERE.
- Consequence = Severity + Spatial Scale +Duration, AND
- Probability = Likelihood of an impact occurring

The matrix calculates the rating out of 75 then converts this to a percentage. The percentage is the figure quoted in the matrix. The weight assigned to the various parameters for positive and negative impacts is presented in Table 10.

**Table 12: Impact severity**

Rating	Severity		Spatial scale	Duration	Probability
	Environmental	Social/cultural heritage			
7	Very significant impact on the environment. Irreparable damage to highly valued species, habitat or ecosystem. Persistent severe damage.	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order.	International	Permanent to mitigation	Certain/ definite
6	Significant impact on highly valued species, habitat or ecosystem.	Irreparable damage to highly valued items of cultural significance or breakdown of social order.	National	Permanent mitigated	Almost certain/ high probability

Rating	Severity		Spatial scale	Duration	Probability
	Environmental	Social/cultural heritage			
5	Very serious, long- term environmental impairment of ecosystem function that may take several years to rehabilitate.	Very serious widespread social impacts. Irreparable damage to highly valued items.	Province/ region	Project life (The impact will cease after the operational life span of the project)	Likely
4	Serious medium term environmental effects. Environmental damage can be reversed in less than a year.	On-going serious social issues. Significant damage to structures/ items of cultural significance	Municipal area	Long term (6-15 years)	Probable
3	Moderate, short-term effects but not affecting ecosystem function. Rehabilitation requires intervention of external specialists and can be done in less than a month.	On-going social issues. Damage to items of cultural significance.	Local	Medium term (1-5 years)	Unlikely/ low probability
2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants.	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Limited	Short term (Less than 1 year)	Rare/ improbable
1	Limited damage to minimal area of low significance, (e.g., ad hoc spills within plant area). Will have no impact on the environment	Low-level repairable damage to commonplace structures	Very limited	Immediate (Less than 1 month)	Highly unlikely/ none



Table 13: Impact significance.

		Consequence (severity + scale + duration)								
		1	3	5	7	9	11	15	18	21
Probability/Likelihood	1	1	3	5	7	9	11	15	18	21
	2	2	6	10	14	18	22	30	36	42
	3	3	9	15	21	27	33	45	54	63
	4	4	12	20	28	36	44	60	72	84
	5	5	15	25	35	45	55	75	90	105
	6	6	18	30	42	54	66	90	108	126
	7	7	21	35	49	63	77	105	126	147

Table 14: Impact significance threshold limit

Significance		
Low	0 - 35	
Medium-Low	36 - 76	
High-Medium	73 - 107	
High	108 - 147	

**Activity 1: Construction phase**

Impacted environment: Topography, visual, soil, land capability, surface water, groundwater, air quality, natural vegetation, animal life and noise

**Description:** This activity involves bringing equipment to site as well as establishing structures associated with drilling prior to actual drilling. The significance of the impacts of the construction, operating and decommissioning of the prospecting area on the environment is low. There is a potential for most of the environment to be impacted over a limited spatial extent. Mitigation measures need to be applied to reduce or prevent the physical impacts on the affected environment

**Table 15: Impact of construction on project area.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Natural vegetation	N	2	5	4	11	5	55	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low

**Activity 2:** Storage of hydrocarbons, chemicals, fuel

Impacted environment: Soil, land capability, surface water, groundwater and natural vegetation.

**Description:** This activity involves the storage of hydrocarbons, chemicals and fuel in the project area. During the drilling activities there will be no storage of diesel fuel, oil and lubricants on site. Significant amount of diesel will be transported to site for the drill rig machine on a daily basis for the duration of the prospecting activities. The potential contaminants for the prospecting of coal are minimal and can be controlled easily as this activity will only take place for a short period of time. Fuel and oil handling facilities are likely sources of hydrocarbon related contaminants. Oils, grease, and other hydrocarbon products (such as petrol and diesel) handled in these areas may contaminate the environment by spillages and leakages (e.g., from drill rigs).

Absorbent Spill kits will be made available near the drill rigs during drilling activities; The oil absorbent chemicals will ensure that no oils infiltrate down to the underground to cause any groundwater contamination.

**Table 16: Impact of hydrocarbon, chemical and fuel storage.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	5	3	10	5	50	Medium-Low
C,O,D	Land capability	N	2	5	3	10	5	50	Medium-Low
C,O,D	Surface water	N	4	5	5	14	5	56	Medium-Low
C,O,D	Ground water	N	4	5	5	14	5	56	Medium-Low
C,O,D	Natural vegetation	N	2	5	3	10	5	50	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low

### Activity 3: Temporal fence

Impacted environment: Visual and animal life

**Description:** This involves the placement of a fence on the farm. The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. The impact that the fence will have on animal life is potentially positive as animals like livestock will be restricted from grazing in the project area, preventing injury and possible overgrazing. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 17: Impact of temporal fence.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Visual	N	2	4	3	9	5	45	Medium-Low
C,O,D	Animal life	P	2	3	3	8	4	32	Low

### Activity 4: Removal and storage of topsoil (topsoil stockpile)

Impacted environment: Soil, land capability, visual, topography, surface water, air quality, natural vegetation, animal life and noise.

**Description:** This activity will cause surface disturbance. The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent with visual and noise disturbance occurring locally. Surface water and archaeology & cultural heritage is most likely to occur on a municipal scale. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 18: Impact of topsoil removal and storage.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,D	Soil	N	2	5	4	11	5	55	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,D	Visual	N	3	4	3	10	5	50	Medium-Low
C,O,D	Topography	N	2	5	3	10	6	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low

C,O,D	Air quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural heritage/ archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

#### Activity 5: Transport of equipment

Impacted environment: Soil, land capability, surface water, groundwater, air quality, natural vegetation, animal life, archaeology/cultural heritage and noise.

**Description:** The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent with noise potentially occurring over a local extent. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 19: Impact of equipment transport.**

Phase impact occurs (C, O, D)	Affected environment	Nature of impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Air quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural vegetation	N	2	5	4	11	5	55	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural heritage/ archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

#### Activity 6: Ablutions

Impacted environment: Soil, land capability, surface water and groundwater

**Description:** The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for surface and groundwater which is most

likely to occur over a limited extent. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 20: Impact of ablutions.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground water	N	4	5	5	14	4	56	Medium-Low

### Activity 7: Domestic waste

**Impacted environment:** Soil, visual, land capability, surface water, groundwater, natural vegetation and animal life.

**Description:** The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for surface and groundwater which is most likely to occur on a limited spatial extent. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 21: Impact of domestic waste.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Visual	N	2	4	4	10	5	50	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Groundwater	N	4	5	5	14	4	56	Medium-Low
C,O,D	Natural vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low

### Activity 8: Access roads

Impacted environment: Soil, land capability, surface water, air quality, natural vegetation, animal life, wetlands, archaeology/cultural heritage and noise.

**Description:** The significance of the impacts of the activity on the affected environment are potentially medium-low, with high probabilities of occurrence. Most of the environment will be potentially impacted over a limited spatial extent, except for noise which probably occur on a local scale and surface and groundwater as well as archaeology/cultural heritage which will occur on a municipal extent. Mitigation measures need to be applied to reduce or prevent physical impacts on the environment.

**Table 22: Impact of access roads.**

Phase impact occurs (C, O, D)	Affected environment	Nature of Impact (Negative/Positive)	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)	Significance rating (pre-mitigation)
C,O,D	Soil	N	2	6	4	12	5	60	Medium-Low
C,O,D	Land capability	N	2	6	4	12	5	60	Medium-Low
C,O,D	Surface water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Ground water	N	4	5	5	14	4	56	Medium-Low
C,O,D	Air quality	N	2	3	4	9	5	45	Medium-Low
C,O,D	Natural vegetation	N	2	6	4	12	5	60	Medium-Low
C,O,D	Animal life	N	2	4	6	12	4	48	Medium-Low
C,O,D	Cultural heritage/ archaeology	N	4	5	5	14	5	70	Medium-Low
C,O,D	Noise	N	3	2	3	8	6	48	Medium-Low

### Soils, land capability and land use

Prospecting activities involve drilling but may affect land available for grazing and will increase the potential for soil erosion (which is currently minimal). Fencing off the project area will prevent animals from grazing, thus improving vegetation growth in the area. Soil pollution from domestic waste and hydrocarbon spillages may occur, potentially increasing soil contamination. Soils that have been stripped can never be replaced in their original state due to the alteration of physical, chemical and biological soil properties during removal and stockpiling. Stockpiling influences soil properties negatively and may cause soil deterioration, especially in terms of biological quality. The cumulative impact on regional land capability and land use is low due to the land use being predominately for agriculture which is dominated by grazing and housing. Thus, the activities will result in a low significance cumulative impact only being limited to the site and its immediate surroundings.

### Surface water

There is a non-perennial and perennial rivers near the boundaries of the project area. Considerable care must be taken to ensure that these water courses are not disturbed and contaminated by the proposed activities.

**Groundwater**

Hydrocarbon spills from trucks and machinery, ablutions and domestic waste may contribute to groundwater contamination. The total cumulative impact is low as these activities will be limited to the site.

**Noise**

Cumulative impacts are expected to be significant due to drilling machines and trucks. Surrounding farmers will also contribute to noise levels in the area with agricultural activities. Prospecting operations will take place between 07:00 and 17:30 to limit noise to office hours. The total cumulative impacts are expected to be low-medium.

**Flora**

Vegetation destruction will only occur during the construction phase in a potentially disturbed area. The cumulative impacts will be more severe if endemic and Red Data plants are encountered on site, but mitigation measures, like the protection and removal of Red Data plants and the rehabilitation and re-introduction of animals currently present after closure should reduce the significance of the negative cumulative impact.

**Fauna**

Regionally, agriculture, plantations, sheep and Livestock farming take place. Towns and communities are developing, resulting in a less significant cumulative impact on the fauna. The cumulative impacts will be more severe if endemic and Red Data animals occur in the area, but mitigation measures, like the protection and removal of Red Data animals and the rehabilitation and re-introduction of animals currently present after closure should reduce the significance of the negative cumulative impact.

**Visual aspects**

Drilling will have a slight impact on the visual aspects. There are, however, already existing impacts on the visual aspects of the area due to the agricultural activities and presence of other infrastructure. The cumulative impacts can be 142 minimize142d in Table 23.

**Table 23: Impact of visual aspects.**

Impacted environment	Nature of Impact (Negative/Positive )	Spatial Scale (7)	Duration (7)	Severity (7)	Consequence	Probability (7)	Significance (147)
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Geology	N	1	3	1	5	2	10
Soils, land capability and land use	N	3	4	3	10	5	50
Surface water	N	3	3	2	8	4	32
Groundwater	N	3	3	2	8	4	32
Air quality	N	2	3	2	7	4	28
Noise	N	2	2	2	6	4	24
Flora	N	1	3	2	6	4	24
Fauna	N	1	3	2	6	4	24
Site of archaeological and cultural interest	N	2	3	2	7	4	28
Visual impacts	N	1	3	2	6	4	24

## **14 POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY (IN TERMS OF THE INITIAL SITE LAYOUT) AND ALTERNATIVES ON THE ENVIRONMENT AND COMMUNITY**

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

Potential impacts that were identified during the Basic Assessment Process are discussed under environmental component headings in this section. The project will not cause adverse surface disturbances as the planned prospecting activities will be managed and rehabilitation will occur progressively per drill hole. A 100m buffer zone will be established around all water bodies, infrastructure/chicken houses.

### **Advantages & Disadvantages**

Exploration has not been conducted in the area thus the proposed prospecting right area is suitable as the coal reserve can be explored. This exploration will assist with adding geological data on the area. In addition, proposed project area is surrounded by operational mines mining coal. Due to this, the proposed area should also be explored.

The proposed prospecting site is currently conducting agricultural activities which is maize and poultry farming. Conducting prospecting activities will only be after harvest and before the seeds need to be planted. In addition, prospecting activities will be done on a schedule that does not hamper the poultry operation. The proposed project area has a water body inside its boundaries. To protect the integrity of the water body, buffers have been put in place and proposed boreholes are placed a distance from the sensitive areas.

Prospecting is a short term and temporary project. In this light, there are no disadvantages of the selected site in terms of the mineral to be prospected for or the location of the boreholes and environmental issues/concerns.

## **15 POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK**

*(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to*



*accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)*

A description and assessment of the mitigation measures for each potential impact identified in the impact assessment process is provided by the following sections.

Possible mitigation measures include:

- Avoid and control through implementation of EMPr mitigation measures (e.g. speed limit enforcement & vehicle maintenance);
- Avoidance and control through preventative measures (e.g. site security, code of conduct);
- Avoid and control through implementation of preventative measures (e.g. monitoring, communication with landowners, emergency response procedures);
- Avoid through implementation of suitable progressive rehabilitation and soil management;
- Avoid and control through implementation of EMPr mitigation measures (e.g. Spill prevention, Hydrocarbon Storage);
- No invasive prospecting activities to be undertaken within 100m of a watercourse.
- Avoiding ground water pollution
- Where drinking water/ livestock watering boreholes are to be affected then the advice of a geohydrologist should be sought with regards to the need for plugging and casing of the prospecting boreholes.
- Remedy through clean-up and waste disposal; and
- Avoid and control through implementation of preventative measures (e.g. location of toilets, spill prevention, waste management).

## **16 STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE**

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

The specific locations of intrusive drilling activities will be confirmed during Phase 1 of the Prospecting Work Programme. All infrastructure to be developed will be mobile and temporary. It is recommended that all activities take place away from the waterbodies, ESA 30m buffer to be maintained and there should be no clearing of sensitive vegetation. Negotiations and agreements will be made with the landowner to use any existing infrastructure like access roads. Negative impacts identified above will be mitigated through implementation of the proposed mitigation measures as detailed in the EMPr. Where negative impacts cannot be avoided, rehabilitation will be undertaken.

The impacts of the development alternative are considered of medium to low significance and would be further reduced to low should the implementation of the proposed mitigation measures be done accordingly.

## **17 FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE (IN RESPECT OF THE FINAL SITE LAYOUT PLAN) THROUGH THE LIFE OF THE ACTIVITY**

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

### **✚ Approach to the EIA**

An Environmental Impact Assessment (EIA) is a good planning tool. It identifies the environmental impacts of a proposed development and assists in ensuring that a project will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

The Basic Impact Assessment for this project complies with the National Environmental Management Act (1998) (as amended) and the NEMA EIA Regulations (2014) and guidelines of the Department of Environmental Affairs (DEA). The guiding principles of an EIA are listed below.

### **✚ Guiding principles for an EIA**

The EIA must take an open participatory approach throughout. This means that there should be no hidden agendas, no restrictions on the information collected during the process and an open-door policy by the proponent. Technical information must be communicated to stakeholders in a way that is understood by them and that enables them to meaningfully comment on the project.

There should be ongoing consultation with interested and affected parties representing all walks of life. Sufficient time for comment must be allowed. The opportunity for comment should be announced on an on-going basis. There should be opportunities for input by specialists and members of the public. Their contributions and issues should be considered when technical specialist studies are conducted and when decisions are made.

### **✚ Information gathering**

Early in the Basic Assessment process, the Environmental Assessment Practitioner (EAP) identified the information that would be required for the impact assessment and the relevant data were obtained. In addition, available information about the receiving environment was gathered from reliable sources, interested and affected parties, previous documented studies in the area and previous EIA Reports. The project team visited the site to gain first-hand information and an understanding of the existing operations and the proposed project.

### **✚ Baseline Specialist Assessments**

The following baseline studies will be conducted:

- Hydrogeology study
- Soil study
- Hydrology Study

The findings and recommendations identified by the various specialist studies undertaken, will be incorporated into the Basic Impact Assessment.

#### **Legislative Framework**

The legal requirements were described and assessed in detail.

#### **Alternatives**

Prospecting is conducted in phases, where the activities and location of drilling are dependent on the previous phase. Therefore, the specific locations and extent of soil sampling and core drilling cannot be as yet confirmed.

#### **Description and assessment of impacts identified**

A comprehensive list of all potential impacts of the prospecting as identified by the EAP and the specialists, are provided and are assessed.

#### **Environmental Management Programme**

An Environmental Management Programme containing mitigation, management and monitoring measures and specifying roles and responsibilities was compiled with specialist input and are included in this report.

#### **Stakeholder engagement**

Registered interested and affected parties including relevant organs of state, are consulted with during the process. All their comments will be formally responded to and incorporated into the Final Basic Assessment Report and Environmental Management Programme that will be submitted to the competent authority.

### **18 ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK**

*(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties)*

Potential impacts that may be caused by the proposed development will be identified using input from the following:

- Views of I&APs;
- Existing information;
- Baseline Specialist investigations;

- Site visit with the project team; and
- Legislation.

The following potential major direct, indirect and cumulative impacts were identified:

- Air pollution (dust, gaseous emissions), Land pollution;
- Water pollution (surface water, groundwater and wetlands);
- Land degradation, land-use and capability impacts;
- Ecological degradation;
- Land pollution;
- Aesthetic, pollution;
- Increased noise levels;

**Table 24: Potential environmental impacts and mitigation measures.**

Potential environmental impacts and sources	Measures to prevent, mitigate, minimize or manage the impacts
<p><b>Impact:</b> Air pollution (dust, gaseous emissions)</p> <p><b>Source:</b> Establishment of camp site, movement of vehicles and drill rigs,</p>	<ul style="list-style-type: none"> <li>• Dust suppression measures will be implemented and the area will be sprayed with water.</li> <li>• A low-speed limit (30 km/h) will be imposed to reduce dust generation.</li> <li>• All equipment and vehicles will be equipped with the manufacturers' standard exhaust systems which will reduce emissions.</li> <li>• Waste burning will not be allowed on site.</li> </ul>
<p><b>Impact:</b> Water pollution (surface water, groundwater and wetlands)</p> <p><b>Source:</b> Spillages from machines on site</p>	<p>Prospecting activities will not be conducted within a 100 m radius from a dam, river, stream, wetland or any water body and the following will be ensured:</p> <ul style="list-style-type: none"> <li>• Control and manage storm water</li> <li>• Prevent soil erosion and keep the water channel clean</li> <li>• Monitor the ground water</li> </ul>
<p><b>Impact:</b> Land degradation, land-use and capability</p> <p><b>Source:</b> Poor waste management</p>	<ul style="list-style-type: none"> <li>• Completed boreholes will be rehabilitated and re-vegetated.</li> <li>• Areas which do not form part of drilling site will not be disturbed</li> <li>• Prospecting will be conducted in an environmentally sustainable manner.</li> <li>• One of the prospecting objectives is to turn the area into other land use/s after closure.</li> <li>• Waste material will be properly managed</li> </ul>
<p><b>Impact:</b> Ecological degradation</p> <p><b>Source:</b> Uncontrolled vehicle movement and poor rehabilitation</p>	<ul style="list-style-type: none"> <li>• Disturbed biodiversity will be restored after closure.</li> <li>• Indigenous species will be used to re-vegetate the area.</li> <li>• No animals will be killed and collection of firewood will not be allowed.</li> <li>• Movement of vehicles will be restricted to designated area only.</li> </ul>
<p><b>Impact:</b> Land pollution</p> <p><b>Source:</b> Lack of proper waste management</p>	<ul style="list-style-type: none"> <li>• It is anticipated that a small amount of domestic waste will be generated by workers. Such waste materials will be kept in waste bins which will be disposed of on a regular basis at the registered waste disposal site. The same will apply to office waste.</li> <li>• Any spillages which may occur will be investigated and immediate action will be taken. Significant spills (&gt;35</li> </ul>

	<p>l) of any hazardous substance will be recorded and reported to the environmental personnel, DWA, DMRE and any other relevant authorities.</p> <ul style="list-style-type: none"> <li>• Scraps will be kept in designated areas prior delivery to the scrap yard.</li> <li>• All machinery will be serviced off site and also inspected for any leaks.</li> </ul>
<p><b>Impact:</b> Aesthetic, pollution <b>Source:</b> Machinery</p>	<ul style="list-style-type: none"> <li>• The visual impact will be of temporary nature.</li> <li>• The surrounding trees and dense vegetation will also serve as the screen to the prospecting area.</li> </ul>
<p><b>Impact:</b> Noise <b>Source:</b> Vehicle movements and drill rigs</p>	<ul style="list-style-type: none"> <li>• The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulation as well as other applicable legislations regarding noise control.</li> <li>• Employees will be supplied with ear plugs. All prospecting vehicles are equipped with silencers and maintained in a road worthy condition.</li> <li>• All work will be carried out between 06:00 and 18:00. This will allow landowners and occupiers to have some respite from noise.</li> </ul>

**Table 25: Activity and potential impact in each phase.**

Activity	Description	Affected environment	Potential impact
<b>Prospecting phase</b>			
Uploading of access roads	Access roads that already exist will be upgraded.	Soil	Increased erosion of soils due to the removal of vegetation.
		Natural vegetation	Destruction and removal of natural vegetation during site clearance.
		Surface water	Siltation of surface run-off due to soil erosion.
		Air quality	Dust emission due to wind erosion.
Transportation of equipment	The drilling operation will involve transportation of equipment to the project area.	Soil	Soil compaction due to the repetitive movement on gravel roads.
		Interested and Affected Parties	Damage to roads caused by movement of heavy vehicles and continual use of vehicles moving to and from the site.
		Air quality	Increased dust emissions due to entrainment of dust particles by the movement and operation of construction equipment.
Construction of surface infrastructure.	This will involve vegetation clearing and topsoil removal to construct a site offices, a change house, toilet, etc.	Soil	Permanent compaction of soil in areas of infrastructure construction
		Land capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural vegetation	Disturbance of vegetation could result in soil erosion due to exposed soils.
		Surface water	Altered surface flow dynamics around surface infrastructure and potential contamination of surface water due to fluid spillage.
		Groundwater	Groundwater contamination due to infiltration of contaminated water.
		Air quality	Dust from construction vehicles on gravel and secondary roads.
Soil Removal and Stockpile	It is assumed that the topsoil thickness averages 0.5 m over	Topography	Alteration of local topography and disturbance of natural drainage lines.
		Visual	Creation of stockpiles alters the visual quality of the landscape.

	the disturbed area. Approximately 93 000 m <sup>3</sup> of topsoil will be removed.	Soil	Damage to the natural soil structure due to soil handling, removal and mixing of soil types and horizons. Removal of vegetation causes a change in the water runoff characteristics of the site and increases probability of soil erosion. This leads to the loss of topsoil and an increase of siltation in the streams and rivers with the runoff carrying sediment. Leaching of soil nutrients during long-term stockpiling.
		Land capability	Decreased land capability due to damage to the natural soil structure, soil loss through wind and water erosion and leaching of soil nutrients.
		Natural vegetation	Damage to natural vegetation due to deposition of dust emitted during the tipping and stockpiling, restricting photosynthesis.
		Animal life	Direct impacts on threatened fauna species, habitat disturbance and destruction, and disruption of birds nesting, foraging or roosting in the area.
		Surface water	Altered surface flow dynamics due to alterations in the onsite topography and increase of siltation in the streams and rivers with the runoff carrying sediment.
		Air quality	Dust emissions due to wind erosion during tipping of soil onto trucks and stockpiles, and exposure of stockpiles to wind erosion, and increased dust generation.
		Noise	Increase of noise of hauling trucks to topsoil stockpile site.
Placement of a fence	A temporary perimeter fence will be constructed around the exploration site which will be limited to the demarcated area to protect operations and prevent people and domestic animals from harm.	Animal life	Limitation of movement for domestic animals to grazing areas. This will prevent movement of domestic animals to demarcated areas, preventing injury.
		Interested and Affected Parties	The temporary fence could prevent access to communal agricultural fields. The fence will also serve as a safety measure, preventing access to possibly hazardous areas.
Storage of fuel	Diesel fuel use for drilling will be determined and the storage	Soil	Soil contamination.
		Land capability	Decreased land capability due to contaminated soil.



	capacity will not be triggered by the NEMA list of activities.	Natural vegetation	Damage to natural vegetation and loss due to hydrocarbon and chemicals spills.
		Animal life	Injury or loss of animals due to spillages of hydrocarbons, chemicals.
		Surface water	Contamination of surface water due to the spillage of hydrocarbons, chemicals or contaminated run- off sourced from contaminated soil.
		Groundwater	Groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.
Use of hydrocarbons, chemicals	The use of hydrocarbons, chemicals will take place and these will be stored on site in designated storage areas.	Soil	Soil contamination.
		Land capability	Decreased land capability due to contaminated soil.
		Natural vegetation	Damage due to natural vegetation and loss due to hydrocarbon and chemical spills.
		Animal life	Injury or loss of animals due to spillages of hydrocarbons, chemicals.
		Surface water	Contamination of surface water due to the spillage of hydrocarbons, chemicals or contaminated run-off sourced from contaminated soil.
		Groundwater	Groundwater contamination due to the infiltration of surface water contaminated with spilled hydrocarbons, chemicals.
Access roads	Existing access roads will be used to access the site and transport equipment onto and off-site. If need be, they will be upgraded.	Soil	Upgrading of existing roads to processing plant may result in soil erosion and loss.
		Land capability	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads
		Natural vegetation	Decreased agricultural and grazing potential of surrounding land due to deposition of dust emitted by vehicle entrainment on haul roads. Site clearing and removal of topsoil could lead to soil erosion and soil loss.
		Surface water	Altered surface flow dynamics due to topsoil removal, topographical alterations and increased surface runoff from cleared areas. Surface water runoff overhaul roads will cause erosion and siltation of surface water resources. Surface water runoff contamination due to hydrocarbon spills from vehicles travelling on haul roads.

		Air quality	Dust pollution caused by construction vehicles
		Noise	Elevated noise levels due to continuous vehicular movement on haul roads.
		Interested and Affected Parties	Damage to roads could impact safety of people and animals.
<b>Decommissioning and closure</b>			
Rehabilitation	All areas disturbed will be rehabilitated to its original state with the waste rock and topsoil stockpiles. Roads should be ripped or ploughed and fertilised if necessary, to promote re-growth of vegetation.	Soil and vegetation	Positive impact as topsoil will be replaced to enhance vegetation growth.
		Animal life	Positive impact as vegetation will re-establish itself and the natural Fauna will gradually return to the rehabilitated sites.

## 19 SUMMARY OF BASIC REPORTS

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

LIST OF BASIC 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.
Soil study	<ul style="list-style-type: none"> <li>The proposed area is covered with freely drained structureless soils and Non soil land classes.</li> <li>It is anticipated that the coal prospecting activities will not lead to severe loss of soils and degradation of agricultural potential.</li> <li>The exploration geologist will be advised to drill and sample away from the waterbody on site.</li> <li>The prospecting boreholes must be cased after drilling and properly rehabilitated by cap sealing the borehole after drilling. The core of coal on the drilled boreholes, should be cleared from the ground immediately after logging by a geologist, to prevent washing and leaching on the water resources during precipitation events.</li> <li>Absorbent Spill kits will be made available near the drill rigs during drilling activities.</li> </ul>	<b>X</b>	Part A, BAR & EMPr, Section 10.1

<p><b>Hydrogeology Study</b></p>	<ul style="list-style-type: none"> <li>• The area is made up of fractured aquifers, it is recommended that during drilling, a map with fracture zones should be used so that the drilling process does not interact with water in fracture zones.</li> <li>• Clearing of vast amount of vegetation should be avoided, this is to preserve infiltration.</li> <li>• Constant availability of waste bins; Compliance of National Environmental Management: Waste Management Act 59 of 2008.</li> <li>• Compliance of GN 704 4(b) and 7(a) and National Water Act 36 of 1998 (Chapter 3 – Part 4, Section 1 (a)(b).</li> <li>• No onsite vehicle or machinery repairs such as changing oil.</li> <li>• No onsite storage of oil, diesel, or petrol.</li> <li>• A 100 meters buffer should be followed to preserve the surface water resources as the area mostly depends on surface water.</li> <li>• It is recommended that a plan on how surface water will be managed as this area is of steep slope, meaning that there is likely to be leaching in the borehole if not properly rehabilitated.</li> <li>• It is recommended that during the drilling process, the team should use fracture zone map, to clearly point areas of fracture zones, this will help them not to drill at that point as it will contribute to groundwater contamination.</li> <li>• On the southern, western, and eastern direction, the contours are decreasing in value, which clearly shows that from the boundary of the study area, it is downhill, mitigation measures on how water will be managed on these areas should be clearly defined.</li> <li>• The area has presence of floodplains, which shows that there is occasional flooding, it is recommended that the phases of the project be scheduled during the time when there is little to no</li> </ul>	<p style="text-align: center;"><b>X</b></p>	<p>Part A, BAR &amp; EMPr, Section 9.1</p>
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	<p>rainfall (June- July), this is to protect the water resources and financial aspect of the prospecting company.</p> <ul style="list-style-type: none"><li>• It is recommended that the drill rig operates while standing on a non-permeable material, to avoid spillages from entering the soil and eventually the water resources.</li><li>• It is recommended that there should be monitoring boreholes and regular monitoring should be implemented.</li></ul>		
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## 20 ENVIRONMENTAL IMPACT STATEMENT

### a) Summary of the key findings of the environmental impact assessment.

#### Key findings for the Basic Assessment

- The possible environmental impacts associated with the proposed prospecting are considered insignificant when mitigations are applied accordingly. A diamond core drill rig will be used for drilling.
- The main impacts are associated with the waterbodies particularly the perennial & non perennial rivers traversing the project area. The affected areas will be buffered to prevent any activities from taking place that may result in detrimental effects upon these denoted sensitive areas.
- This is a biologically sensitive area, there are ESA: Important sub-catchments
- The area occurs within a Strategic Water Source Area

### b) Final Site Map

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

### c) SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES;

**Table 26: Summary of positive and negative impacts**

<b>Negative</b>	<p>No concerns in terms of community health as all possible traces of waste and ore will be disposed of appropriately during prospecting. The following negative impacts may occur:</p> <ul style="list-style-type: none"> <li>• Noise: State-of-the-art drilling equipment will be used to minimise noise. Drilling will be conducted during office hours to limit disturbance of nearby residences.</li> <li>• Invasion of privacy: Land access agreements will be signed before prospecting commences. This will limit unnecessary invasion.</li> </ul>
<b>Positive</b>	<ul style="list-style-type: none"> <li>• Discovery of an economically viable mineral resources</li> <li>• Employment contributing to the economy</li> <li>• Positive contribution to the South African Gross Domestic Product</li> <li>• Concurrent rehabilitation during Prospecting Activities</li> </ul>

## 21 PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPr;

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

✚ The objective of the EMPr include:

- Providing enough information for the prospecting activities to prevent and avoid unnecessary social and environmental impact.
- Providing a prospecting plan, guidance and guidelines to conduct prospecting with little to no impact on the environment.
- Reducing impacts by implementing realistic operational management measures like imposing restrictions on the time of day when drilling can take place.

✚ The desired outcomes of the aforementioned objectives include:

- Implementing a drilling programme that does not impact sensitive environmental feature
- Implementing a drilling programme with the consent of the landowner
- Ensuring that all temporary impacts are reduced.
- Rehabilitating the area after drilling to its original (or better) state.
- Reducing noise by operating during office hours and giving the nearby residence peace and quiet.
- Managing water and soil pollution through containment.
- Managing ecological degradation by implementing pollution prevention measures, minimising land clearing and restricting working hours.
- Identifying impacts to inform planning, execution and rehabilitation. During the planning phase, identifying of such impacts is vital to implement and mitigate during construction of the site office and accommodation, as well as during drilling, rehabilitation and closure.

✚ Impact management objectives

**Soils:** Prevent soil degradation by establishing effective rehabilitation measures.

**Dust:** Establish cost-effective measures like spraying of working areas to reduce dust.

**Vegetation:** Limit flora removal to the footprint area and mitigate against it as far as possible.

**Animal life:** Limit fauna removal to the footprint area and mitigated against it as far as possible.

**Visual impacts:** Limit the visual impact of the proposed activity and mitigate against it as far as possible.

## **22 ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION**

*(Any aspects which must be made conditions of the Environmental Authorisation)*

The following aspects are recommended to be included as conditions in the Environmental Authorisation:

- The EMPr is a contractual document and must be implemented at all times during the prospecting phase;
- An independent environmental control officer (ECO) must be appointed to monitor the implementation of the EMPr and audit reports to be kept by the applicant;
  - All contractors and employees of Limmkholo Investment (Pty) Ltd must be made aware of the EMPr and its requirements as well as the impact of not implementing the measures of the EMPr;
- Copies of the EMPr, Integrated Environmental Authorisation and any emergency procedures and method statements, must be kept on site and be available on request of the Competent Authority.

## **23 DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.**

*(Which relate to the assessment and mitigation measures proposed)*

- All information provided to the environmental team, by the applicant and I&APs was correct and valid at the time that it was provided;
- The investigations undertaken by specialists during the BA process, indicate the development site as suitable and technically acceptable, except for the western portion, which is sensitive and recommended that prospecting not take place
- It is not always possible to involve all I&APs individually, however, every effort has been made to involve as many affected stakeholders as possible;
- The information provided by the applicant and specialists was accurate and unbiased; and
- The scope of this investigation is limited to assessing the environmental impacts associated with the prospecting activity.

## **24 REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED**

### **a) Reasons why the activity should be authorized or not**

The primary goal of protected areas is to preserve natural ecosystems and ecosystem functions in perpetuity. They are also useful tools for mitigating or adapting to the effects of climate change.



Although many natural and managed ecosystems can do this, protected areas have several advantages, including a legally entrenched and long-term commitment to protection, as well as associated governance and management structures. Protected areas can assist nature and society in mitigating climate change by gathering and storing carbon in natural ecosystems, as well as adapting to current and predicted changes through the provision of various ecosystem services.

In Mpumalanga, for example, protected areas can be established to protect wetlands and grassland ecosystems that provide essential water services, as well as to use adaptive management practices to mitigate the effects of climate change on these services. Many species and ecosystems are currently threatened by a combination of climate change and other land-use pressures. Protected areas can play an important role in managing existing risks, reducing overall land use pressures, and providing active management measures to reduce climate hazards that threaten biodiversity. More fundamentally, protected areas serve as critical tools for maintaining overall ecosystem resilience at the landscape level.

The proposed prospecting activities have the potential to have a negative impact on the ecological environment as well as the social environment of the area. These impacts, however, can potentially be prevented, minimized, mitigated and managed to low and very low levels, as shown through the impact assessment.

#### **b) Conditions that must be included in the authorisation**

- The EMPr is a contractual document and must be implemented at all times during the prospecting phase;
- An independent environmental control officer (ECO) and Registered Ecologist must be appointed to monitor the implementation of the EMPr and audit reports to be kept by the applicant;
- All contractors and employees of Limmkholo Investment (Pty) Ltd must be made aware of the EMPr and its requirements as well as the impact of not implementing the measures of the EMPr;
- Copies of the EMPr, Environmental Authorisation and any emergency procedures and method statements, must be kept on site and be available on request of the Competent Authority.

## **25 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED**

This Environmental Authorisation is required for a period of 5 years

## 26 UNDERTAKING

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

Please refer to the EMPr in Part B of this document.

## 27 FINANCIAL PROVISION

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

**Table 27: Quantum Calculation**

CALCULATION OF THE QUANTUM							
Applicant: Limmkholo Investment (Pty) Ltd		Ref No.: MP30/5/1/1/2/ 17388 PR					
Evaluator: Abel Mojapelo		Date: 01-Jul-22					
No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	19	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	271	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	400	1	1	0
3	Rehabilitation of access roads	m2	1913,79	49	0,02	1	1875,5142
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	257	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	542	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	284292	1	1	0
7	Sealing of shafts adits and inclines	m3	0	146	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	189528	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	236054	1	1	L
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	685612	1	1	0
9	Rehabilitation of subsided areas	ha	0	158701	1	1	0
10	General surface rehabilitation	ha	0,9	150138	0,2	1	27024,84
11	River diversions	ha	0	150138	1	1	0
12	Fencing	m	0	171	1	1	0
13	Water management	ha	0	57087	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0	19980	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
						Sub Total 1	28900,3542
1	Preliminary and General		3468,042504	weighting factor 2		1	3468,042504
2	Contingencies						2890,03542
						Subtotal 2	35258,43
						VAT (15%)	5288,76
						Grand Total	40547

Singed: Abel Mojapelo  
Date: 01/07/2022

### 27.1 Explain how the aforesaid amount was derived

An amount of **R 40547.00** is required to manage and rehabilitate the environment. The financial provision amount was calculated utilizing the methodology as prescribed by the Guideline Documents for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine issued by the DMRE.

<b>ACTIVITY</b>	<b>YEAR 1 Expenditure (R`)</b>	<b>YEAR 2 Expenditure (R`)</b>	<b>YEAR 3 Expenditure (R`)</b>
<b>Phase 1 (Months 0 to 12)</b>			
Literature surveys	R 2 500.00	R1 500.00	
Desk top studies	R 10 000.00	R 5 000.00	
Geophysical or geotechnical work	R 10 000.00	R 4 000.00	
Research and target identification		R 5 000.00	
Invasive work, (Drilling 05 boreholes a depth of 110m)	R48 024 9.00		
<b>Phase 2-3 (Months 13 to 36)</b>			
Invasive work, (Drilling 05 boreholes a depth of 110m)		R48 024 9.00	R48 024 9.00
Sampling work		R 25 000.00	R 15 000.00
Laboratory work		R 22 800.00	R 11 200.00
Analytical and modelling work			R 40 000.00
Infill work			R 25 000.00
Bulk sampling and testing to be carried out			
<b>Annual Total</b>	<b>R 502 749.00</b>	<b>R 543 549.00</b>	<b>R 571 449.00</b>
		<b>Total Budget</b>	<b>R 1 617 747.00</b>

## **27.2 Confirm that this amount can be provided for from operating expenditure**

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

Limmkholo Investment (Pty) Ltd herewith confirms both its capacity and willingness to make the financial provision required should the prospecting right be granted. Work will be approved on a phase-by-phase basis, dependent on the results obtained in the previous phase i.e. although prospecting work may be provided for financially in the budget for a specific year, it will only take place if justified.

## **FINANCIAL PROVISION**

## **28 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

- a) 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: -**

### **28.1 Impact on the socio-economic conditions of any directly affected person**

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

Potential impacts on landowners, land occupiers, communities or individuals or competing land uses in the area include:

- Potential soil pollution which may result from any hydrocarbon spills where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking;
- Contamination of stormwater runoff and groundwater, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.

- Visual impacts: Visibility from sensitive receptors / visual scarring of the landscape as a result of the prospecting activities.
- Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and vibration impacts associated with the operation of vehicles, machinery and equipment.
- Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and drilling.
- Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.
- Generation of additional general waste, litter and building rubble and hazardous waste.
- Minor impact caused by need for services i.e. water, electricity and sewerage systems during the prospecting phase causing additional strain on natural resources and service infrastructure.
- Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.
- Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.
- Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.
- Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.
- Potential creation of very limited extent short term employment opportunities for the local community, during the prospecting phase.
- Multiplier effects on local economy will be positive, but very limited in extent and only short term.

Mitigation measures are included in this report, as well as the EMPr.

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

*(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).*

Whilst there is no knowledge of heritage resources within the proposed prospecting area care will be taken to avoid any sensitive heritage resources that may otherwise be identified during Prospecting.

Where graves or fossils are identified proposed boreholes will be moved to avoid features of this type. If fossils or graves are discovered, the relevant authorities will be immediately notified and drilling will be stopped in this area.

## **29 OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT**

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

The proposed drilling activities requested as part of this authorization authorisation is the only current viable manner in which a mineral resource can be identified and used to generate a SAMREC and/or JORC- compliant resource which is a minimum requirement to determine whether it is viable to invest in a future mine.

## **PART B:**

# **ENVIRONMENTAL MANAGEMENT PROGRAMME**

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### **30 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME**

#### **30.1 Details of the EAP**

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

Herewith, it is confirmed that the requirement for the provision of the details and expertise of the EAP are already included in PART A, Section 1 (a) of this report.

#### **30.2 Description of the Aspects of the Activity**

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

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

#### **30.3 Composite Map**

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

Refer to section 18 above

#### **30.4 Description of Impact management objectives including management statements**

##### **30.4.1 Determination of closure objectives**

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

The prospecting activities are dependent on the preceding phase (non-invasive). Prospecting is conducted in phases, where the activities and location of drilling are dependent on the previous

phase. Therefore, the specific locations and extent of soil sampling and diamond core drilling cannot as yet be confirmed. Mapping of prospecting activities can also not be conducted.

The closure objectives include:

- Ensure that there are no safety risks associated with the drill boreholes through drill hole capping and backfilling;
- Rehabilitate any pollution that occurred through hazardous spills or waste materials and remove the source of the pollution;
- Establish an area that is not susceptible to soil erosion;
- Re-vegetate disturbed areas with endemic plant species that occur naturally within the area.

#### **30.4.2 Volumes and rate of water use required for the operation**

After careful consideration of the scale of operation it has been deduced that approximately 40 L will be used as potable water. It is anticipated that water will be purchased from a private water filter dealer such as Oasis and brought onto the site.

#### **30.4.3 Has a water use Licence been applied for?**

No, best practice guidelines will be used for mine water management, mine water characterisation, mine water resource protection, mine water treatment and development of mine water management model (Best Practice Guidelines: Series A, G, & H), hence a water use licence has not been applied for.



### 30.5 Impacts to be mitigated in their respective phases

Table 28: Impacts to be mitigated

Activities	Phase	Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Site clearance	Construction Operation	0.69ha, short term and localized	<ul style="list-style-type: none"> <li>• Demarcation of sensitive areas in consultation with relevant specialists and ECO;</li> <li>• Utilise local labour if possible;</li> <li>• Minimise removal of vegetation as far as possible;</li> <li>• Identification and relocation of protected species by a qualified ecologist (and application of the relevant biodiversity permits where required);</li> <li>• Minimize dust generation;</li> <li>• Limit vehicle access;</li> <li>• Implement alien vegetation management;</li> <li>• Ongoing identification of risks and impacts;</li> <li>• Emergency preparedness;</li> <li>• Monitoring and review; and</li> <li>• Avoid disturbance of fauna as much as possible, especially bird nesting sites.</li> </ul>	NEMA MPRDA NEMBA NEMAQA Dust regulations NWA DWAF Best Practice Guidelines	Throughout Construction and operation

<b>Site access</b>	Construction Operation	181.426 ha, short term and localized	<ul style="list-style-type: none"> <li>• All employees and visitors to the site must undergo a site induction which shall include basic environmental awareness and site-specific environmental requirements (e.g. site sensitivities and relevant protocols/procedures). This induction should be presented or otherwise facilitated by the Contractors EO/Mine EO wherever possible.</li> <li>• Landowners/lawful occupiers must be notified prior to accessing properties. A date and time that is suitable to landowners/lawful occupiers and is reasonable to the applicant should be negotiated and agreed upon.</li> <li>• The number, identity of workers, work location and work to be done must be provided to the landowner/lawful occupier prior to going on site.</li> <li>• Consideration must be taken by the applicant and/or contractors when on site not to interfere with the existing land uses and practices.</li> </ul>	NEMA OHS & MHSA	Throughout Construction and operation
<b>Establishment of site infrastructure</b>	Construction	short term and localized	<ul style="list-style-type: none"> <li>• Minimise physical footprint of construction;</li> <li>• Ensure construction is consistent with occupational health and safety requirements;</li> <li>• Minimise vegetation clearance;</li> <li>• Ensure proper and adequate drainage;</li> <li>• Minimise waste and control waste disposal;</li> <li>• Fencing of all drill sites with security access control and warning signs;</li> <li>• Establish waste storage areas for recycling;</li> <li>• Ensure adequate containment of waste to prevent pollution;</li> <li>• Minimise dust generation;</li> <li>• Limit vehicle access to approved access roads;</li> <li>• Prepare contingency plans for spillage</li> </ul>	NEMA MPRDA NEMBA NEMAQA Dust regulations NWA DWAf Best Practice Guidelines NHRA	Throughout Construction and operation

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
<b>Storage of construction vehicles</b>	Construction and Operation	short term and localized	<ul style="list-style-type: none"> <li>Any equipment that may leak, and does not have to be transported regularly, must be placed on watertight drip trays to catch any potential spillages of pollutants. The drip trays must be of a size that the equipment can be placed inside it;</li> <li>Drip trays must be cleaned regularly and shall not be allowed to overflow. All spilled hazardous substances must be collected and adequately disposed of at a suitably licensed facility; and</li> <li>Compacting of soil must be avoided as far as possible, and the use of heavy machinery must be restricted in areas outside of the proposed exploration sites to reduce the compaction of soils.</li> </ul>	NWA DWAf BPG	Throughout Construction and operation
<b>Transportation/ access to and from drill sites</b>	Construction and Operation	short term and localized	<ul style="list-style-type: none"> <li>Where possible, drill sites should be located along existing access roads to reduce the requirement for additional access roads;</li> <li>Any new temporary access routes to a drill site should result in minimal disturbance to existing vegetation;</li> <li>Prior to accessing any portion of land, the Applicant must enter into formal written agreements with the affected landowner. This formal agreement should additionally stipulate landowners special conditions which would form a legally binding agreement;</li> </ul>	NEMA NEMBA CARA NEMAQA Dust Regulations Road Traffic Act	Throughout Construction and operation

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			<ul style="list-style-type: none"> <li>All farm gates must be closed immediately upon entry/exit;</li> <li>Under no circumstances may the contractor damage any farm gates, fences, etc.;</li> <li>On-site vehicles must be limited to approved access routes and areas on the site so as to</li> </ul>		
Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			<p>roads must be in a roadworthy condition and their loads secured. They must adhere to the speed limits and all local, provincial and national regulations with regards to road safety and transport;</p> <ul style="list-style-type: none"> <li>Damage caused to public roads as a result of the construction activities must be repaired in consultation with the relevant municipal authorities; and</li> <li>All measures should be implemented to minimize the potential of dust generation.</li> </ul>		
<b>Storage of hazardous substances</b>	Construction and Operation	short term and localized	All hazardous substances (e.g. fuel, grease, oil, brake fluid, hydraulic fluid) must be handled, stored and disposed of in a safe and responsible manner so as to prevent pollution of the environment or harm to people or animals. Appropriate measures must be implemented to prevent spillage and appropriate steps must be taken to prevent pollution in the event of a spill; and way that does not pose any danger of pollution even during times of high rainfall.	NWA NEMWA DWAF BPG NEMA	Throughout Construction and operation

<p><b>Prospecting boreholes: 25 sites ,with a footprint of 600 m<sup>2</sup> each</b></p>	<p>Construction and Operation Decommissioning</p>	<p>1,2 ha, short term</p>	<ul style="list-style-type: none"> <li>• Vegetation clearing for prospecting sites should be kept to a minimum in order to reduce the disturbance footprint;</li> <li>• Compaction of soil must be avoided as far as possible, and the use of heavy machinery must be restricted in areas outside of the proposed prospecting sites to reduce the compaction of soils;</li> <li>• All measures should be implemented to minimize the potential of dust generation;</li> <li>• Noise attenuation on engines must be adequate, and the noisy activities must be restricted as far as is possible to times and locations whereby the potential for noise nuisance is reduced;</li> <li>• When working near to a potential sensitive area, the contractor must limit the number of simultaneous activities to the minimum;</li> <li>• Ensure proper storage of fuels;</li> <li>• On-site vehicles must be limited to approved access routes and areas on the site so as to minimize excessive environmental disturbance to the soil and vegetation on site, and to minimize disruption of traffic;</li> <li>• Workforce should be kept within defined boundaries and to agreed access routes.</li> <li>• No invasive prospecting activities to be undertaken within 100m of a watercourse.</li> <li>• Should any watercourse be affected, then the necessary water use licences should be</li> </ul>	<p>SANS 10103 ECA Noise Regulations NEMAQA Dust Regulations NWA</p>	<p>Throughout Construction and operation and decommissioning</p>
Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation

			<ul style="list-style-type: none"> <li>obtained from the Department of Water and Sanitation.</li> <li>No ablution of site laydown areas is to be located within 100m of a watercourse.</li> <li>Where drinking water/ livestock watering boreholes are to be affected, and where a pollution event occurs at a particular borehole, then the advice of a geohydrologist should be sought with regards to the need for plugging and casing of the prospecting boreholes.</li> </ul>		
<b>Prospecting</b>	Construction and Operation	1,2 ha, short term	Workers must be easily identifiable by clothing and ID badges. Workers should carry with them, at all times a letter from the applicant stating their employment, title, role and manager contact details.	OHS and MHS A	Throughout Construction and operation
<b>Resource definition drilling</b>	Planning Phase Construction and Operation	short term	Local residents (landowners and directly adjacent landowners) should be notified of any potentially noisy activities or work and these activities should be undertaken at reasonable times of the day. This work should not take place at night or on weekends;	MPRDA Regulations GN R527 SANS 10103	Planning Phase Throughout Construction and operation

<b>Activities</b>	<b>Phase</b>	<b>Size and Scale of Disturbance</b>	<b>Mitigation Measures</b>	<b>Compliance with Standards</b>	<b>Time Period for Implementation</b>
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			<ul style="list-style-type: none"> <li>• The contractor must attempt to restrict noisy activities as far as is possible to times and locations whereby the potential for noise nuisance is reduced;</li> <li>• Dust suppression methods must be applied when necessary to restrict the visual impact of dust emissions.</li> <li>• Any spills of hydrocarbons or fluids used during operation, must be cleaned up immediately;</li> <li>• An above ground drilling sump must be used to contain drilling mud in order to reduce surface and groundwater contamination. No earthen mud sumps are to be constructed and utilized;</li> <li>• No prospecting boreholes should be drilled in the immediate vicinity of existing private boreholes;</li> <li>• Soils in drilling areas where disturbances will be encountered must be stripped and stockpiled outside affected areas for use after completion of the drilling program.</li> <li>• Topsoil must be adequately stripped to the correct depth and stored separately from subsoils;</li> <li>• A liner should be placed over the drill pad and drip trays must be used in all areas where hydrocarbons are handled;</li> <li>• On-site vehicles must be limited to approved access routes and areas on the site so as to</li> </ul>	ECA Noise Regulations NEMAQA Dust Regulations NWA DWAF BPG NHRA	
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Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
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			<ul style="list-style-type: none"> <li>• recording, sampling or collection) can be taken by a professional palaeontologist.</li> <li>• The Final BAR and appendices must be submitted to SAHRA for record purposes;</li> <li>• If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit, must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; and</li> <li>• If the development receives an Environmental Authorisation (EA), SAHRA must be informed and all documents pertaining to the EA must be uploaded to the SAHRIS Case file.</li> </ul>		
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Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
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<b>Refuelling</b>	Construction and Operation	Short term and localized	<ul style="list-style-type: none"> <li>• Refuelling may only take place within demarcated areas that is subject to appropriate spill prevention and containment measures refuelling and transfer of hazardous chemicals and other potentially hazardous substances must be carried out so as to minimize the potential for leakage and to prevent spillage onto the soil;</li> <li>• Drip trays should be utilized in relevant locations during transfer so as to prevent such spillage or leakage. Any accidental spillages must be contained and cleaned up promptly.</li> </ul>	NWA DWAF BPG	Throughout Construction and operation
<b>Maintenance and repair</b>	Construction and Operation	Short term and localized	<ul style="list-style-type: none"> <li>• Trucks, machinery and equipment must be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks must be cleaned up immediately using spill kits or as per the emergency response plan. For large spills a hazardous materials specialist shall be utilized;</li> <li>• Accidental hydrocarbon spillages must be reported immediately, and the affected soil should be removed, and rehabilitated or if this is not possible, disposed of at a suitably licenced waste disposal facility.</li> </ul>	NWA DWAF BPG NEMA	Throughout Construction and operation
<b>Borehole Closure</b>	Decommissioning and Closure	Short term and localized	<ul style="list-style-type: none"> <li>• Where groundwater is encountered during drilling, all affected prospecting boreholes that will not be required for later monitoring or other useful purposes should be plugged and sealed with cement to prevent possible cross flow and contamination between aquifers;</li> <li>• Cement and liquid concrete are hazardous to the natural environment on account of the very high pH of the material, chemicals contained.</li> </ul>	NWA DWAF BPG	Throughout Decommissioning and Closure

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			<p>therein. As a result, the contractor shall ensure that:</p> <ul style="list-style-type: none"> <li>• Concrete shall not be mixed directly on the ground;</li> <li>• The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and disposed of as waste, (Washing of visible signs into the ground is not acceptable); and o All excess aggregate shall also be removed.</li> </ul>		
<b>Removal of surface infrastructure</b>	Decommissioning	Short term and localized	<ul style="list-style-type: none"> <li>• All infrastructure, equipment, and other items used during prospecting will be removed from the site.</li> <li>• Compaction of soil must be avoided as far as possible. The use of heavy machinery must be restricted in areas outside of the proposed prospecting sites to reduce the compaction of soils.</li> </ul>	MPRDA Rehab Plan	Decommissioning
<b>Removal of waste</b>	Decommissioning	Small scale and localized	<ul style="list-style-type: none"> <li>• Any excess or waste material or chemicals, including drilling muds etc. must be removed from the site and must preferably be recycled (e.g. oil and other hydrocarbon waste products). Any waste materials or chemicals that cannot be recycled must be disposed of at a suitably licensed waste facility.</li> </ul>	NWA DWAf BPG	Decommissioning

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
<b>Rehabilitation</b>	Rehabilitation	All disturbed areas	<ul style="list-style-type: none"> <li>• Restoration and rehabilitation of disturbed areas must be implemented as soon as prospecting activities are completed;</li> <li>• Sites must be restored to the original condition with vegetation cover (where applicable) equalling the surrounding vegetation cover;</li> <li>• All debris and contaminated soils must be removed and suitably disposed of;</li> <li>• Contours and natural surrounding must be reformed;</li> <li>• Natural drainage patterns must be restored;</li> <li>• All surface infrastructure on site must be removed;</li> <li>• Temporary access routes/roads must be suitably rehabilitated; and</li> <li>• Sites must be monitored by the ECO (including relevant specialist's inputs if, necessary) for adequate rehabilitation until the desired rehabilitation objectives have been achieved.</li> </ul>	MPRDA Rehab Plan NEMA	Rehabilitation
<b>Consultation</b>	Planning Phase Construction and Operation	Medium term, local	<ul style="list-style-type: none"> <li>• Stakeholder engagement will continue throughout the prospecting activities to ensure the community and landowners are kept informed and allowed to raise issues.</li> </ul>	NEMA OHS and MHSA	Planning Phase Throughout Construction and Operation

<b>Monitoring</b>	Post-Operational	All rehabilitated areas	<p>The post-operational monitoring and management period following decommissioning of prospecting activities must be implemented by a suitable qualified independent party for a minimum of one (1) year unless otherwise specified by the competent authority.</p> <p>The monitoring activities during this period will include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Biodiversity monitoring; and</li> <li>• Re-vegetation of disturbed areas where required.</li> </ul> <p>Provision must be made to monitor any unforeseen impact that may arise as a result of the proposed prospecting activities and incorporated into post closure monitoring and management.</p>	MPRDA Rehab Plan	Post-operation
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### 30.6 IMPACT MANAGEMENT ACTIONS AND OUTCOMES

Table 29: Summary of impact management actions and outcomes

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Site clearance</b>	<ul style="list-style-type: none"> <li>• Deterioration and damage to existing access roads and tracks;</li> <li>• Dust generation;</li> <li>• Clearance of vegetation;</li> <li>• Invasion by alien species;</li> <li>• Sedimentation</li> <li>• Erosion</li> </ul>	Topography; Soil; Air Quality; Surface Water; Groundwater; Transportation	Construction Operation	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA NEMBA CARA Threatened or Protected Species (TOPS) regulations NEMAQA Dust regulations NWA DWAF best Practice Guidelines

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Establishment of base camps and access</b>	<ul style="list-style-type: none"> <li>• Interference with existing land uses</li> <li>• Safety and security risks to landowners and lawful occupiers;</li> <li>• Deterioration and damage to existing access roads and tracks;</li> <li>• Dust generation;</li> <li>• Clearance of vegetation;</li> <li>• Pollution of soils</li> <li>• Contamination on surface and ground</li> </ul>	<p>Topography;</p> <p>Landform;</p> <p>Soil disturbance;</p> <p>Fauna and Flora;</p> <p>Air Quality;</p> <p>Surface Water;</p> <p>Groundwater;</p> <p>Socioeconomics</p>	<p>Construction</p> <p>Operation</p>	<p>Avoidance and control through preventative measures (e.g. communication with landowners, site access control)</p> <p>Remedy through application of mitigation measures in EMP</p>	<p>NEMA</p> <p>MPRDA</p> <p>NEMBA</p> <p>CARA</p> <p>Threatened or Protected Species (TOPS) regulations</p> <p>NEMAQA</p> <p>Dust regulations</p> <p>NWA</p> <p>DWAF best Practice Guidelines</p>

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Storage of construction vehicles</b>	<ul style="list-style-type: none"> <li>• Pollution of surface and groundwater resources from potential hydrocarbon spills; and</li> <li>• Compaction of soils</li> </ul>	Surface water; Groundwater; Soils.	Construction Operation	Avoid through implementation of EMP mitigation measures (e.g. communication with landowners)  Control through implementation of ESMS	Protected Species (TOPS) regulations NEMAQA Dust regulations NWA DWAF best Practice Guidelines
<b>Transportation to and from drill sites</b>	<ul style="list-style-type: none"> <li>• Soil compaction;</li> <li>• Disturbance and loss of fauna and flora, Wearing and tearing of existing roads and Dust generation from increased traffic.</li> </ul>	Soil disturbance; Fauna and Flora; Air quality.	Construction Operation	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA NEMBA CARA Threatened or Protected Species (TOPS) regulations NEMAQA

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Storage of hazardous substances</b>	Potential hydrocarbon spills that could pollute surface and ground water resources.	Surface water; Groundwater.	Construction  Operation	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	NEMA  NEMBA  NWA  DWAf best Practice Guidelines
<b>Waste management</b>	Pollution of habitats and surrounding areas.	Pollution	Construction  Operation	Avoid and control through implementation of EMP mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	DWAf minimum requirement for waste disposal



Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Prospecting boreholes</b>	<ul style="list-style-type: none"> <li>• Vegetation clearance;</li> <li>• Possible erosion;</li> <li>• Changes in drainage and surface hydrology;</li> <li>• Soil disturbance and compaction;</li> <li>• Emissions from vehicles;</li> <li>• Land use conflict;</li> <li>• Noise disturbance due to acoustic sources;</li> <li>• Dust generation;</li> <li>• Disturbance or damage of palaeontological resources;</li> <li>• Potential spills of hydrocarbons;</li> <li>• Influx of people;</li> <li>• Impact on groundwater</li> </ul>	Ecology; Topography; Access/footprint; Soil disturbance; Noise; Air Quality; Socio-economics; Groundwater	Construction  Operation  Decommissioning	Control through implementation of EMPR mitigation measures	SANS10103  ECA Noise Regulations  NEMAQA  Dust regulations  NWA
<b>Resource definition drilling</b>	<ul style="list-style-type: none"> <li>• Vegetation clearance</li> <li>• Removal of topsoil;</li> <li>• Changes in drainage and surface hydrology;</li> <li>• Drainage and soil contamination;</li> <li>• Land use conflict;</li> <li>• Dust generation;</li> </ul>	Air Quality; Noise; Surface water; Groundwater,	Operation	Control through implementation of EMPR mitigation measures	SANS10103  ECA Noise Regulations  NEMAQA  Dust regulations

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved	
	<ul style="list-style-type: none"> <li>• Disturbance of wildlife and communities in close vicinity;</li> <li>• New access roads;</li> <li>• Increased transportation;</li> <li>• Damage to local infrastructures;</li> <li>• Disturbance or damage of palaeontological resources;</li> <li>• Influx of people;</li> <li>• Waste water discharge;</li> <li>• Spillage and leaks of hydrocarbons; Pollution or interplay between groundwater aquifers; Waste disposal.</li> </ul>				NWA  DWAF best Practice Guidelines	
<b>Refuelling</b>	Potential hydrocarbon spills that could pollute soil or surface and/or groundwater resources.	Pollution; Surface water; Groundwater	Construction  Operation	Control through implementation of EMPr mitigation measures	NWA  DWAF best Practice Guidelines	
<b>Maintenance and repair</b>	Potential hydrocarbon spills that could pollute surface and groundwater resources.	Pollution; Surface water; Groundwater	Construction  Operation	Control through implementation of EMPr mitigation measures	NWA	

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
<b>Borehole closure</b>	<ul style="list-style-type: none"> <li>• Pollution of groundwater resources;</li> <li>• Potential pollution of habitats with cement residue that may be exposed to runoff etc.</li> </ul>	Pollution; Groundwater	Decommissioning	Control through implementation of EMPr mitigation measures	NWA
<b>Removal of surface infrastructure</b>	<ul style="list-style-type: none"> <li>• Soil compaction;</li> <li>• Pollution of soil and surrounding vegetation.</li> </ul>	Landform; Topography; Soils.	Decommissioning	Control through implementation of EMPr mitigation measures	MPRDA  In accordance with Rehab plan
<b>Rehabilitation</b>	<ul style="list-style-type: none"> <li>• Soil compaction;</li> <li>• Soil and Water contamination;</li> <li>• Erosion;</li> <li>• Change in drainage and surface hydrology;</li> <li>• Loss of habitat; and</li> <li>• Disturbance to wildlife and communities in close vicinity</li> </ul>	Topography Land use Soil disturbance Ecology Surface water Groundwater	Rehabilitation	Control through implementation of EMPr mitigation measures	MPRDA  In accordance with Rehabilitation plan
<b>Monitoring of rehabilitated sites</b>	<ul style="list-style-type: none"> <li>• Soil compaction;</li> <li>• Soil and Water contamination;</li> <li>• Erosion;</li> <li>• Disturbance to wildlife; and communities in close vicinity.</li> </ul>	Topography Land use Soil disturbance Ecology Surface water Groundwater	Post-operation	Control through adhering to monitoring requirements	MPRDA and regulations

## 31 FINANCIAL PROVISION

### ✚ Determination of the amount of Financial Provision

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

The closure objectives include:

- Ensure that there are no safety risks associated with the drill boreholes through drill hole capping and backfilling;
- Rehabilitate any pollution that occurred through hazardous spills or waste materials and remove the source of the pollution;
- Establish an area that is not susceptible to soil erosion;
- Re-vegetate disturbed areas with endemic plant species that occur naturally within the area.

### **31.1 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 will be subjected to a public consultation period, whereby I&APs are given 30 days to comment.

### **31.2 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**

The prospecting activities are dependent on the preceding phase (non-invasive). Prospecting is conducted in phases, where the activities and location of drilling are dependent on the previous phase. Therefore, the specific locations remains proposed. Mapping of prospecting activities can also not be conducted.

Due to the small extent and fairly short-term period of the prospecting activities and as shown in the Environmental Impact Assessment, the impacts will be of a low or very low significance. Rehabilitation will be conducted progressively and will include borehole capping and re-vegetation.

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

Due to the small extent and fairly short-term period of the prospecting activities and as shown in the Environmental Impact Assessment, the impacts will be of a low or very low significance. Rehabilitation will be conducted progressively and will include borehole capping and re-vegetation. Detailed mitigation measures are provided in the EMPR to ensure the closure objectives are met.

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

**31.5 Confirm that the financial provision will be provided as determined.**

Limmkholo Investment (Pty) Ltd herewith confirms both its capacity and willingness to make the financial provision required should the prospecting right be granted. Work will be approved on a phase-by-phase basis, dependent on the results obtained in the previous phase i.e. although prospecting work may be provided for financially in the budget for a specific year, it will only take place if justified.

### 32 MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING H) MONITORING OF IMPACT MANAGEMENT ACTIONS

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency
- Responsible persons
- Time period for implementing impact management actions
- Mechanism for monitoring compliance

Source activity	Impacts requiring monitoring programmes	Functional requirements for monitoring	Roles and responsibilities For the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
Desktop studies	N/A	N/A	N/A	N/A
Geophysics	N/A	N/A	N/A	N/A
Mapping	N/A	N/A	N/A	N/A
Site establishment and drilling	Visual impact	All areas exposed will be monitored for erosion	Project Manager	Weekly and after heavy winds and rain
	Dust generated	All areas exposed will be monitored for erosion	Project Manager	Weekly and after heavy winds and rain
	Noise	All areas where machinery will be operating	Operators and Project Manager	Daily
	Water and environmental pollution	All areas of operation	Operators and Project Manager	Daily
Post closure and rehabilitation	Rehabilitated areas	All rehabilitated areas	Environmentalist	Weekly, monthly and after heavy rain

### **33 INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT/ ENVIRONMENTAL AUDIT REPORT.**

A Performance Assessment Review of the EMPr should be conducted annually and the environmental audit report will be submitted annually.

### **34 ENVIRONMENTAL AWARENESS PLAN**

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

The environmental awareness plan will include the following:

- Induction of all staff and workers;
- Monthly 'toolbox' talks (awareness talks);
- Risk assessments for specific tasks with supervisors and staff involved in the task on a daily basis, or as often as the task is taking place.

The following principles and training will apply to the Environmental Awareness Plan (safety, health and environmental (SHE) training and the Environmental Management System (EMS) training):

- All personnel, including contactors, will as a minimum undergo general SHE induction and awareness training;
- The Safety, Health, Environmental and Quality (SHEQ) Manager will identify the SHE training requirements for all personnel and contractors. The training requirements will be recorded in a training needs matrix indicating particular training that must be undertaken by identified personnel and contractors. The training matrix will be administered by the Training Department; and Development of the Training Programme, which will include:
  - Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts;
  - Assessment of extent to which personnel are equipped to manage environmental impacts;
  - Basic environmental training;
  - EMS training;
  - Comprehensive training – on emergency response, spill management, etc;

- Specialised skills;
- Training verification and record keeping; and
- Periodic re-assessment of training needs, with specific reference to new developments, newly identified issues and impacts and associated mitigation measures.

### **34.2 General Awareness Training**

- The HR Manager, together with the SHEQ Manager, will be responsible for the development of, or facilitating the development of, the required general SHE induction and awareness training. A general environmental awareness training module will be developed and integrated into the general induction programme. The general awareness
- training must include the Environmental Policy, a description of the environmental impacts and aspects and the importance of conformance to requirements, general responsibilities of personnel and contractors with regard to the environmental requirements and a review of the emergency procedures and corrective actions; and
- A Training Practitioner will conduct the general awareness training. The training presenter will keep a record of the details of all persons attending general awareness training. Such attendance registers shall indicate the names of attendants and their organisations, the date and the type of training received.

### **34.3 Specific Environmental Training**

- Specific environmental training will be in line with the requirements identified in the training matrix; and
- Personnel whose work tasks can impact on the environment will be made aware of the requirements of appropriate procedures/work instructions. The SHEQ Manager will communicate training requirements to responsible supervisors to ensure that personnel and contractors are trained accordingly.

### **34.4 Training Evaluation and Re-training**

- Effectiveness of the environmental training will be reflected by the degree of conformance to EMPr requirements, the result of internal audits and the general environmental performance achieved;
- Incidents and non-conformances will be assessed through the Internal Incident Investigation and Reporting System, to determine the root cause, including the possible lack of awareness/training;



- Should it be evident that re-training is required, the SHEQ Manager will inform the managers of the need and take the appropriate actions;
- General awareness training of all personnel shall be repeated every year; and
- The re-induction shall take into consideration changes made in the EMP, changes in legislation, current levels of environmental performance and areas of improvement.

### 34.5 Emergency Procedures

- Emergency procedures, as relevant to this project, shall be implemented;
- The SHEQ Manager shall define emergency reporting procedures for the project;
- All personnel shall be made aware of emergency reporting procedures and their responsibilities;
- Any spills will be cleaned up immediately in accordance with relevant legislation; and
- Telephone numbers of emergency services, including the local firefighting service, shall be conspicuously displayed.

## 35 MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT

There are several ways to avoid and minimise pollution, including environmental awareness, training, dust suppression, buffer zones, hunting avoidance and veld fire prevention.

<b>Environmental awareness and training</b>	Drilling teams must be trained and any other person who will be based on-site or come to site for the prospecting project must be briefed and inducted on site regulations, especially with regard to health, safety and environmental aspects.
<b>Dust suppression</b>	During construction, preparation and drilling, dust suppression must be exercised on the roads, drill holes and areas being excavated. The right amount of water must be applied to get the desired results.
<b>Buffer zone</b>	Roads, railway lines, water ways, ponds, rivers and wetlands must be avoided to minimise negative impact. Establishing a minimum buffer zone of 100 m around such a feature will reduce pollution and destruction thereof.
<b>Avoid hunting</b>	Hunting of any animals on site will be strictly prohibited
<b>Avoid veld fires</b>	Veld fires will not be permitted, as they easily get out of control and can destroy vegetation, livestock and property.

## **36 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

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

No specific information has been required by the Competent Authority at this point in time.

## **37 CONCLUSION**

The proposed development should have significant negative effects on the natural or social environment. The nature and types of negative impacts do not outweigh the potential benefits of this project, as long as the construction phase's short-term localized impacts are adequately mitigated. An EMPr has been compiled and attached to this report in this regard.

### **36.1 EAP's Opinion regarding the Project**

## **38 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;
- 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.

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Signature of the environmental assessment practitioner:

Singo Consulting (Pty) Ltd

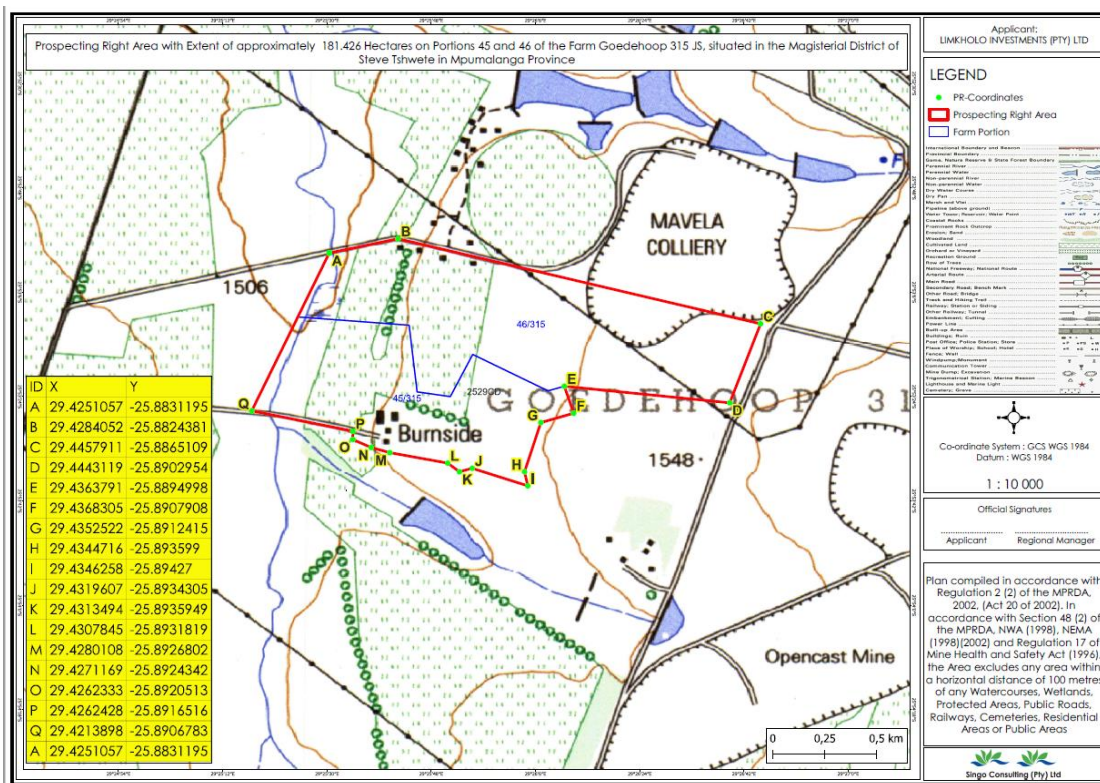
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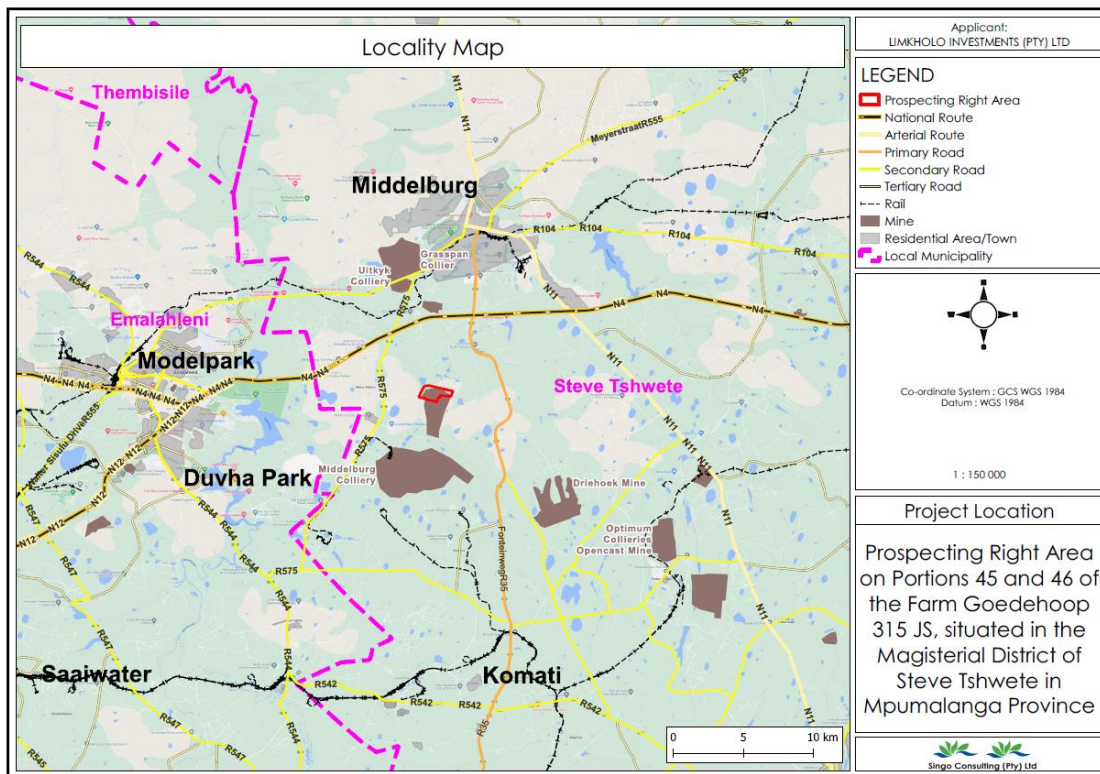
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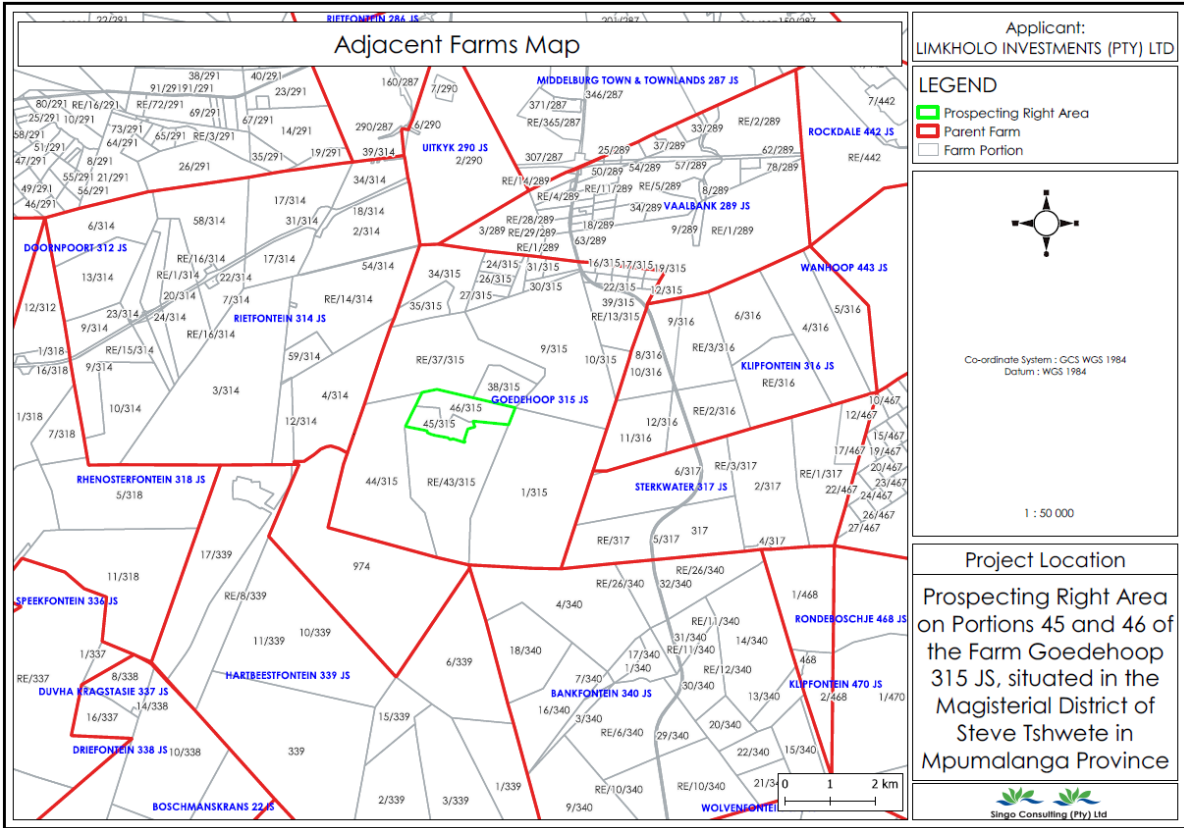
# Appendix 1: Project Maps



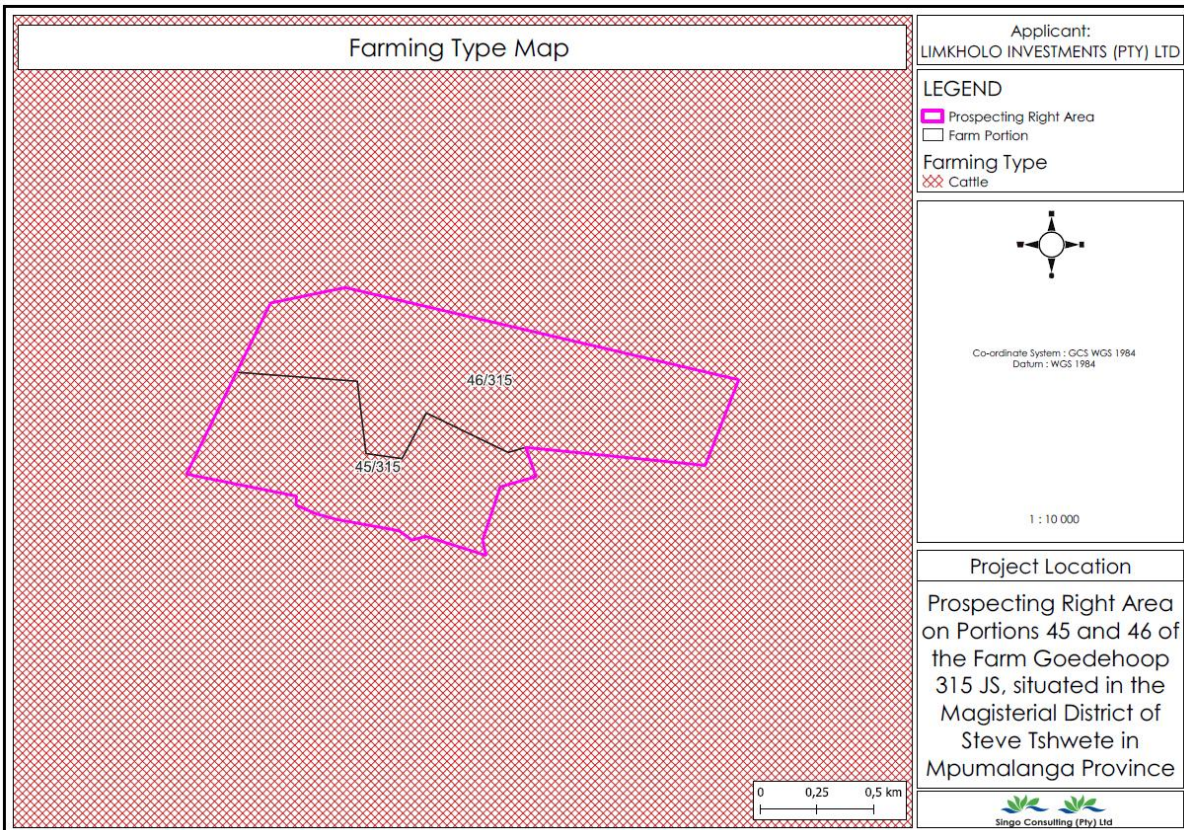
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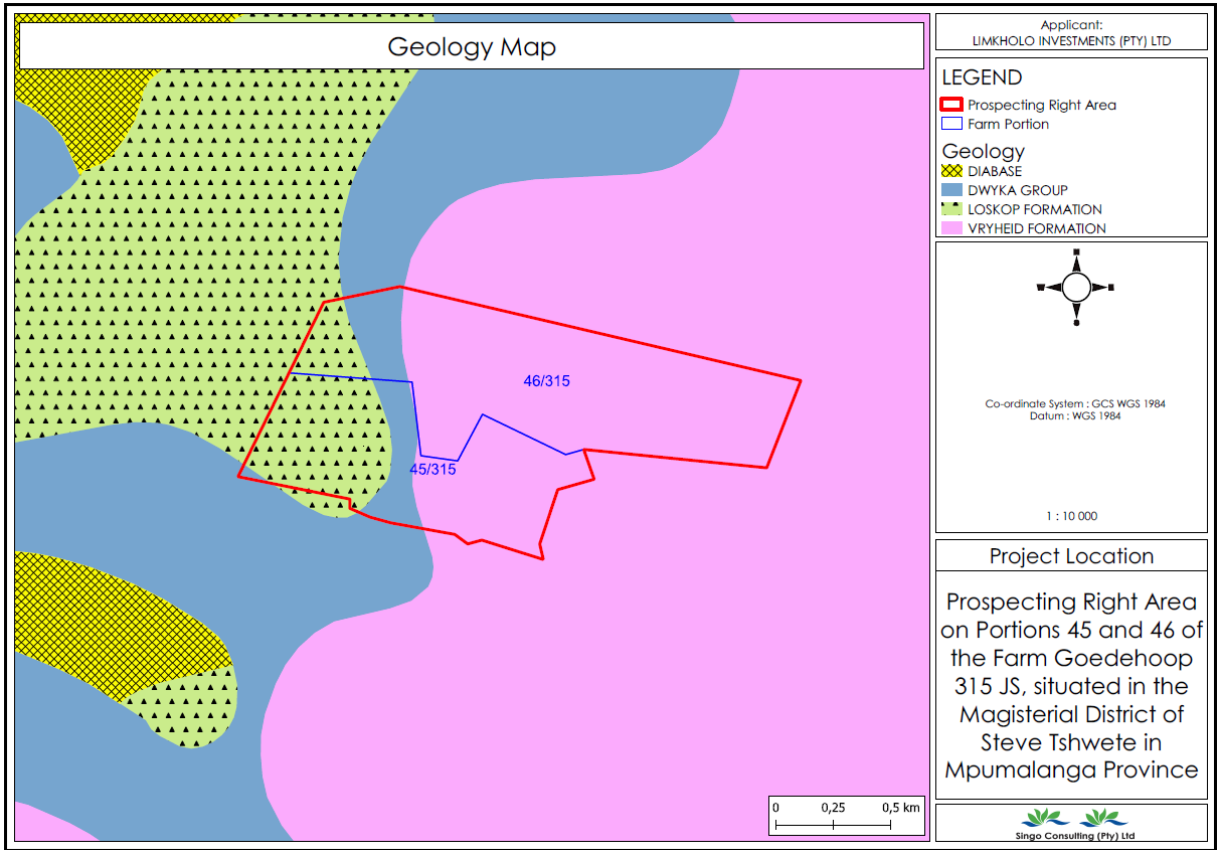
Locality Map



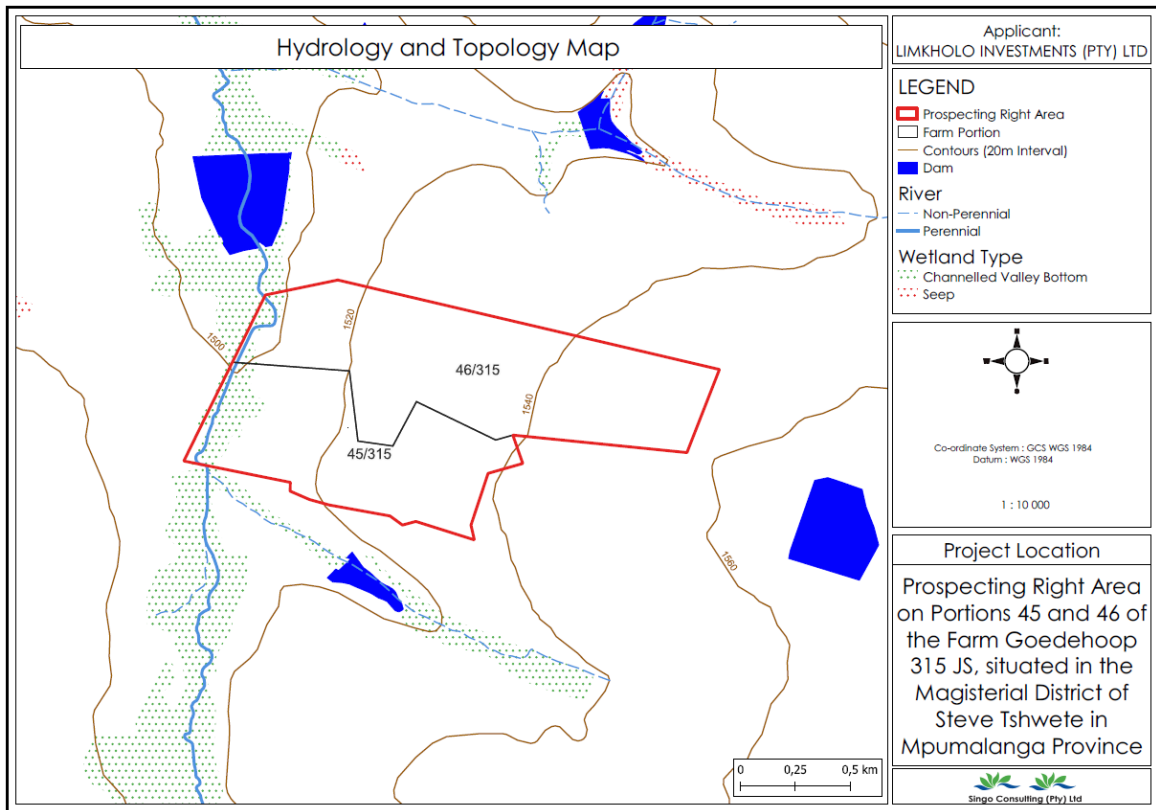
**Adjacent Farms Map**



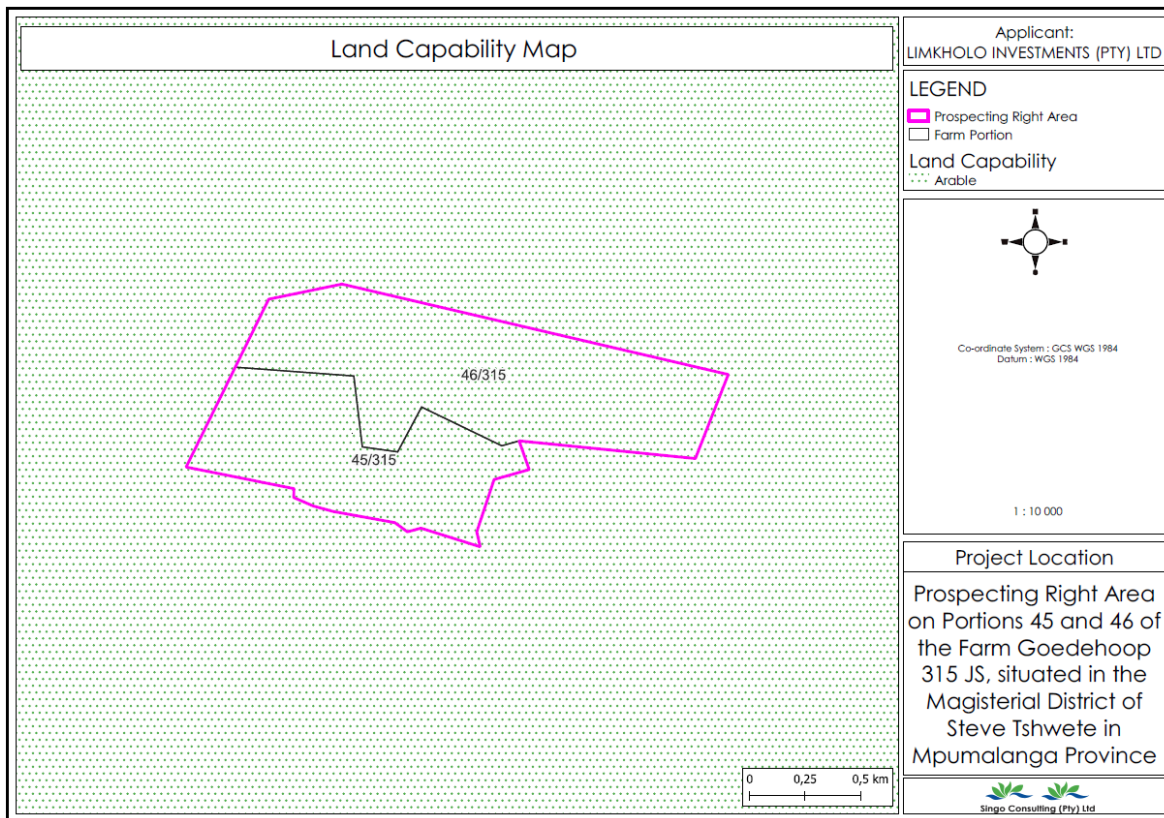
**Farming Type Map**



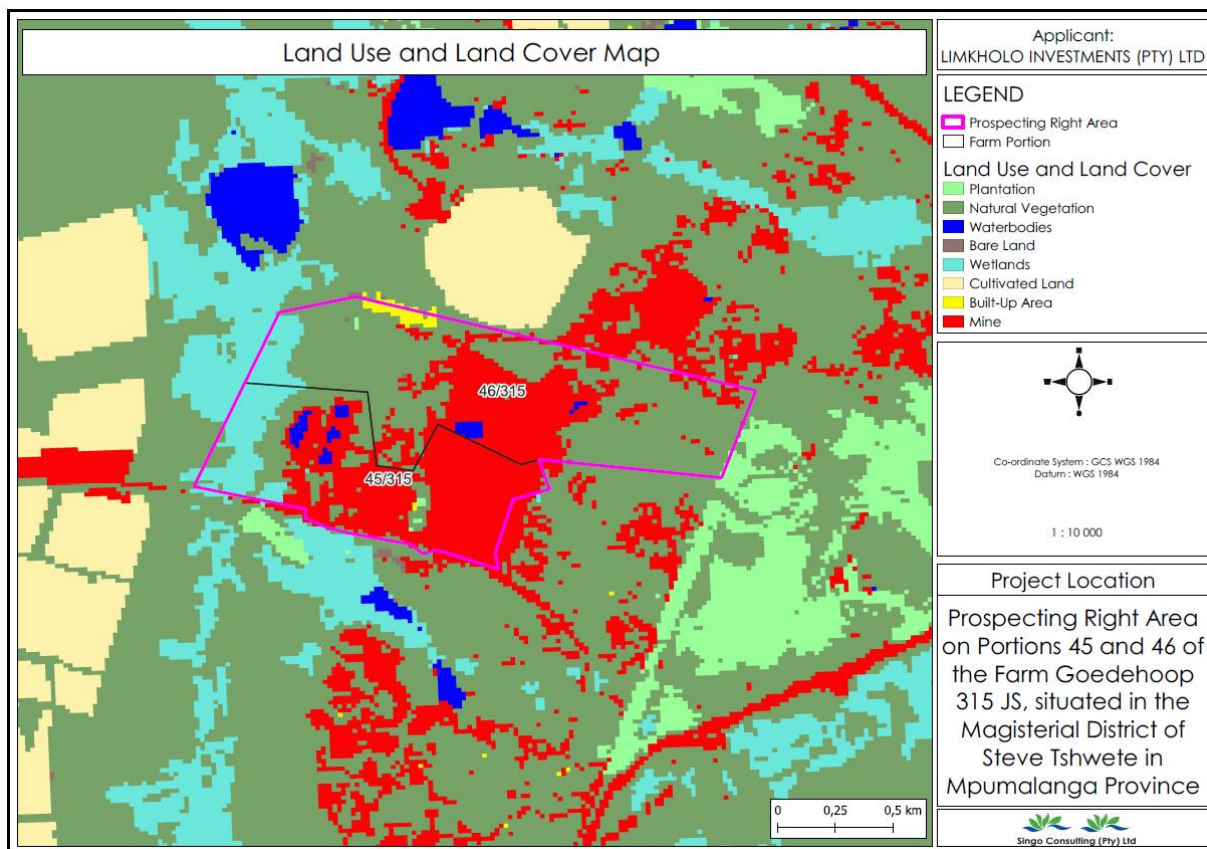
**Geology Map**



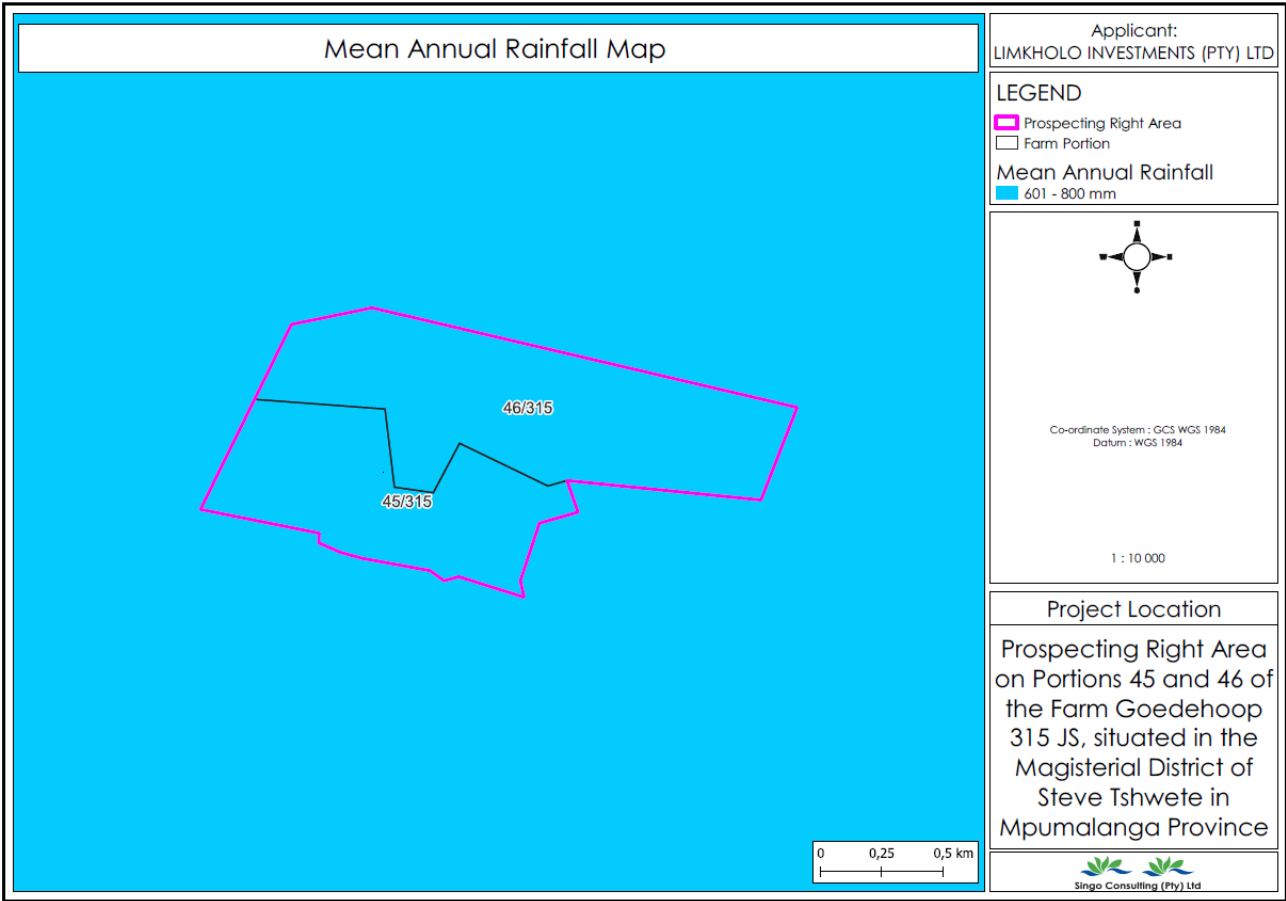
**Hydrology and Topology Map**



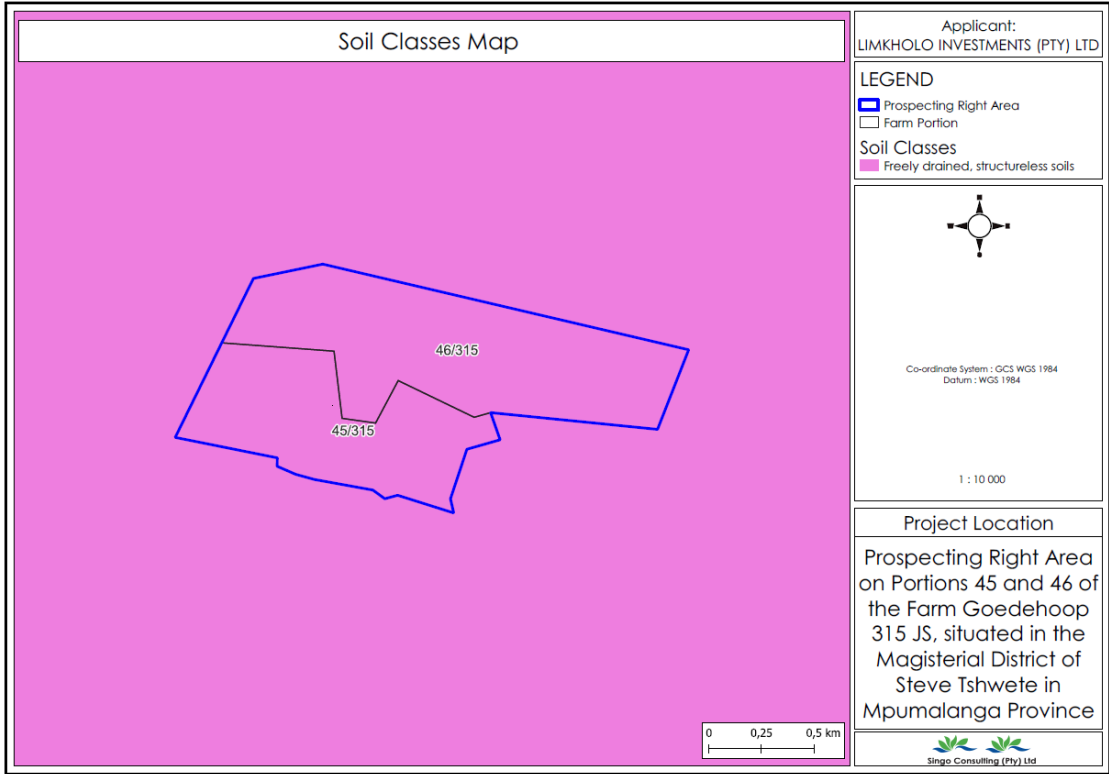
**Land Capability Map**



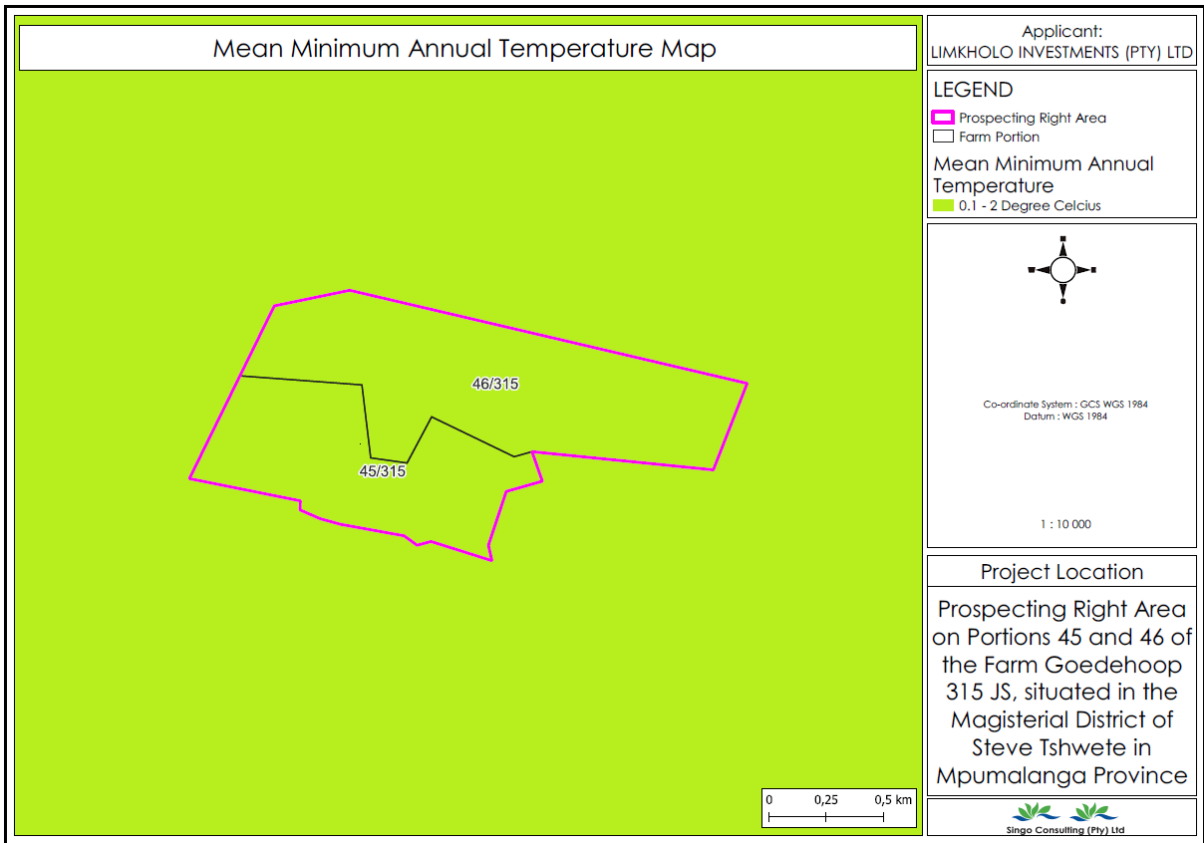
**Land use and Land Cover Map**



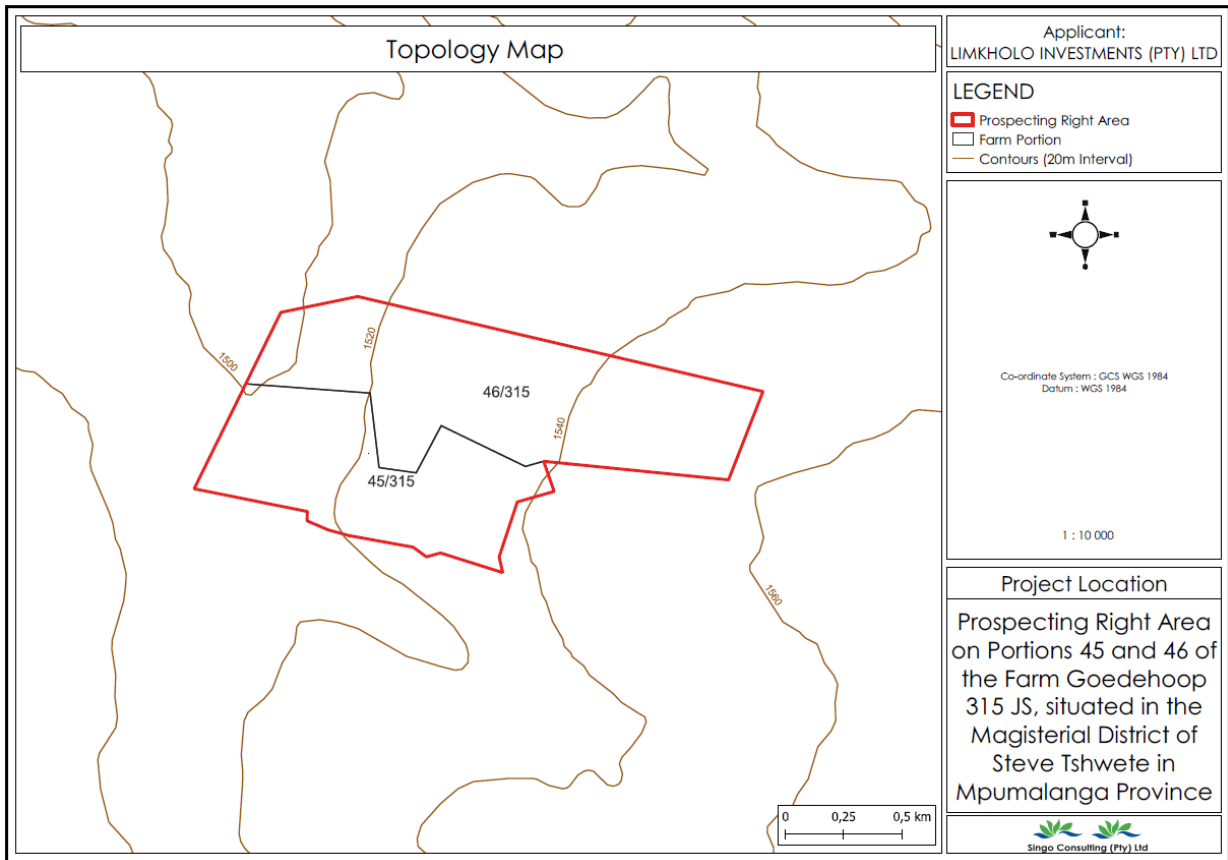
**Mean annual Rainfall Map**



**Soil Classes Map**

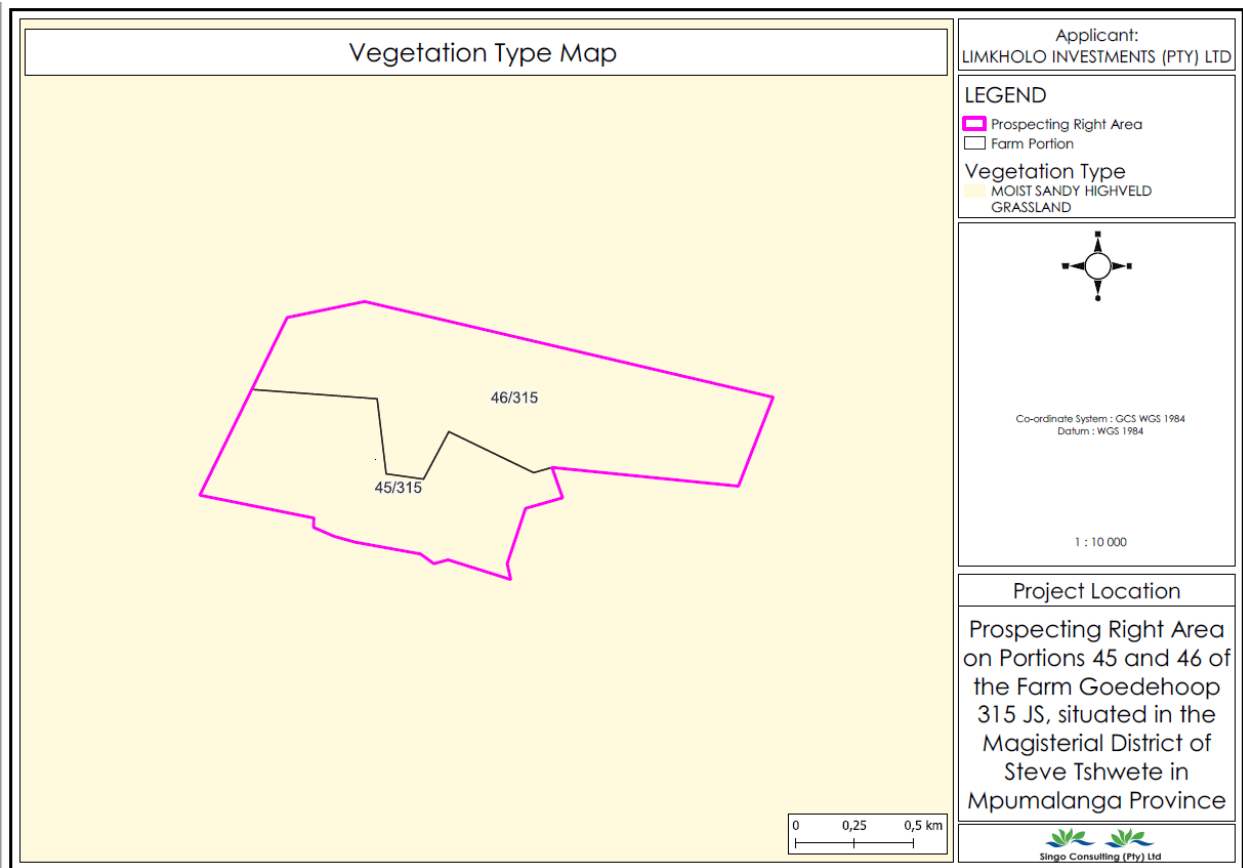


**Mean minimum Annual Temperature Map**



**Topology Map**





**Vegetation Type Map**

**MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY**

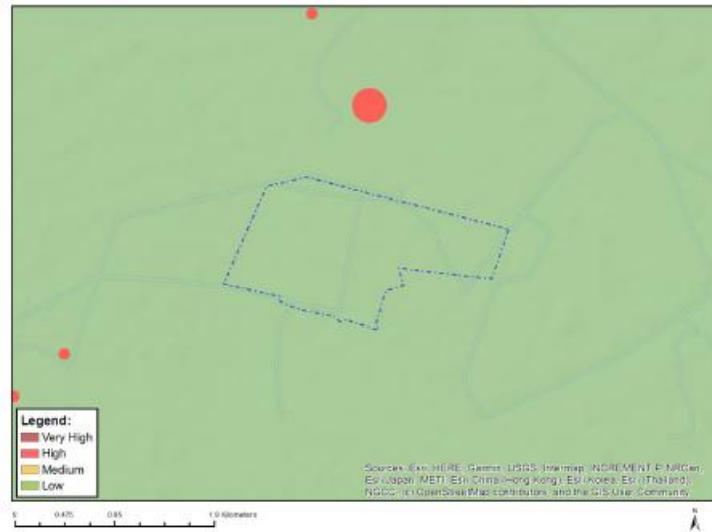


Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

**Map of relative animal species theme sensitivity**

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Map of relative archeological and cultural heritage theme sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



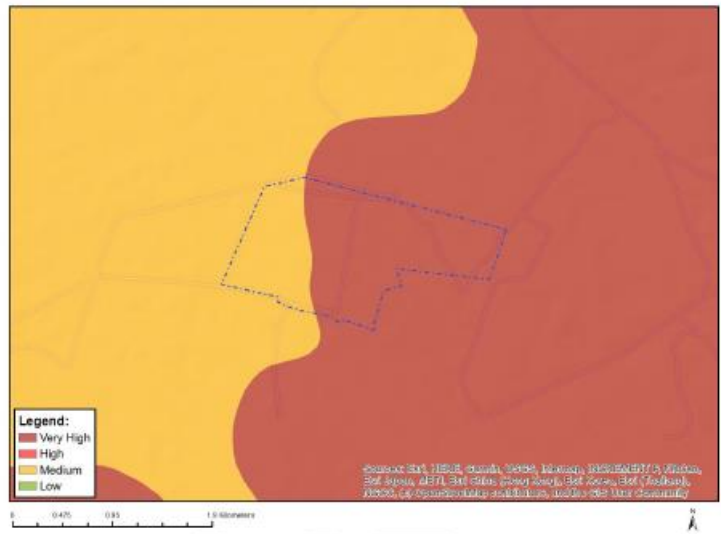
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome

Map of relative civil aviation theme sensitivity

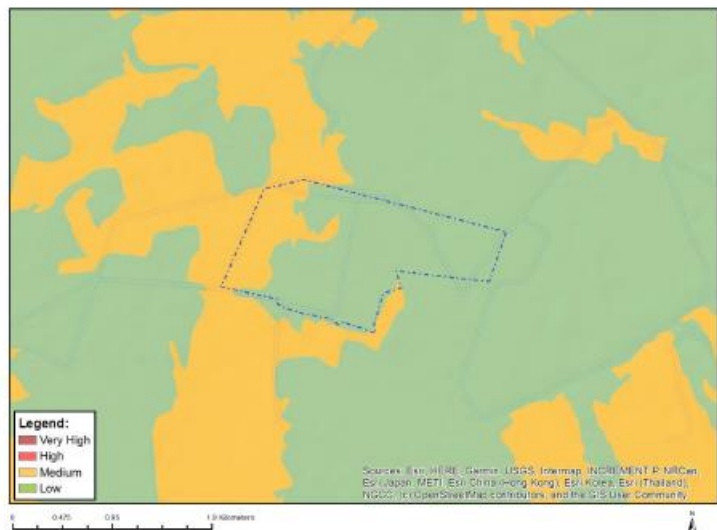
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Map of relative paleontology theme sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

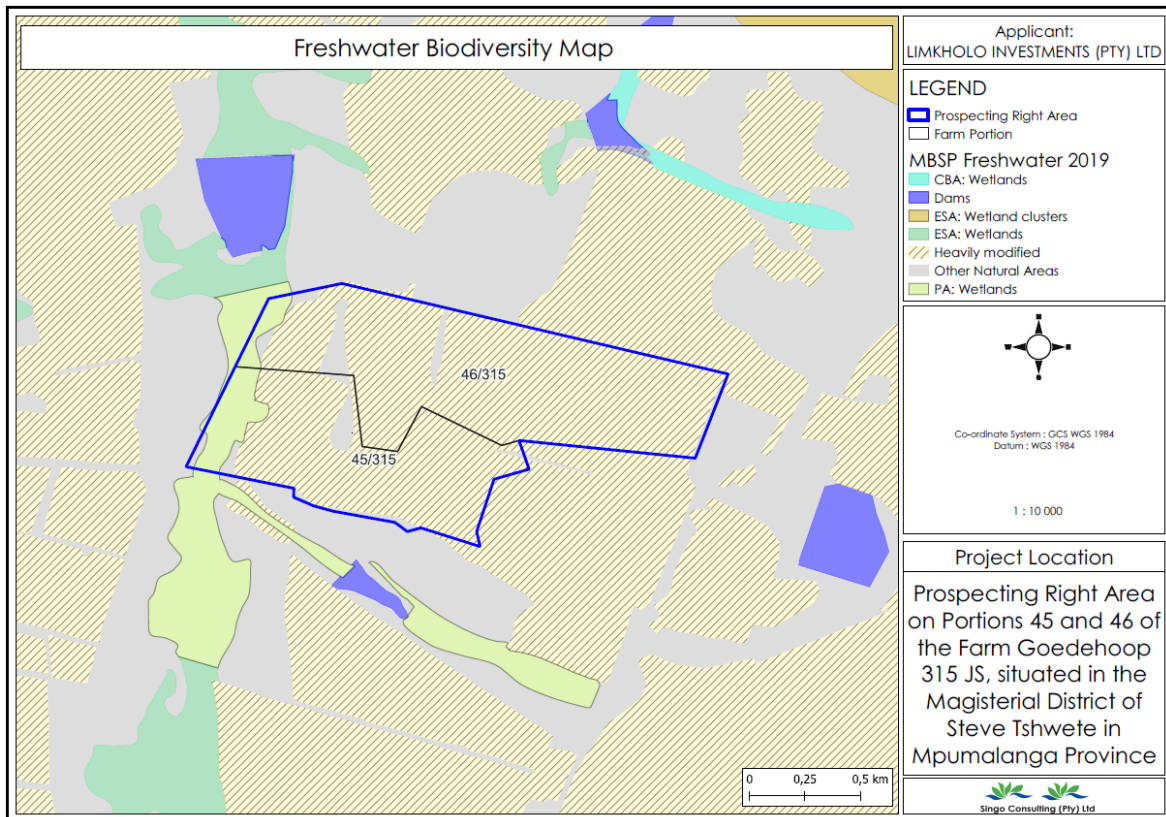
Map of relative plant species theme sensitivity

**MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY**

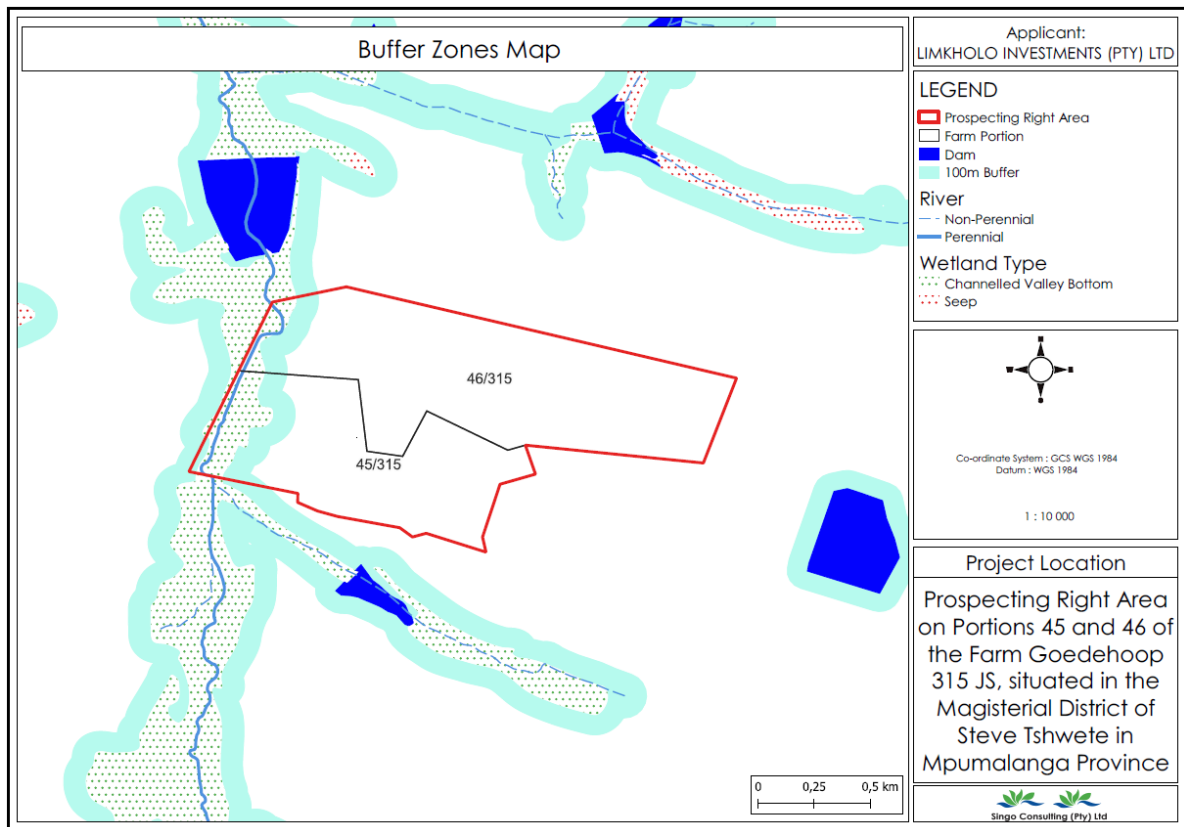


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

**Map of relative terrestrial biodiversity theme sensitivity**



**Biodiversity Map**



**Buffer Zones Map**

## Appendix 2: Background Information Document

## Appendix 2: Screening report

### **Appendix 3: EAPS CV & QUALIFICATIONS.**

(Due to POPI Act sensitive information will not be disclosed to the public)



## Appendix 4: Financial Provision

### CALCULATION OF THE QUANTUM

Applicant: Limmkholo Investment (Pty) Ltd  
 Evaluator: Abel Mojapelo

Ref No.: MP30/5/1/1/2/ 17388 PR  
 Date: 01-Jul-22

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	19	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	271	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	400	1	1	0
3	Rehabilitation of access roads	m2	1913,79	49	0,02	1	1875,5142
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	471	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	257	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	542	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	284292	1	1	0
7	Sealing of shafts adits and inclines	m3	0	146	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	189528	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	236054	1	1	L
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	685612	1	1	0
9	Rehabilitation of subsided areas	ha	0	158701	1	1	0
10	General surface rehabilitation	ha	0,9	150138	0,2	1	27024,84
11	River diversions	ha	0	150138	1	1	0
12	Fencing	m	0	171	1	1	0
13	Water management	ha	0	57087	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0	19980	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							28900,3542
1	Preliminary and General		3468,042504		weighting factor 2 1		3468,042504
2	Contingencies			2890,03542			2890,03542
Subtotal 2							35288,43
VAT (15%)							5288,76
Grand Total							40547

Singed: Abel Mojapelo  
 Date: 01/07/2022

### Appendix 5: Impact Management Outcomes.

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
Whether listed or not, e.g. excavations, blasting stockpiles, discard dumps/dams, loading, hauling, transport, water supply dams/boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control berms, roads, pipelines, power lines, conveyors, etc.	Including the potential impacts for cumulative impacts, e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.		In which impact is anticipated e.g. construction, commissioning, operational, decommissioning, closure, post-closure.	Modify, remedy, control or stop through e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. E.g. modify through alternative method. Control through noise control. Control through management and monitoring through rehabilitation.	Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Planning and Project Management	EMPr	Project Management	Planning	A finalized EMPr must address all authorization conditions stipulated by the DEA (and other commenting authorities). EMPr must encompass all environmental impact mitigation measures as identified in the final BAR.	MPRDA & NEMA
	Appointment of Environmental Officer	Project Management	Planning	The Limmkholo Investment environmental geologist will serve as the Environmental Officer during construction, given the short duration of construction and the low Limmkholo Investment environmental geologist will be responsible for monitoring the compliance of the construction workers and employees on site with the EMPr and ensure their co-operation.	MPRDA & NEMA
	Permits and Permissions		Planning	Steve Tshwete Local Municipality must ensure that all licensing, permits or certificates required for the project are obtained and in place prior to the commencing of any construction activities on site.	MPRDA & NEMA
	Emergency Response Planning	Safety and health personnel	Planning	Plan all emergency responses including: <ul style="list-style-type: none"> <li>• Response procedures to fires, explosions, or</li> </ul>	MPRDA & NEMA

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		on site		<p>any accidents that will require rapid medical responses; and</p> <ul style="list-style-type: none"> <li>Responses to community and stakeholder concerns and communication procedures with potentially affected parties (I&amp;AP).</li> </ul>	
	Project Schedule	Undertaking the project in a timeous manner	Planning	Plan and develop a construction sequence to alleviate noise generation during the construction phase.	N/A
	Method statement	Project Management	Planning	Ensure that a method statement has been compiled and submitted to the Site/Construction manager.	N/A
	Grievances	Project Management	Planning	Develop grievance mechanisms for the recording and management of complaints and grievances specifically including (but not limited to) grievances from those living in the area.	N/A
	Records and Administration	Project Management	Planning	<p>Ensure the following are up to date and available on site:</p> <ul style="list-style-type: none"> <li>A complaint registers.</li> <li>•An approved method statements.</li> <li>Copies of the EMPr.</li> <li>Environmental Permits and authorizations.</li> <li>Copies of weekly checklists, compliance reports, incidence reports and corrective action reports.</li> <li>•Photographs of areas of concern (photos of non-compliance areas as well corrective action).</li> <li>Attendance registers of environmental awareness training.</li> </ul>	
	Recruitment of Labour	Project Management	Planning	<ul style="list-style-type: none"> <li>Where possible, the contractor must make use of local labour in support of the local economy.</li> </ul>	Basic Conditions of Employment

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				<ul style="list-style-type: none"> <li>• Advertise employment opportunities adequately, so as not to limit application opportunities.</li> <li>• Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria.</li> </ul>	Act, No. 75 of 1997 (as amended)
<b>PRE-DRILLING/EXPLORATION</b>					
	Site establishment	Project Management	Planning	<ul style="list-style-type: none"> <li>• The Contractor must, in agreement with the Construction Manager, decide upon an area for the location of a construction camp. The construction camp should be properly demarcated and fenced, and be adequately sized, with enough space for site offices, construction vehicles, equipment, material and waste storage areas</li> <li>• The construction camp must be located in an area with minimal damage or disturbance to the environment.</li> <li>• Establish 'NO-GO' areas- where no construction personnel, equipment/machinery or vehicles are permitted. Any identified Environmental Sensitive or important areas should be designated as 'NO-GO' areas.</li> </ul>	
	Site Housekeeping	Project Management	Planning	<ul style="list-style-type: none"> <li>• The construction camp should always be kept clean and orderly.</li> </ul>	
	Ablution Facilities	Project Management	Planning	<ul style="list-style-type: none"> <li>• Enough toilet facilities should be provided near construction camp. The toilets should be properly covered and ventilated and should contain hand washing facilities.</li> <li>• Portable toilets should be properly secured to the grounds to avoid toppling in the case of a</li> </ul>	

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				<p>wind/storm event.</p> <ul style="list-style-type: none"> <li>• Ensure that all toilets function properly and are in a hygienic state. The toilets should be cleaned and emptied regularly.</li> <li>• Ensure that there are no spillages when toilets get cleaned and emptied.</li> <li>• Urination on site should be strictly prohibited.</li> </ul>	
<p><b>Site establishment activities (-ve):</b></p> <ul style="list-style-type: none"> <li>• Vegetation clearance</li> <li>• Topsoil stripping &amp; stockpiling</li> <li>• Drill pad compaction</li> <li>• Erection of office, toilets, fuel storage (if not by road tanker), water tanker, core storage</li> <li>• Vehicle movements</li> </ul> <p>Waste management</p>	Cultural and heritage	Destruction or loss of Cultural and Heritage Resources: No cultural/heritage artefacts have been identified on site	Construction/ set-up	<ul style="list-style-type: none"> <li>• Environmental Permits and authorizations.</li> <li>• Copies of weekly checklists, compliance reports, incidence reports and corrective action reports.</li> </ul>	Heritage Act
	Noise	Noise Generation	Construction/ set-up	<ul style="list-style-type: none"> <li>• Photographs of areas of concern (photos of non-compliance areas as well corrective action).</li> </ul>	SANS 10103
	Visual	Visual intrusion	Construction/ set-up	<ul style="list-style-type: none"> <li>• Attendance registers of environmental awareness training.</li> </ul>	N/A
	Traffic	Increase in traffic volumes near the drilling site	Construction/ set-up	<ul style="list-style-type: none"> <li>• Traffic signs to be put around the site to notify motorist of the activities</li> <li>• Construction vehicles to make trips on/off site only when necessary</li> <li>• Construction vehicles to adhere to local speed limits as far as possible when driving in around site</li> </ul>	National Traffic Act Regulations

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	Signage	Traffic volumes, safety	Construction/ set-up	<ul style="list-style-type: none"> <li>The construction management needs to communicate the commencement and duration of construction activities to the community.</li> <li>Clear signage needs to be put up to make and keep the community awareness of construction activities to prevent any hazardous occurrences.</li> <li>Provide adequate safety warning signage on the roads.</li> </ul>	National Traffic Act Regulations
	Dust fall	Dust fall and nuisance from activities	Construction/ set-up	<ul style="list-style-type: none"> <li>Wet suppression should be applied to ensure that no visible dust is raised by any of the prospecting operations;</li> <li>Separation of distance of minimum 500m, to be maintained between drill sites and dwellings; and</li> <li>Low vehicle speeds will be enforced on unpaved surfaces.</li> </ul>	GN R. 827 (NEMAQA)
	Soil and vegetation	The potential impact of the proposed prospecting on the vegetation would occur at proposed drilling sites and the access routes used to get to these sites.	Construction/ set-up	<ul style="list-style-type: none"> <li>The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required; No clear scraping (dozing) be carried out unless necessary to establish a level drill pad.</li> <li>Rather that surface vegetation is cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow; and</li> <li>Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.</li> </ul>	NEMBA
	Animal life	Animal life will be affected in the immediate	Construction/ set-up	<ul style="list-style-type: none"> <li>Environmental awareness training sessions should be part of the workers' induction and site workshops; and</li> </ul>	NEMBA

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		vicinity of the drilling rig. It is anticipated that the noise and general activity will keep the animal life away from the site while the prospecting is ongoing.		<ul style="list-style-type: none"> <li>If any animals are encountered they must not be killed or injured, but should rather be removed or chased away from the site with the assistance of an animal specialist</li> </ul>	
	Social	Friction between local residents/land owners and construction personnel	Construction/ set-up	<ul style="list-style-type: none"> <li>All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution;</li> <li>All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the residents may not welcome the prospecting activities in the area;</li> <li>There will always be a strict requirement to treat residents with respect and courtesy.</li> </ul>	NEMA
	Job creation	Employment will be created for the clearing of the land and establishing the drilling site.	Construction/ set-up	<ul style="list-style-type: none"> <li>No mitigation measures required.</li> </ul>	NEMA
	Storage and Disposal of Waste	Safety and aesthetic/ visual aspects of the property, as well as waste	Construction/ set-up	<ul style="list-style-type: none"> <li>Litter generated by construction workers must be collected in containers that are clearly labelled and disposed of weekly at registered waste disposal sites.</li> <li>Enough weather- and vermin- proof bins</li> </ul>	National Waste Act

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		disposal practices		<p>should be placed on site for the disposal of solid waste. Littering on site should be strictly prohibited. The burning of waste on site should also be prohibited.</p> <ul style="list-style-type: none"> <li>• All waste generated from construction activities (building rubble, solid and liquid waste etc.), should be disposed of as frequently at an appropriately licensed refuse facility.</li> <li>• Minimize waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water) and adopt a 'cradle to grave' responsibility for wastes.</li> <li>• Comply with legal requirements for waste management and pollution control and employ "good housekeeping" and monitoring practices.</li> </ul>	
	Hazardous Waste	Safety and aesthetic/ visual aspects of the property, as well as waste disposal practices.	Construction/ set-up	<ul style="list-style-type: none"> <li>• Any hazardous waste that may be generated should be separated from general waste and stored in clearly marked and properly sealed secondary containers.</li> <li>• Any hazardous waste generated should be disposed of accordance with the Hazardous Chemical Substances Regulations, 1995 (Regulation 15).</li> </ul>	National Waste Act
	Spills and Leaks	Safety and aesthetic/ visual aspects of the property, as well as waste disposal practices.	Construction/ set-up & Operation	<ul style="list-style-type: none"> <li>• Any equipment that is leaking should be temporarily decommissioned and removed from the construction site to a surface with an impermeable surface and waste water collection system.</li> <li>• Spill response kits must be readily available and accessible to all personnel on site.</li> </ul>	National Waste Act



Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
	PPE			<ul style="list-style-type: none"> <li>Always Ensure that all persons on site use Personal Protective Equipment (PPE) , this including safety boots, safety vests, protective masks etc.</li> </ul>	Employment Act
	Illegal Fires			<ul style="list-style-type: none"> <li>Ensure that no fires are ignited on site unless required for construction purposes, in which case the EC should designate areas for the fires. The designated areas should be as far as possible from vegetation.</li> </ul>	NEMA
	Erosion	The properties of the receiving environment and ensuring that the ground is not susceptible to erosion beyond that which can be rehabilitated.	Construction/ set-up & Operation	<ul style="list-style-type: none"> <li>Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities.</li> <li>All topsoil stockpiles (if any) must be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting.</li> <li>Topsoil stockpiles should not exceed 2 m in height.</li> </ul>	NEMA
<b>PRE-DRILLING/EXPLORATION</b>					
<b>Exploration drilling (ve)</b> <ul style="list-style-type: none"> <li>Drilling</li> <li>Drill maintenance and refueling</li> <li>Core sample collection and storage</li> <li>Vehicle movements</li> </ul> Waste generation and management	Noise	Noise generation	Operations	<ul style="list-style-type: none"> <li>Construction/setup, operational and decommissioning activities will be limited to daylight hours on Mondays to Saturdays from 08h00 – 17h00 and no activities on Sundays and public holidays.</li> <li>Separation of distance of minimum 500m, but preferably 1000m to be maintained between drill sites and dwellings; Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition.</li> <li>If intrusive noise levels are experienced by any person at any point, the source of the noise</li> </ul>	Heritage Act

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.	
	Visual	Visual intrusions	Operations	<ul style="list-style-type: none"> <li>The drilling rig and other visually prominent items on the site will be in consultation with the landowner;</li> <li>Make use of existing vegetation as far as possible to screen the prospecting operations from view; and</li> <li>If necessary, the operations can be screened from view by erecting a shade cloth barrier.</li> </ul>	SANS 10103
	Traffic	Increase in traffic volumes near the drilling site	Operations	<ul style="list-style-type: none"> <li>Traffic signs to be put around the site to notify motorists of the activities</li> <li>Construction vehicles to make trips on/off site only when necessary</li> <li>Construction vehicles to adhere to local speed limits as far as possible when driving in around site</li> </ul>	N/A
	Dust fall	Dust fall and nuisance from activities	Operations	<ul style="list-style-type: none"> <li>Wet suppression will be applied to ensure that no visible dust is raised by any of the prospecting operations;</li> <li>Separation of distance of minimum 500m, to be maintained between drill sites and 100m from dwellings; and</li> <li>Low vehicle speeds will be enforced on unpaved surfaces.</li> </ul>	National Traffic Act Regulations
	Soil and vegetation	Soil and vegetation disturbance from drill pad preparation	Operations	<ul style="list-style-type: none"> <li>The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required; No clear scraping (dozing) be carried out unless necessary to establish a level drill pad. Rather</li> </ul>	GN R. 827 (NEMAQA)

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				<p>that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow; and</p> <ul style="list-style-type: none"> <li>Disturbed areas will be re vegetated with locally indigenous species as soon as possible.</li> </ul>	
	Animal life	Animal life will be affected in the immediate vicinity of the drilling rig. It is anticipated that the noise and general activity will keep the animal life away from the site while the prospecting is ongoing.	Operations	<ul style="list-style-type: none"> <li>Measures implemented during site establishment should apply in this phase as well.</li> </ul>	NEMBA
	Social	Friction between residents/land owners and construction personnel	Operations	<ul style="list-style-type: none"> <li>All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution;</li> <li>All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the residents may not welcome the prospecting activities in the area;</li> <li>There will always be a strict requirement to treat residents with respect and courtesy.</li> </ul>	NEMBA
	Job creation	Employment will be created for	Operations	<ul style="list-style-type: none"> <li>No mitigation measures required.</li> </ul>	Basic Conditions of

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
		the clearing of the land and establishing the drilling site.			Employment Act, No. 75 of 1997 (as amended)
<b>DECOMMISSIONING AND REHABILITATION</b>					
Rehabilitation of the drill sites and surroundings	Removal of construction structures	Ensuring the receiving environment is not impacted on any further, by dismantling machinery and equipment appropriately.	Rehabilitation	<ul style="list-style-type: none"> <li>Clear and completely remove from site all construction plant equipment, storage containers, signage, temporary fencing, temporary services, fixtures and any other temporary works; and</li> <li>Ensure that all access roads utilized during construction (which are not earmarked for closure and rehabilitation) are returned (as far as possible) to their state prior to construction.</li> </ul>	NEMA
	Waste and Rubble Removal	Visual aspects by preventing any further pollution.	Rehabilitation	<ul style="list-style-type: none"> <li>Clear the site of all inert waste and rubble, including surplus rock, foundations and batching plant aggregates.</li> <li>Load and haul excess spoil and inert rubble to fill in borrow pits / dongas or to dump sites indicated / approved by an environmental control specialist</li> <li>Remove from site all domestic waste and dispose of in the approved manner at a registered waste disposal site.</li> </ul>	National Waste Act
	Solid and Hazardous Waste			<ul style="list-style-type: none"> <li>Store hazardous waste as indicated in the approved Environmental Management Programme Report.</li> <li>Dispose of all hazardous waste not earmarked for reuse, recycling or resale at a registered hazardous waste disposal site.</li> <li>Remove from site all temporary fuel stores, hazardous substance stores, hazardous waste</li> </ul>	National Waste Act

Activity	Potential impact	Aspects affected	Phase	Mitigation type	Standard to be achieved
				<p>stores and pollution control sumps. Dispose of hazardous waste in the approved manner.</p> <ul style="list-style-type: none"> <li>• Do not hose oil or fuel spills into a storm water drain or sewer, or into the surrounding natural environment.</li> <li>• Dispose of all visible remains of excess material when exiting the site.</li> </ul>	
	Erosion protection		Rehabilitation	<ul style="list-style-type: none"> <li>• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction site.</li> <li>• Retain shrubbery and grass species wherever possible.</li> <li>• Perform regular monitoring and maintenance of erosion control measures.</li> </ul>	NEMA