2022

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

FOR MINING PERMIT APPLICATION ON PORTION OF PORTION 4 OF THE FARM DRIEFONTEIN 388 IT SITUATED WITHIN MKHONDO MAGISTERIAL DISTRICT IN MPUMALANGA PROVINCE

PREPARED ON BEHALF OF:

Physical Address: Plot 106, Road 4, Delmas, Gauteng, 2210
Contact Person: Mr. Eddi Aphane
Tel No: +27 66 211 8714
Cell No.: +27 66 211 8714
Email: eddi@notrecom.co.za

COMPETENT AUTHORITY:

Department of Minerals and Resources & Energy
Regional office
Saveways Crescent Centre
Mandela Drive
Emalahleni, 1035 Mpumalanga

PREPARED BY:

Singo Consulting (Pty) Ltd

Physical Address: Office 870, 5 Balalaika Street, Tasbet Park Ext 2, Witbank,1040
Tel No.: +27 13 692 0041
Fax No.: +27 86 514 4103
Email: admin@singoconsulting.co.za

DMRE REF:MP 30/5/1/3/2/ (13599) MP

mineral resources & energy

Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS 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: Notre Coal (Pty) Ltd

TEL NO: +27 66 211 8714

EMAIL: eddi@notrecom.co.za

POSTAL ADDRESS: Plot 106, Road 4, Delmas, Gauteng, 2210

PHYSICAL ADDRESS: Plot 106, Road 4, Delmas, Gauteng, 2210

FILE REFERENCE NUMBER SAMRAD: DMRE REF: MP 30/5/1/3/2/13599 MP

DISCLAIMER

The opinion expressed in this, and associated reports are based on the information provided by Notre Coal (Pty) Ltd to Singo Consulting (Pty) Ltd ("Singo Consulting") and is specific to the scope of work agreed with Notre Coal (Pty) Ltd. Since the client is the owner or lessor of the property, many of the advice and acts contained in this legally binding contract remain his or her duty.

Singo Consulting acts as an advisor to the Notre Coal (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. Where site inspections, testing or fieldwork have taken place, the report is based on the information made available by Singo Consulting during the visit, visual observations, and any subsequent discussions with regulatory authorities. The data and information used in this report were provided to Singo Consulting by the client and referred to other outside sources (includes historical site investigation information and third-party expert research).

Singo Consulting (Pty) Ltd ("Singo Consulting") takes reasonable care and diligence when providing services and preparing documents, but it has been assumed that the information provided to Singo Consulting (Pty) Ltd ("Singo Consulting") is accurate

DOCUMENT CONTROL

Project Title	Mining Permit Application for Coal, Manganese, Iron, Vanadium, PGMS and Copper on portion of portion 4 of the Farm Driefontein 388 IT
Minerals	Coal, Manganese, Iron, Vanadium, PGMS and Copper
Site Location	Magisterial District of Mkhondo, Mpumalanga Province
Compiled on behalf of	Notre Coal (Pty) Ltd
Compiled By	ZF Tshabuse
First Reviewer	R Shonisani
Second Reviewer	Dr NK Singo
Version 1	DBAR & EMPR
Date	2022

IMPORTANT NOTICE

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

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

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

It is therefore the instruction that the prescribed reports required in respect of application for an environmental Authorization 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 Authorization 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 requested 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 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 activity is located and document how the proposed 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 the technology alternatives on these aspects to determine:

    i. The nature, significance, consequence, extent, duration, and probability of the impacts occurring; and
    ii. The degree to which these impacts
        (aa) Can be reversed.
        (ba) May cause irreplaceable loss of resources. (ca) 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.
    iii. Identify residual risks that need to be managed and monitored.

This report has been designed to meet the requirements for a Basic Assessment Report and Environmental Management Programme as stipulated in the 2014 Environmental Impact Assessment Regulations (as amended) promulgated under the National Environmental Management Act, 1998 (Act 107 of 1998). The adjudicating authority for this application is the Department of Mineral Resources and this report has been compiled in accordance with the applicable Department of Mineral Resources Guidelines and Basic Assessment Report and Environmental Management Programme template.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Singo Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by Notre Coal (Pty) Ltd to conduct Environmental Impact Assessment (EIA), Compile an Environmental Management Programme report (EMPr). This is done for processes of acquiring Environmental Authorization for the proposed Coal, Manganese, Iron, Vanadium, PGMS and Copper Mining Permit Application within portion of portion 4 of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province with DMRE REF: MP 30/5/1/3/2/13599 MP.

The proposed mining permit Application encompasses portion of portion 4 of the Farm Driefontein 388 IT constituting a total of 5 hectares. The area is located within 3.65 km southeast of Brereton and approximately 7.97 km east of St Helena and 3.38 km northwest of Hyshope dam. The proposed project area can be accessed through unnamed/ tertiary road connecting N2. The entire area is covered by natural vegetation and is used for grazing (cow dung was observed on site). The dirty water trench was observed on site which is used for irrigation.

Mining activities will be undertaken over a period of two (2) years. This project will entail an open cast method of excavation. The mine design will be developed according to the dimension of the applied mineral deposit within the project area, but overall mining activities will be limited to an area of 5 Ha as per mining permit requirements. The topsoil will be stockpiled elsewhere on site preferably next to the farm boundary and will be used during rehabilitation period. Once a box cut has been made, the overburden and mineral resources where necessary will be loosened by blasting. The loosened material will then be loaded onto trucks by excavators. A haul road will be situated at the side of the open cast, forming a ramp up which trucks can drive, carrying ore and waste rock. Waste rock will be piled up at the surface, near the edge of the open cast (waste dump). The waste dump will be tiered and stepped, to minimize degradation. All the activities will be guided by the project's EMPr such that the project does not impact the environment negatively.

The project infrastructure and activities will include:

- Site clearance.
- Removal of topsoil and overburden and stockpiling.
- Site establishment, including the establishment of an access route, mobilization of equipment and preparation of area for mining.
- Excavation of a box cut.
- Ripping (Blasting for hard rock)
- Loading zone.
- Dust control.

- Crushing and screening of ore.
- Hauling and transporting of ore.
- Ablution facilities and waste storage area.
- Rehabilitation of site

LIST OF ABBREVIATIONS

AEL	: Air Emissions License
APPA	: Atmospheric Pollution Prevention Act
BAR	: Basic Assessment Report
BID	: Background Information Document
DMRE	: Department of Mineral Resources & Energy
DEDET	: Department of Economic Development, Environment and Tourism
DWS	: Department of Water and Sanitation
DWAF	: Department of Water Affairs and Forestry
DEA	: Department of Environmental Affairs
DRDLR	: Department of Rural Development and Land Reform
EA	: Environmental Authorisation
EAP	: Environmental Assessment Practitioner
EIA	: Environmental Impact Assessment
EIMS	: Environmental Impact Management Services
EMPr	: Environmental Management Programme report
ECA	: Environmental Conservation Act
EHS	: Environmental, Health, and Safety
FPA	: Fire Protection Agency
GIS	: Geographic Information System
I&AP	: Interest and Affected Party
IWULA	: Integrated Water Use License Application
IWWMP	: Integrated Water and Waste Management Plan
MP	: Mining Permit
MPRDA	: Mineral and Petroleum Resources Development Act
NEMA	: National Environmental Management Act
NEMWA	: National Environmental Management Waste Act
NWA	: National Water Act
NEMAQA	: National Environmental Management Air Quality Act
PPP	: Public Participation Process
PRA	: Prospecting Right Application
PWP	: Prospecting Works Programme
IDP	: Integrated Development Plan
RSIP	: Rehabilitation Strategy and Implementation Plan
SDF	: Spatial Development Framework
SHE	: Safety, Health and Environmental
SAWQG	: South African Water Quality Guidelines

TOPS	: Threatened and Protected Species
WML	: Waste Management License

PART A:

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. INTRODUCTION

Singo Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by Notre Coal (Pty) Ltd to conduct Environmental Impact Assessment (EIA), Compile an Environmental Management Programme report (EMPr). This is done for processes of acquiring Environmental Authorization for the proposed Coal, Manganese, Iron Vanadium, PGMS and Copper Mining Permit Application within portion of portion 4 of the farm Driefontein 388 IT situated in the Magisterial District of Mkhondo in Mpumalanga Province with the DMRE REF: MP 30/5/1/3/2/13599 MP

Mining activities will be undertaken over a period of two (2) years. Period with an option to renew for three (3) periods, each of which may not exceed one (1) year if the mining programme is not completed. This project will entail an open cast method of excavation. The mine design will be developed according to the dimension of the applied mineral deposit within the project area, but overall mining activities will be limited to an area of 5 Ha as per mining permit requirements. The topsoil will be stockpiled elsewhere on site preferably next to the farm boundary and will be used during rehabilitation period. Once a box cut has been made, the overburden and mineral resources where necessary will be loosened by blasting. The loosened material will then be loaded onto trucks by excavators. A haul road will be situated at the side of the open cast, forming a ramp up which trucks can drive, carrying ore and waste rock. Waste rock will be piled up at the surface, near the edge of the open cast (waste dump). The waste dump will be tiered and stepped, to minimize degradation. All the activities will be guided by the project's EMPr which must be viewed as a day-to-day management document as it essentially contains all foreseeable actions as well as potential mitigations or management actions.

The proposed mining permit application encompasses portion of portion 4 of the Farm Driefontein 388 IT constituting a total of 5 hectares. The area is located within 3.65 km southeast of Brereton and approximately 7.97 km east of St Helena and 3.38 km northwest of Hyshope dam. The project area is mainly compromised natural grassland, surrounded by, few waterbodies, few farmsteads and bare land. According to the terrestrial biodiversity map produced by GIS specialist, it shows that the proposed area falls within Other Natural Areas. Other Natural Areas, are natural areas which are not identified as CBAs or ESAs but which provide a range of ecosystem services from their ecological infrastructure.

2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Singo Consulting (Pty) Ltd was appointed by Notre Coal (Pty) 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 environmental technician that prepared the report

Name of the Environmental Technician	**Zwivhuya Tshabuse**
Designation	Environmental Technician
Tel No.	+27 13 692 0041
Cell No.	+27 67 904 7475
Fax No.	+27 67 904 7475
Email	*zwivhuya@singoconsulting.co.za*

Table 2: Details of the 1st EAP who reviewed the report

Name of the Practitioner	**Rudzani Shonisani**
Designation	EAP
Tel No.	+27 13 692 0041
Cell No.	+27 78 548 1244
Fax No.	+27 86 515 4103
Email	*rudzani@singoconsulting.co.za*

Table 3: Details of the 2nd EAP who reviewed the report

Name of the Practitioner	**Dr Kenneth Singo**
Designation	Principal EAP
Tel No.	+27 13 692 0041
Cell No.	+27 78 2727 839
Fax No.	+27 86 515 4103
Email	*kenneth@singoconsulting.co.za*

2.1 Expertise of the EAP

2.1.1 Summary of EAP's Past Experience

Singo Consulting (Pty) Ltd is a private independent research, consultancy and advisory company based in eMalahleni (Witbank). It was established in 2008, since then this company is growing rapidly, and it is making itself known within the length and breadth of the Republic of South Africa. We take pride in the outstanding quality of our services driven by our core values which are due diligence, integrity, and honestly (independency).

2.1.2 Qualifications of the EAP

For carried out Environmental Impact Assessments: See attached CV. Due to the Protection of Personal Information Act, 2013 the CVs will not be disclosed in this report.

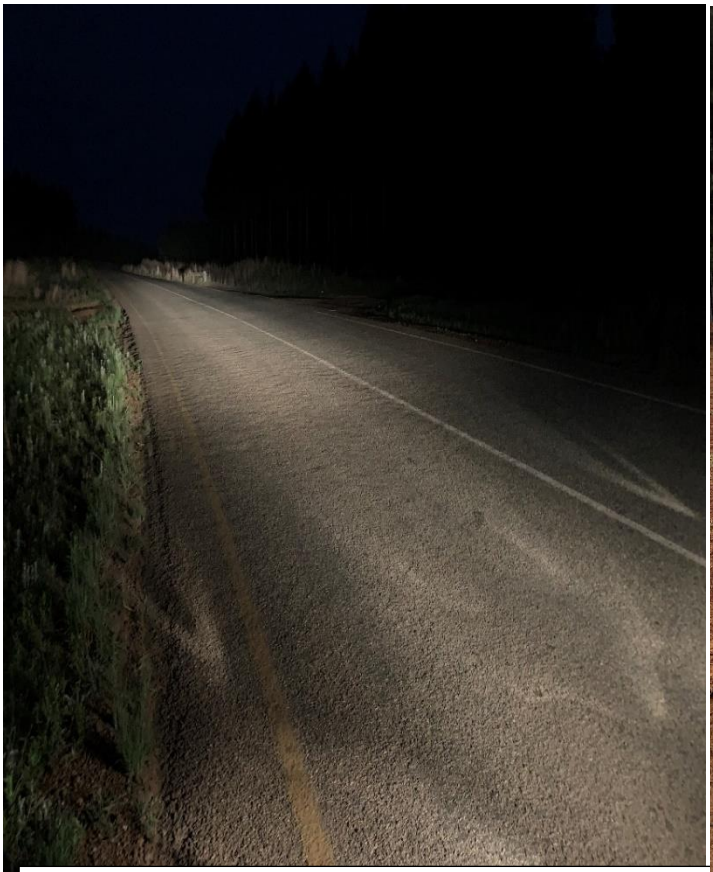
3. LOCATION OF THE OVERALL ACTIVITY

Table 4: Locality details

<table>
<tr><td>Farm Name</td><td>Portion of portion 4 of the Farm Driefontein 388 IT</td></tr>
<tr><td>Application Area (Ha)</td><td>Approximately 5 hectares (ha)</td></tr>
<tr><td>Magisterial District</td><td>Magisterial District of Mkhondo</td></tr>
<tr><td>Local Municipality</td><td>Mkhondo Local Municipality</td></tr>
<tr><td>Distance and direction from nearest town</td><td>Located approximately 3.65 km Southeast of Brereton and approximately 7.97 km east of St Helena</td></tr>
<tr><td>21-digit Surveyor General Code for each Portion</td><td>T0IT00000000038800004</td></tr>
<tr><td>Coordinates</td><td>
<table>
<tr><th>ID</th><th>X</th><th>Y</th></tr>
<tr><td>A</td><td>30.464061</td><td>-26.949734</td></tr>
<tr><td>B</td><td>30.466212</td><td>-26.949260</td></tr>
<tr><td>C</td><td>30.466742</td><td>-26.951187</td></tr>
<tr><td>D</td><td>30.464591</td><td>-26.951662</td></tr>
<tr><td>E</td><td>30.464061</td><td>-26.949734</td></tr>
</table>
</td></tr>
<tr><td>Locality map</td><td>See Figure 1 - 3 below</td></tr>
</table>

4. LOCALITY MAP

The proposed mining permit application encompasses portion of portion 4 of the Farm Driefontein 388 IT constituting a total of 5 hectares. The area is located within 3.65 km southeast of Brereton and approximately 7.97 km east of St Helena and 3.38 km northwest of Hyshope dam. The project area is mainly compromised natural grassland, surrounded by, few farmsteads and bare land. According to the terrestrial biodiversity map produced by GIS specialist, it shows that the proposed area falls within Other Natural Areas and Moderately modified-Old lands . Other Natural Areas, are natural areas which are not identified as CBAs or ESAs but which provide a range of ecosystem services from their ecological infrastructure. Moderately modified-Old lands are areas were modified within the last 80 years but now abandoned including old mines and old cultivated land.



A: Unnamed tertiary road, Access Road

B: Farm Entrance

Figure 1: Access Road to the mining permit area. (Singo Consulting (Pty) Ltd , 2022)

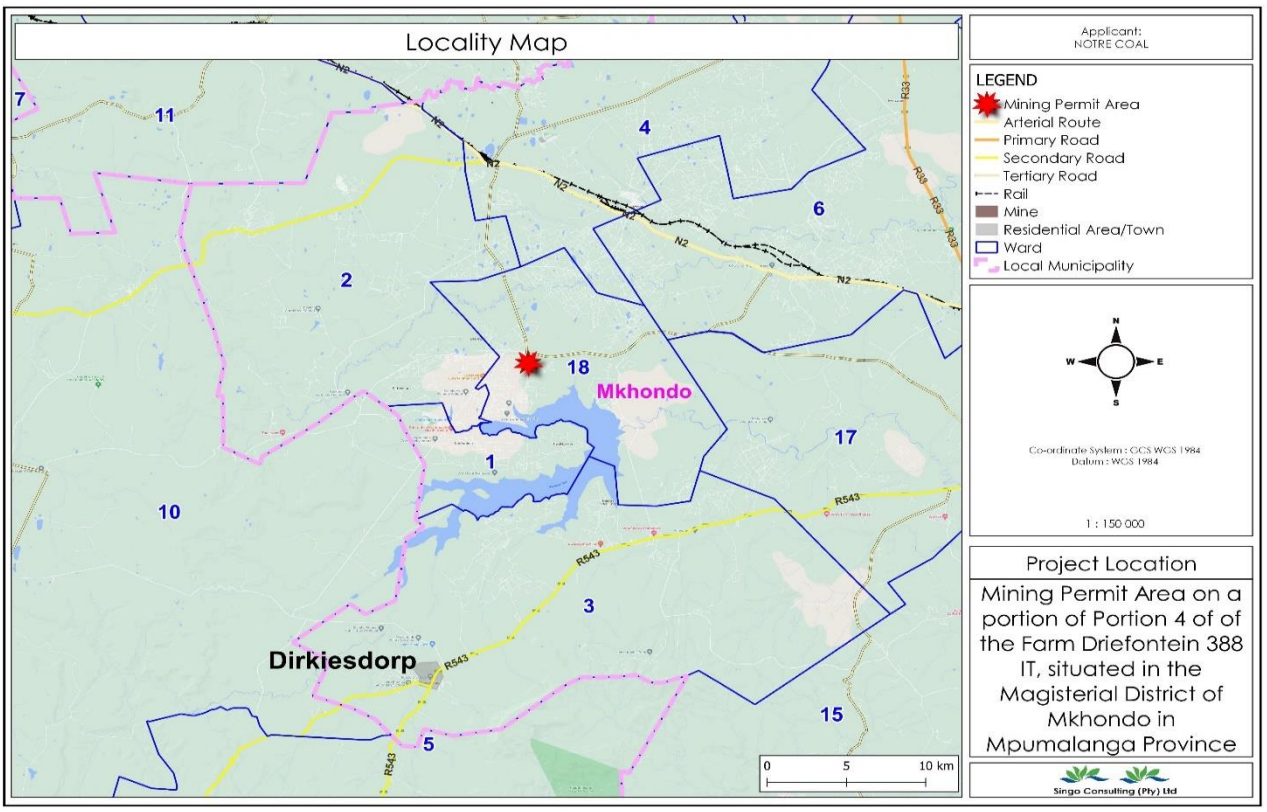


Figure 2: Locality map of the proposed project area. (Singo Consulting (Pty) Ltd , 2022)

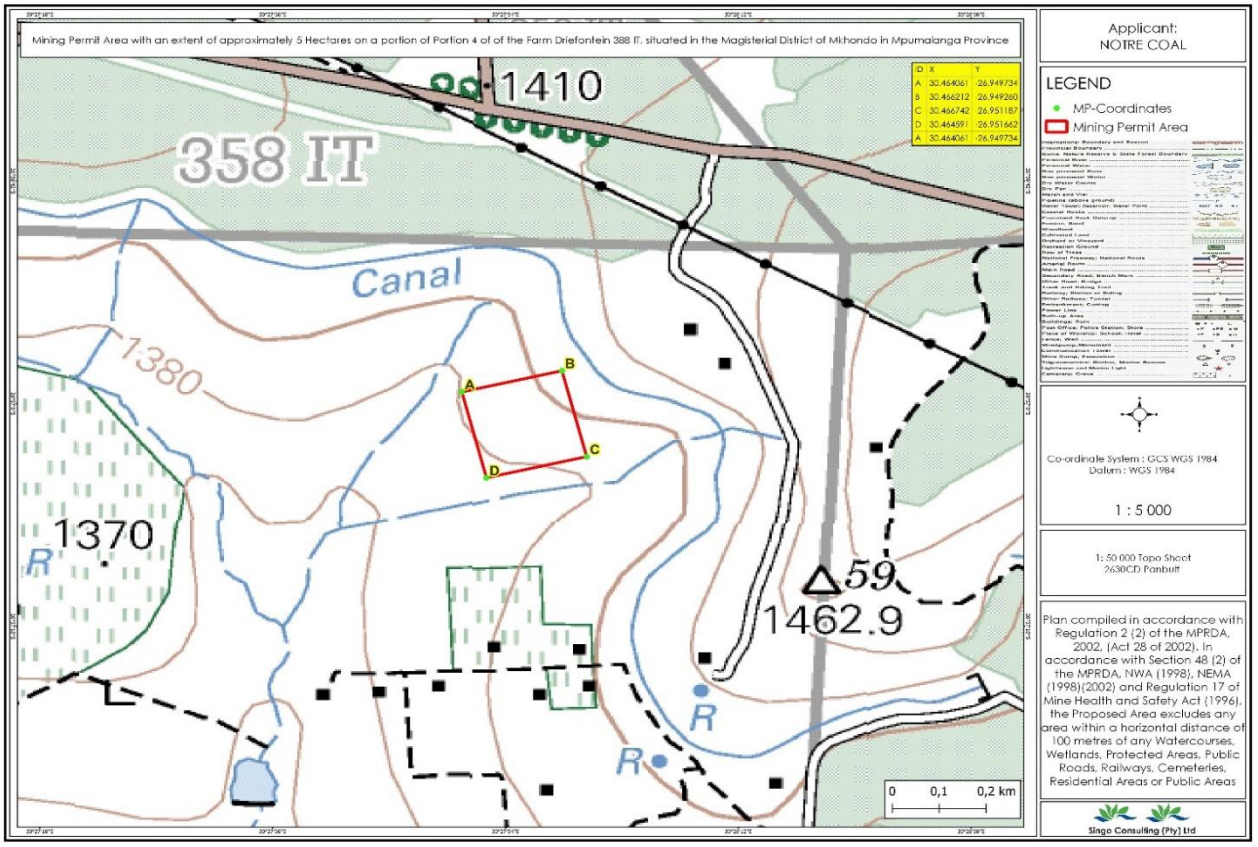


Figure 3: Reg 2.2 map. (Singo Consulting (Pty) Ltd , 2022)

5. 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: 10000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site

The method that will be employed is a very basic form of open cast mining, and a 5-ha area will be demarcated for mining activities. Blasting and subsequent mining of the coal utilizing a truck and shovel operation will be conducted. The mined coal will be crushed and screened on site utilizing a mobile crushing and screening plant that will be established within the boundaries of the mining area. A front-end loader will be utilized to load the material into haulage trucks. The mine will operate for a two (2) year permit period with an option to renew for three (3) periods of which each may not exceed one year in terms of Section 27(8)a of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002) as amended. The product (coal) will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the mining site (5 Ha). The project infrastructure and activities will include the following:

- Site clearance.
- Removal of topsoil and overburden and stockpiling.
- Site establishment, including the establishment of an access route, mobilization of equipment and preparation of area for mining.
- Excavation of an open pit.
- Ripping (Blasting when necessary).
- Loading zone.
- Dust control.
- Hauling and transporting of coal.
- Crushing and screening.
- Ablution facilities and waste storage area.
- Rehabilitation of site and Monitoring (Post Closure).

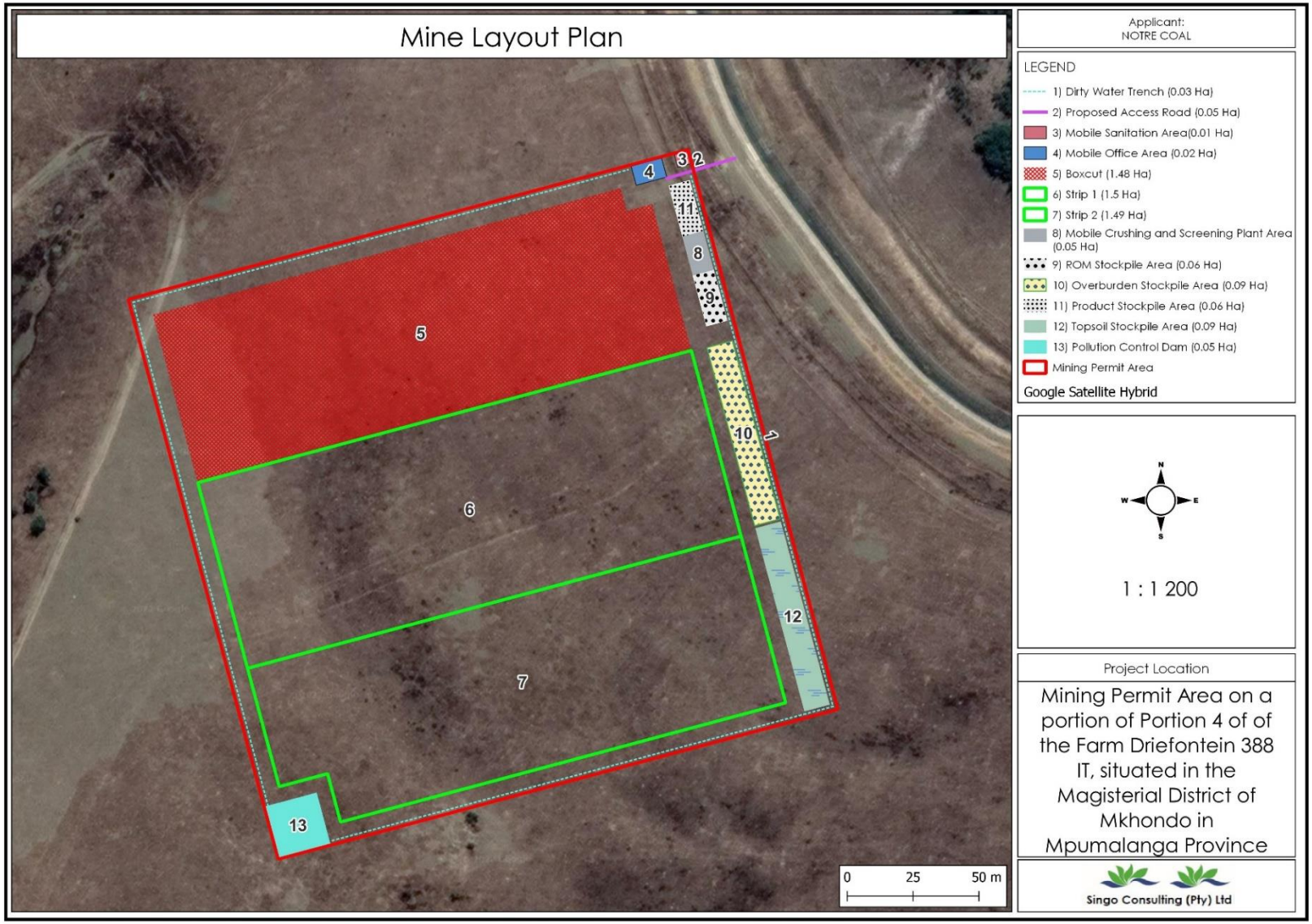


Figure 4: Proposed Mining Layout. (Singo Consulting (Pty) Ltd , 2022)

5.1 Listed and Specified Activities

Describe methodology/technology to be employed, including type of commodity to be prospected/mined, a linear activity and a description of the route of the activity

The legal requirement for Environmental Authorisation for a Mining Permit came into effect after the promulgation of the NEMA 2014 EIA Regulations on the 08th of December 2014. Prior to this, Mining Permits were subjected to the provisions of the MPRDA (2002). In this regard, a Mining Permit and Environmental Authorisation are required in terms of the MPRDA (2002) and NEMA 2014 EIA Regulations (as amended), respectively.

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 and access route; and for mining: excavations, blasting, stockpiles, discard dumps/ dams, loading, hauling, transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines and conveyors.**	**Aerial extent of the activity Ha or m²**	**Listed activity Mark with X where applicable**	**Applicable listing notice** **(GNR 324, GNR 325 OR GNR 327)**
Open cast mining and crushing to produce coal specs required by clients	5 Ha	X	GNR 327 Listing notice 1 activity 21: Any activity, including the operation thereof, which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (No. 28 of 2002), including related

			infrastructure, structures and earthworks directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the MPRDA, 2002 (28 of 2002)
Vegetation Clearance	5 Ha	X	GNR 327 Listing Notice 1 activity 27: The clearance of an area of 1 hectare o more, but less than 20 hectares o indigenous vegetation, except where such clearance of indigenous vegetation is required for - (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Access road	0.05 Ha	X	Not listed
Topsoil stockpile	0.09 Ha	X	Not listed
ROM stockpile area	0.06 Ha	X	Not listed
Product Stockpile area	0.06 Ha	X	Not listed
Overburden Stockpile area	0.09 Ha	X	Not listed
Dirty water trench	0.03 Ha	X	Not listed
Mobile offices	0.02 Ha	X	Not listed
Toilets and sanitation	0.01 Ha	X	Not listed
Pollution Control Dam (PCD)	0.05 Ha	X	Not listed
Box cut construction	1.48 Ha	X	Not listed
Strip 1	1.5 Ha	X	Not listed
Strip 2	1.49 Ha	X	Not listed
Mobile Crushing & screening	0.05 Ha	X	Not listed
Rehabilitation	5 Ha	X	Not listed

5.2 Description of Activities to be Undertaken

Describe methodology/technology to be employed, including type of commodity to be

prospected/mined, a linear activity and a description of the route of the activity

This project will be carried out in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 (as amended) read together with regulation 40-43 of the Act. The trigged activities as reflected on Government Notice R983 (as amended) Activity No. will be LN 1 Activity 21 & 27:

- LN 1 Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for -(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

- Activity 21: The project requires a mining permit in terms of the MPRDA.

LN 1 Activity 27 is about clearing of vegetation and this application seek to be authorised for this activity. Deforestation process is required before commencement of any mining activity if the area is vegetated, this process allows the mining company to gain access to the mining area and locating other required infrastructures. Therefore, land clearance will be the first stage as part of development.

During site establishment, the applicant must demarcate the site boundaries and clear the topsoil and overburden from the extension area to open it for drilling and blasting. Upon stripping, the topsoil and overburden will be stockpiled along the boundaries of the opencast mining for use during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be mined. The complete A-horizon (topsoil – the top 100-200 mm of soil, which is generally darker in colour due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends, the top 300 mm of soil must be stripped.

- **Site Establishment / Construction phase:**

During the site establishment phase the applicant must fence the footprint area and clear the topsoil from the applied area. Upon stripping, the topsoil will be stockpiled along the boundaries of the mining area to be used during the rehabilitation phase. If it is unclear where the topsoil layer ends the top 300 mm of soil must be stripped. The topsoil will be stockpiled in the form of a berm alongside the boundary of the mining area where it will not be driven over, contaminated, flooded, or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and should be planted with indigenous grass species if vegetation does not naturally establish within 6 months of stockpiling to prevent soil erosion and to discourage growth of weeds. The roots of the grass will

also improve the viability of the soil for rehabilitation purposes.

Construction phase will include clearing of topsoil and an access road already exist. The open pit will be handled as part of the operational phase. As the infrastructure are temporary the use of infrastructure and machinery that is either track-based or can be removed without difficulty. Temporary infrastructure to be used in the mining method will entail a temporary weighbridge, chemical toilet, with servicing of vehicles and equipment being done on-site at the workshop and wash bay of the applicant. An on-site office will also be used for all administration purposes relating to the project. During the site establishment phase the applicant, must demarcate the boundaries of the site and fence the entire mining area.

- **Operational phase:**

The mining methods will make use of blasting means of explosives in order to loosen the hard rock, the material is then loaded and hauled out of the excavation where primary crushing is conducted for producing soil and concrete and all products will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site. Blasting of rock and secondary blasting could occur more than once a month. The noise caused by blasting will be instantaneous and of short duration. The blasting at the site will not have an adverse effect on surrounding landowners as many are 100m away from proposed area. The applicant must ensure that all surrounding residents as well as permit holders are informed of each blasting event.

- **Mining area:**

<u>Demarcating the mining area:</u>

- The mining area will be clearly demarcated by means of fencing, and along its boundaries if there is no visibility between the corner beacons.
- Permanent beacons will be firmly erected and maintained in their correct position throughout the life of the operation.
- The blasted material is loaded with earth moving equipment onto tipper trucks and stockpiled. The remaining will be carted to the crushing plant to produce coal that will be transported as product. This activity will be continuous throughout the operation phase.

The mining activities will consist of the following:

- Blasting
- Excavating
- Crushing
- Stockpiling and Transporting
- Site access road
- Mobile chemical toilets and Sanitation

The machinery used in the operation will be serviced at the applicants existing off-site workshop. Only emergency repairs will be conducted on site with regular maintenance of the equipment done at the workshop. Fuelling of tracked vehicles has to be done in an open pit due to logistical reasons. A mobile chemical toilet will be established on site to be used by the employees. The existing N2 and existing unnamed road will be used to access the mining area.

Figure 5:Example of Mobile toilets.

The stockpiling process includes mechanical loading and transportation of coal, Manganese, Vanadium, Iron, PGMS and Copper. As mentioned previously the coal, Manganese, Vanadium, Iron, PGMS and Copper will be loaded with a front-end loader onto trucks upon which it will be weighed and transported to the client. The product stockpiling activities will consist of the following:

- ✓ Loading of coal, Manganese, Vanadium, Iron, PGMS and Copper.
- ✓ Weighing of coal, Manganese, Vanadium, Iron, PGMS and Copper.
- ✓ Transportation of coal, Manganese, Vanadium, Iron, PGMS and Copper

<u>Working hours:</u>

All proceedings will be undertaken in 7am-5pm shifts to meet schedule demands.

- ➢ One Shift will be worked: Sunrise to Sunset

<u>Water:</u>

Process water will be obtained from the municipal line that runs across the property. Water will be bought from the municipality. The water will mainly be used for dust suppression purposes on the crusher plant, roads and mining area. Potable water will be transported, stored in a JoJo tank.

- **Decommissioning phase:**

The closure objectives for the mining area are to be made safe, and the remainder of the site to be returned to natural vegetation. The perimeter of the site will be subject to top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding (if applicable) has been done in an area. Site management will implement an alien invasive plant management plan during the 12 months' aftercare period to address germination of problem plants in the area.

The decommissioning activities will consist of the following:

- ✓ Landscaping during rehabilitation.
- ✓ Replacing of topsoil; and
- ✓ Implementation of an alien invader plant management plan.

Figure 6: Typical example of open cast operation.

Phase	Activity no	Activity
Construction	1	Site clearing: Removal of topsoil and vegetation
	2	Construction of any surface infrastructure, e.g. Haul roads, pipes, storm water diversion berms (incl. transportation of materials and stockpiling)
	3	Blasting and development of initial box cut for mining
	4	Temporary storage of hazardous products (fuel, explosives) and waste
Operation	5	Removal of overburden and backfilling when possible (incl. drilling/blasting of hard overburden and stockpiling)
	6	Use and maintenance of haul roads.
	7	Extraction of coal, Manganese, Vanadium, Iron, PGMS and Copper (mining process) and run of mine (ROM) coal stockpile other minerals
	8	Water use and storage on site
	9	Storage, handling and treatment of hazardous products (fuel, explosives, oil) and waste activities (waste, discard)
	10	Concurrent replacement of overburden, topsoil and re-vegetation
Decommissioning	11	Removal of all infrastructure (incl. transportation off site)
	12	Rehabilitation (spreading of soil, re-vegetation and profiling)
	13	Installation of post-closure water infrastructure
	14	Environmental monitoring of decommissioning activities
	15	Storage, handling and treatment of hazardous products (fuel, explosives, oil) and waste activities (waste discard)
Post-closure	16	Rehabilitation and Post-closure monitoring

6. POLICY AND LEGISLATIVE CONTEXT

This Mining Permit application requires Authorisation in terms of the following interlinked pieces of legislation:

- The Mineral and Petroleum Resources Development Act, 2002 (MPRDA, Act 28 of 2002), as amended.
- The National Environmental Management Act, 1998 (NEMA, Act 107 of 1998), as amended.

These pieces of core legislation stipulate the required studies, reports and legal processes to be conducted and the results thereof are to be submitted to the relevant authorities for approval prior to commencement. In addition to the above, there are various pieces of legislation which govern certain aspects of the mining operations, and these are summarized in Table 5, together with the main legislative requirements mentioned above.

Table 6: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	**Reference where applied**	**How does this development comply with and respond to the legislation and policy context**
A description of the policy and legislative context within which the development is proposed, including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.		E.g. In terms of the National Water Act (NWA)a Water Use License has/has not been applied for.
Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008	DMRE	The conditions and requirements attached to the granting of the mining permit will apply to the mining activities.
Constitution of South Africa, specifically everyone has the right to: • an environment that is not harmful to their health or wellbeing • have the environment protected, for the benefit of	Republic of South Africa	The mining activities will only proceed after effective consultation.

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development		
Environmental Impact Assessment (EIA) regulations	DMRE	This Basic Assessment Report (BAR) is being undertaken in terms of the EIA. Regulations are in place to determine any possible impacts on the environment and propose sufficient mitigation to prevent environmental damage.
National Environmental Management Act, Act 107 of 1998 (as amended) (NEMA)	DMRE	This BAR is being undertaken in terms of the NEMA (No. 107 of 1998), as amended, to determine environmental impact and propose sufficient mitigation to prevent environmental damage. The appropriate environmental authorisation will be obtained before proceeding with any mining activities. No mining activity will be conducted in a sensitive environment. Measures will be implemented to prevent pollution during mining activities. Once mining is complete, the area will be

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context
		rehabilitated as close as reasonably possible to its pre-mining state.
National Water Act, 1998 (Act 36 of 1998). Best Practice Guidelines: Series A, G, & H	(S 21) Water use & mine water management	Best practice guidelines will be followed for water management, water characterisation, water resource protection, water treatment, and the development of the mine water management model
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA)NEM: WA	Management measures Environmental awareness plan	All type of waste will be managed as prescribed by the regulation (NEMWA)
National Heritage Resources Act, 25 of 1999 (NHRA)	Management measures	Phase 1 Archaeological and Heritage Impact Assessment has been conducted and recommendations made will be adhered to.
Municipality By-Laws: Waste Management by-law Act 59 of 2008, Air Quality Management By-law Act No 39 of 2008, 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.

6.1 Listed activities triggered/Other relevant legislation.

Activity	Mining permit area (5 ha)	Activity 21: Listing Notice 1 (7 April 2017)
Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the MPRDA 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of mineral resource, including activities for which an exemption has been issued in terms of section 106 of the MPRDA (2002).		E.g., In terms of the NWA, a Water Use License has/has not been applied for
The clearance of an area of 1 ha or more, but less than 20 ha, of indigenous vegetation, except where such clearance of indigenous vegetation is required for: (i) The undertaking of a linear activity. (ii) Maintenance purposes undertaken in accordance with a maintenance management plan.	Mining permit area (5 ha)	Activity 27: Listing Notice 1 (7 April 2017)
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Mining activities	The potential impact on important CBAs conservation in the study area, and the management thereof is addressed in this BAR & EMPr.
Mkhondo Local Municipality (2017- 2022 Final Integrated Development Plan)	Needs, desirability, socio-economic needs	Incorporated under section 4 and 9.1
Gert Sibande District Municipality Spatial Development Framework	Land Use	The applicant acknowledges the need to maximize economic benefit from mining, industrial, business, agricultural and tourism development in the area and

Activity	Mining permit area (5 ha)	Activity 21: Listing Notice 1 (7 April 2017)
		promote a climate for economic development in line with the municipal development frameworks
National Environmental Management Air Quality Act (Act No 39 of 2008), National Ambient Air Quality (GN 1210: 2009) Mine Health and Safety Act, Act 29 of 1996 National Dust Control Regulations (GN 827: 2013 as amended)	Air quality & dust control	Standards for particulates and dust used in the Impact Assessment will regulate the concentration of a substance that can be tolerated without environmental deterioration. Exposure to dust and toxic particles (i.e. coal dust) will be managed.
ISO 14001:2015: Principle of Sustainable development	Environmental management system	Development of an integrated environmental management system and measures for responding to environmental conditions (PDCA model).

6.2 Environmental Authorization Process

6.2.1 Mineral and Petroleum Development Act

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), a Mining Permit must be issued prior to the commencement of any mining activities. As per Section 79(4)(a) and (b) of the MPRDA, the Applicant is required to conduct a Basic Assessment and submit an EMPR for approval as well as to notify in writing and consult with Interested and Affected Parties (I&APs) within 90 days of acceptance of the application. The MPRDA also requires adherence with related legislation, chief amongst them is the National Environmental Management Act (Act 107 of 1998, NEMA) and the National Water Act (Act 36 of 1998, NWA).

Several amendments have been made to the MPRDA. These include, but are not limited to, the amendment of Section 102, concerning amendment of rights, permits, programmes and plans, to requiring the written permission of the Minister for any amendment or alteration; and the Section 5A(c) requirement that landowners or land occupiers receive twenty-one (21) days' written notice prior to any activities taking place on their properties. One of the most recent

amendments requires all mining related activities to follow the full NEMA process as per the 2014 EIA Regulations (as amended), which came into effect on 08th of December 2014.

A Mining Permit is exclusive, transferable, valid for two (2) years and may be renewed for three periods of which may not exceed one year.

6.2.2 National Environmental Management Act

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA Environmental Impact Assessment (EIA) regulations, the proponent is required to appoint an environmental assessment practitioner (EAP) to undertake the EIA 9 as well as the public participation process. In South Africa, EIA became a legal requirement in 1997 with the promulgation of regulations under the Environmental Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant environmental authorisation. On 21 April 2006, the Minister of Environmental Affairs and Tourism promulgated regulations in terms of Chapter 5 of the NEMA.

The objective of the Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

The aim of the EIA process is to identify and assess the potential impacts associated with the proposed project and to develop measures through which potential negative biophysical and socio-economic impacts can be mitigated and positive benefits can be enhanced. The EIA will ensure that all issues are integrated into the lifecycle of the mining operation and its infrastructure. This will occur during the planning, construction, operation and decommissioning and site closure phases.

The Basic Assessment Report and the associated EMPr will indicate how the identified impacts will be avoided, mitigated and/or managed by setting environmental objectives and goals. The EMPR will further outline the implementation programme for the environmental objectives and goals. The EMPR is a legal requirement of the MPRDA and all mines, existing or new, are required to possess an approved EMPr prior to initiating any mining operations. The EMPr is legally binding, and the proponent is required to meet the requirements specified in the document.

The written decision called an Environmental Authorisation, is a legal document setting out the

conditions of the Authorisation and the actions required to protect human health and the environment. Any affected party may appeal against the decision contained in an Environmental Authorisation. Appeals must be lodged with the Minister who considers appeals in terms of the relevant provisions of NEMA and the Environmental Regulations.

An important amendment to the NEMA (December 2014) Regulations is that the Department of Mineral Resources has been the responsible authority for approving and issuing of Environmental Authorisations under the NEMA for mining related activities. The Department of Environmental Affairs is the appeal authority for mining related Environmental Authorisations.

6.2.3 National Environmental Management: Waste Amendment Act

The Regulations pertaining to the NEMWA activities were published on 3rd July 2009 in Government Gazette 32368 under GN 718. These were amended in August 2013 in Government Notice Regulation 921. Regulations regarding the planning and management of residue stockpiles and residue deposits were published and commenced on 24 July 2015 in Government Notice Regulation 632 and the List of waste management activities that have or are likely to have a detrimental effect on the environment were amended on the same date by Government Notice Regulation 921. As per this list the following is of important to note:

Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining permit or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

On the 2nd of June 2014 the National Environmental Management: Waste Amendment Act came into force. Of importance for mining activities is that according to this amendment, waste resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals is classified as Hazardous Waste. Waste is accordingly no longer governed by the MPRDA but is subject to all the provisions of the National Environmental Management: Waste Act, 2008 (NEMWA). Section 16 of the NEMWA must also be considered which states as follows:

"A holder of waste must, within the holder's power, take all reasonable measures to:

- Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated.
- Reduce, re-use, recycle and recover waste.
- Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner.
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odours, or visual impacts.
- Prevent any employee or any person under his or her supervision from contravening the Act.
- Prevent the waste from being used for unauthorized purposes.

These general principles of responsible waste management are incorporated into the

requirements in the EMPr to be implemented for this project.

Schedule 3: Defined Wastes have been broken down into two categories: Category A being hazardous wastes and category B being general wastes. Under Category A (hazardous wastes) the act makes allowance for "wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals".

In order to attempt to understand the implications of this it is important to ensure that the definitions of all the relevant terminologies are defined:

- Hazardous waste: means "any waste that contains organic or inorganic elements or compounds that may, owning to the inherent physical, chemical or toxicological characteristic of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
- Residue deposits: means "any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right.
- Residue stockpile: means "any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.

Various regulations have been drafted in support of the NEMWA, as discussed below:

- Proposed Regulations regarding the planning and management of waste from a prospecting, mining, exploration or production operations (2014):
- Chapter 2, Section 3 states the identification and assessment of any environmental impacts, including those on groundwater, arising from waste must be done as part of the Environmental Impact Assessment (EIA) conducted in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) (hereafter referred to as the NEMA). The pollution control barrier system shall be defined by the (a) Waste Classification and Management Regulations (2013);(b) National Norms and Standards for the Assessment of Wastes for Landfill Disposal (2013); and (c) National Norms and Standards for Disposal of Waste to Landfill (2013).
- Waste Characterization must be done in terms of physical and chemical composition as well as content. The classification must be done in terms of the health and safety classification and the environmental classification.

Proposed Regulations to exclude a waste stream or a portion of a waste stream from the definition of a waste (2014):

This regulation will give the holder of the right the opportunity to exclude a waste stream, or a

portion of a waste stream from the definition of a waste. Chapter 2, Section 4 of this Regulation, Sub-section (1) states that any portion of a waste generated from a source listed in Category A of Schedule 2 of the NEMWA, may be excluded from being defined as hazardous on demonstration that such portion of waste in non-hazardous in accordance with the Waste Management and Classification Regulations of 2013. The application process will be in the form of a prescribed process and application must be made to the Minister. This Regulation is however not yet in force. National Norms and Standards for the assessment of waste for landfill disposal (23 August 2013): These norms and standards prescribe the requirements for the assessment of waste prior to disposal to landfill. The aim of the waste classification tests is to characterise the material to be deposited or stored in terms of the above-mentioned waste classification guidelines set by the Department of Environmental Affairs (DEA).

The outcomes of the tests provide the necessary information in terms of:

- Identification of chemical substances present in the waste.
- Determination of the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in Section 6 of the above-mentioned Regulations. The obtained TC and LC values of the waste material will be compared to the threshold limits for total concentrations (TCT limits) and leachable concentrations (LCT limits) specified in Section 6 of the above-mentioned Regulations. Based on the TC and LC values of the elements and chemical substances in the waste exceeding the corresponding TCT and LCT limits respectively, the specific type of waste for disposal to landfill will be determined in terms of Section 7 of the Regulations.

6.2.4 The National Environmental Management: Biodiversity Act

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004, NEMBA), "provides for: the management and conservation of South Africa's biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute (SANBI); and for matters conducted therewith".

In terms of the Biodiversity Act, the applicant has a responsibility for: The conservation of endangered ecosystems and restriction of activities according to categorization of the area (not just by listed activity as specified in the EIA regulations):Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.

Limit further loss of biodiversity and conserve endangered ecosystems

Regulations published under the NEMBA also provide a list of protected species, according to the Act (GNR 151 dated 23 February 2007, as amended in GNR 1187 dated 14 December 2007). Section 57 of NEMBA identifies restricted activities involving threatened or protected species. Restricted activities include the gathering, collecting, cutting, uprooting, damaging or destroy a listed species.

6.2.5 The National Environmental Management: Protected Areas Act

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA) serves to: "provide for the protection and conservation of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes and seascape; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection therewith.

The objectives of this Act are –

- To provide, within the framework of the national legislation, including the National Environmental Management Act, for the declaration and management of protected areas.
- To provide for co-operation governance in the declaration and management of protected areas.
- To affect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity.
- To provide for a diverse and representative network of protected areas on state land, private land, communal land and marine water.
- To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas.
- To promote participation of local communities in the management of protected areas, when appropriate
- To provide for the continued existence of South African National Parks.

6.2.6 National Water Act

The National Water Act, 1998 (Act 36 of 1998) (NWA) makes provision for two types of application for water use licenses, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the Applicant of the likely effect of the proposed license on the resource quality, and that such assessment be subject to the EIA regulations. A person may use water if the use is-

- Permissible as a continuation of an existing lawful water use (ELWU).

- Permissible in terms of a general Authorisation (GA).
- Permissible under Schedule 1.
- Authorised by a licensed.

The NWA defines 11 water uses. A water use may only be undertaken if authorised. Water users are required to register certain water uses that took place on the date of registration, irrespective of whether the use was lawful or not.

Section 21 of the National Water Act 1998 lists the following 11 water uses which can only be legally undertaken through the water use Authorisation issued by the Department of Water and Sanitation (DWS):

(a) Taking water from a water resource.

(b) Storing water.

(c) Impeding or diverting the flow of water in a watercourse.

(d) Engaging in a stream flow reduction activity contemplated in Section 36.

(e) Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).

(f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits.

(g) Disposing of waste in a manner which may detrimentally impact on a water resource.

(h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.

(i) Altering the bed, banks, course or characteristics of a watercourse.

(j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

(k) Using water for recreational purposes.

No Water Use License has been applied for this project. DWS was engaged about this project so they can direct us whether it is viable or not to apply for water use license.

6.2.7 National Heritage Resources Act

The National Heritage Resources Act, 1999 (NHRA) stipulates that cultural heritage resources may not be disturbed without Authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…" The NHRA is utilized as the basis for the identification, evaluation and management of heritage resources and in the case of CRM those resources specifically impacted on by

development as stipulated in Section 38 of NHRA, and those developments administered through NEMA, MPRDA and the DFA legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorisations are granted for development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impacts processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b).

The NEMA 23(2)(b) states that an integrated environmental management plan should, "…identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

MPRDA defines 'environment' as it is in the NEMA and therefore acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment and identification of impacts on all heritage resources as identified in Section 3(2) of the National Heritage Resources Act that are to be impacted on by activities governed by the MPRDA. Section 40 of the same Act requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities (Fourie, 2008b).

The NHRA identifies 5 activities that require a Heritage Impact Assessment (HIA). An HIA is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources.

An HIA must be done under the following circumstances:

(a) The construction of a linear development (road, wall, power line, canal etc.) exceeding 300 m in length.

(b) The construction of a bridge or similar structure exceeding 50 m in length.

(c) Any development or other activity that will change the character of a site and exceed 5 000 m2 or involve three or more existing erven or subdivisions thereof.

(d) Re-zoning of a site exceeding 10 000 m2.

(e) Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

Human remains and burials are commonly found close to archaeological sites; they may be found in abandoned
and neglected burial sites or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or
crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked on the surface. Archaeological and historical burials are usually identified when they are exposed through erosion, mining and earth moving activities for infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.
The possibility of encountering burial sites is low as the site inspection revealed only modified lands. Furthermore, the community residing on the farm stated there are no graves within the boundaries of the proposed project area.

7. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

In South Africa, the production of economic output has historically been dominated by the mining industry. It alleviates poverty and offers work. The mining firms have a responsibility to develop the infrastructure, the educational system, and the workforce in order to better the state of the areas where they operate. The various businesses that are brought about by mining activity are very beneficial to local economies. Additionally, the mine-created jobs often pay higher wages than the national average. The export market in South Africa is significantly influenced by the mining sector. It generates significant gains from the foreign exchange rate differences. Mining contributions to the total government revenue are directed to the national and sub-national levels. The profits of mining companies and taxes generated by companies, in addition, contribute to the Gross Domestic Product (GDP) of the country.

South Africa contributes about 3.5% of the world's coal resources. The country's production is around 3.3% of the world's annual total and exports approximately 6% of global exports. Coal is the major primary energy source for South Africa. More than 90% of the country's electricity and approximately 30% of the liquid fuel are produced from coal (DoE, 2016). Coal also plays a significant role in supply to the South African chemicals industry and is an essential component of its steelmaking industry. With the country's attempts of diversifying energy, coal is expected to play a major role in the foreseeable future, and it is the leading mining commodity revenue generator in South Africa. The majority of coal comes from the Witbank and Highveld coalfields, which together account for about 75% of South Africa's production. However, these sources will be

exhausted in the next century (DMR, 2016).

South Africa is the fifth-largest coal producer in the world, generating 224 million tonnes of marketable coal on average yearly. South Africa is the third-largest exporter of coal, with a total of 25% of our production going elsewhere. The remaining coal produced in South Africa is utilized to fuel a variety of regional businesses, with 53 percent going toward the production of power. The fact that Eskom ranks as the seventh-largest electricity generator in the world and Sasol as the top manufacturer of coal-to-chemicals highlights the crucial role that our coal reserves play in the economy. Due to the abundance of coal resources in the Mpumalanga province, there are several career prospects there. The Witbank Coalfield in South Africa is where the majority of the coal is extracted, and where the seams which have diverse characteristics are located, resulting in a range of potential markets/utilisation in power generation, export, domestic, metallurgical, liquefaction and chemical sectors.

Coal is the major primary energy source for South Africa. More than 90% of the country's electricity, approximately 30% of the liquid fuel, and about 70% of its total energy needs are produced from coal (DoE, 2016). Coal also plays a significant role in supply to the South African chemicals industry and is an essential component in the steelmaking industry, i.e., metallurgical coal.

With 7% of the world's vanadium supply, South Africa is the third-largest producer in 2019. Most of its vanadium came from primary production by Glencore and Bushveld Minerals. Vanadium pentoxide and ferrovanadium are the vanadium products that are traded the most.A dominant host of Platinum Group Metals (PGM) and chromite deposits, the Bushveld Igneous Complex spans the provinces of the North-West, Limpopo, and Mpumalanga. Vanadium is a rare element; hence South Africa's magnetite deposits only contain workable amounts of less than 1% vanadium.

Manganese is a necessary component in the production of steel, which, along with iron, forms the basis of contemporary industrial civilization, manganese demand is regarded by some economists as the mineral that most accurately predicts economic expansion. The idea is that as manganese demand rises, the overall state of the world economy would improve.

PGMs are among the most uncommon metals on earth and are well known for their catalytic abilities. After being disrupted by the pandemic and seeing a considerable output decline in 2020, platinum group metals (PGMs) have been the primary driver of a significant increase in Southern African mining production in 2021, the largest bounce in six years.

Copper might not be as profitable as uranium and platinum mines, copper mining in South Africa remains a significant component of the mining sector.

The individuals most affected by the proposed project are those who live in the Mkhondo Local

Municipality's rural nodes, which include Driefontein.

The National Development Framework includes, in summary, the need to produce energy to support industry at competitive prices. Furthermore, the proposed Project will contribute to the local economy through job creation and procurement. Increased employment will lead to increased expenditure, tax base and royalties.

The Applicant must firstly employ people from the affected wards. The Applicant will also provide skills development to employees thereby advancing the future employability of these individuals. The project further identifies community development projects from which the surrounding communities will benefit as a result of this project. As stated in the MPRDA, the Government's objective is to maximise the benefit of the nation's mineral resources for the benefit of all South Africans. By establishing a new mining operation, this objective can be accomplished, particularly through job creation. From an environmental perspective, the Applicant is willing to pursue open cast mining to reduce the environmental impacts.

From the environmental Impact Assessment, it was found that the proposed area is not utilized for any activity, and it is believed that there is Coal, Manganese, Vanadium, Iron, PGMS, and Copper resources that should be exploited economically. Land capability refers the potential of land to support different land uses, and is determined by the physical, chemical and biological properties of the soils. In nature these qualities develop over millennia and are dependent on the type of underlying parent rock, the geographic locality, and climate. On rehabilitated land, the desired land capability is reinstated by re-creating the key fundamentals of what defines land capability (e.g., soil type, soil depth, soil texture, soil density, soil chemistry, topographic slope, and soil microbiology). Upon Rehabilitation, the land will be transformed to arable land for which the agricultural activities taking place adjacent of the area can be extended towards the mined area.

8. MOTIVATION FOR THE OVERALL PREFERRED DEVELOPMENT FOOTPRINT

The geology is the primary driver in determining the location for mining. After due consideration and conducting background and desktop studies, it was found that the coalfield lithology essentially comprises sediments of the Vryheid Formations of the coal-bearing Ecca Group, Karoo Supergroup, with dolerite intrusions thus providing the ideal geological formation for the presence of the mineral applied for (see Figure 8 for the project geology).

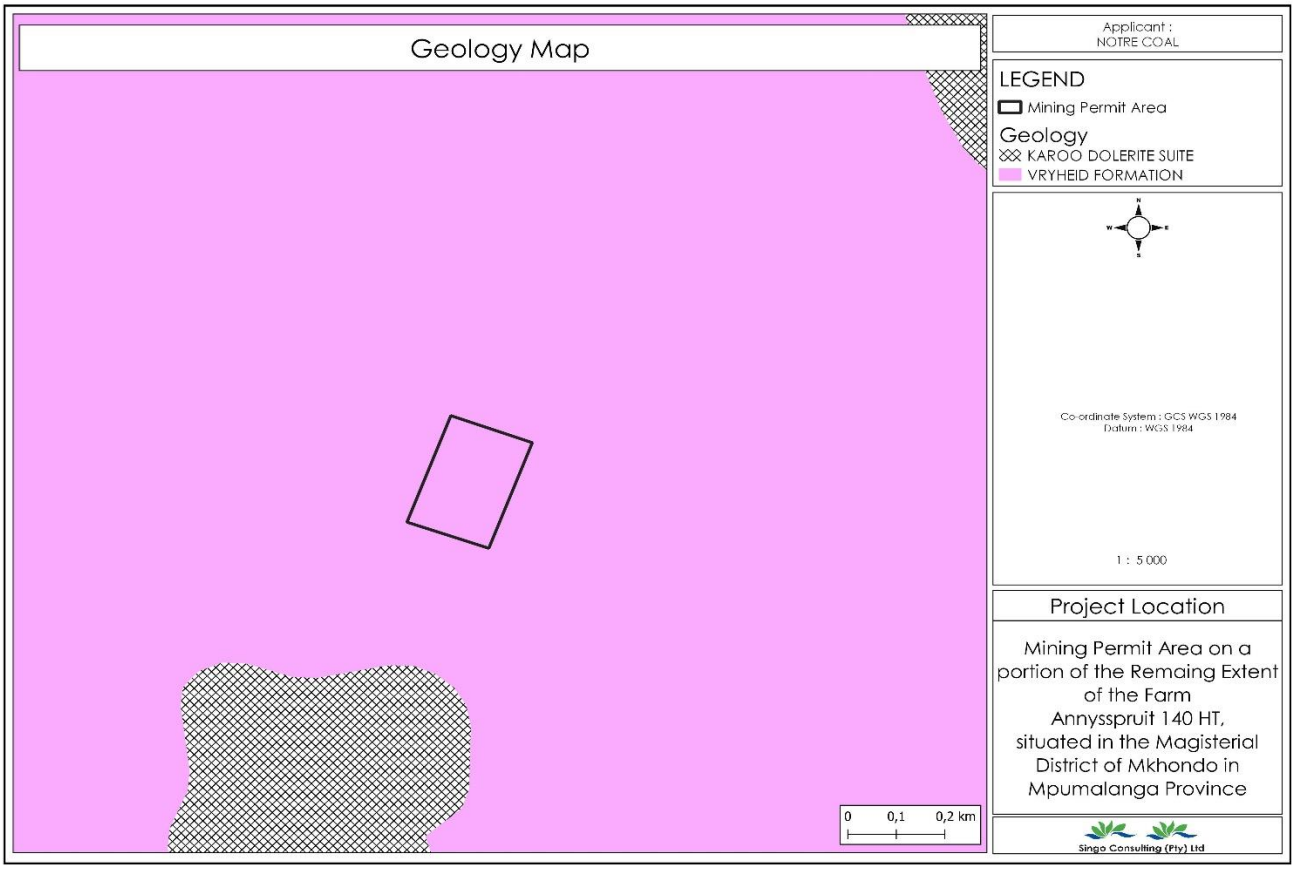


Figure 7: Geology map of the proposed project area. (Singo Consulting (Pty) Ltd , 2022)

9. FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

9.1 Details of Development Footprint Alternatives

The development footprint is 5 ha, which is the maximum legislated aerial extent that may be approved for a Mining Permit application in terms of the MPRDA, 2002 (as amended). The geology is the primary driver in determining the location for mining. As such, no assessment of alternative development scenarios was conducted.

9.1.1 Preferred Site

The application area has been selected based on historical and active coal mining operations in the surroundings of the application area along with historical and current data that indicate the economic viability of the Coal, Manganese, Vanadium, Iron, PGMS and Copper mineral to occur.

9.1.2 Type of Activity

The proposed activity is mining. The geology is the primary driver in determining the location for

mining. As such, no activity alternative was considered.

9.1.3 Technology Alternatives

The method that will be employed is a very basic form of open cast mining, and a 5-ha area will be demarcated for mining activities. Ripping method will be used for soft material and blasting will only be used when hard rock is encountered. Subsequent mining of the orebody utilizing a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilizing a mobile crushing and screening plant. A front- end loader will be utilized to load the material into haulage trucks. The ore will be processed within the site. Should the proposed mining activities change, this will be indicated in the form of a Section 102 Amendment Application of the MPRDA.

9.1.4 No-Go Alternative

Mining contributes greatly to local economic stimulation through direct employment, business opportunities, royalties, and tax revenues. If the Coal, Manganese, Vanadium, Iron, PGMS and Copper reserves on the property are not mined, South Africa and the local communities will forego the benefits of the associated employment, business opportunities, royalties, and tax revenues. Furthermore, according to the screening report generated, the area of interest has the area of interest is not utilized for anything and it allows mining activity to be conducted.

The no-go alternative entails no change to the status quo and should therefore not be considered. From the baseline environmental sensitivity conducted, and the site visit conducted the area would remain untouched and utilised only for grazing.

9.2 Details of the development footprint alternatives considered.

The development footprint is 5 ha, which is the maximum legislated aerial extent that may be approved for a Mining Permit application in terms of the MPRDA, 2002 (as amended). The geology is the primary driver in determining the location for mining. As such, no assessment of alternative development scenarios was conducted.

b) The type of activity to be undertaken

Other activity alternatives have therefore not been considered as the sole purpose of the proposed project is to mine from the section of the proposed mining site. The only other activity required to be assessed in terms of NEMA is the "no-go" alternative. The application is for mining permit and alternatives were not considered. The proposed site is the only land that is within reasonable reach to the applicant.

c) The design or layout of the activity

The location of the infrastructure will be determined based on the location of the mining activities. All

infrastructure will be temporary and/or mobile. The site layout will be determined by considering both spatial and practical mining operation aspects. The proposed layout and temporary nature of the mining activity and associated infrastructure will be implemented with the aim to reduce substantial impacts on the area.

d) The technology to be used in the activity

The opencast mining method will be considered to maximize the Coal, Manganese, Vanadium, Iron, PGMS, and Copper extraction and use of the resources from the area. Truck and shovel operations will be used. A front-end loader will be utilized to load material into haulage trucks that will be used for hauling through haul roads that will be constructed in the demarcated Mining Permit area. The coal, Manganese, Vanadium, Iron, PGMS and Copper mined will be crushed and screened utilizing a mobile crushing and screening plant. The mined coal, Manganese, Vanadium, Iron, PGMS, and Copper will be processed off-site. These mining methods are standard practice for opencast mining operations as stipulated above. Should the mining activities change, the applicant will be advised to apply for Section 102 of the MPRDA for amendments.

- Types of Blasting Explosives that can be Employed

Non-Ex Rock Breaking Cartridges can be applied when blasting hard rocks in sensitive areas as it does not contain high explosives and have low vibrations compared to conventional explosives, also used by Samancor Chrome in Gauteng and Waterkloof mine in Rustenburg. It is a pyrotechnic composition (low explosives) that break rocks by generating tensile force through rapid gas expansion in a sealed (stemmed) drill hole and have no adverse environmental effects.

- Environmental Impacts Associated with the Non-Ex Rock Breaking Cartridges

Air blast Overpressure

Air blast overpressure is the pressure produced by blasting over and above that of atmospheric pressure produced by explosives. The three main concerns associated with air blast overpressure are human, structural damage and window damage.

Non-Ex™ method of breaking ensures that expansion gases are contained in the drill hole by effective stemming, which result in very low overpressure levels. Overpressure levels produced by non-ExTM are extremely low when compared to conventional explosives and are of a shorter duration and less damaging frequency. This gives non-Ex™ a major advantage over explosives in environmentally sensitive areas.

Noise

Noise is the part of the air blast pressure wave which falls within the audible frequency region of the human ear. The high frequency portion of the air pressure wave is audible and is responsible for the noise that accompanies a blast. The lower frequency portion is not audible but can excite structures, such as windows, which in turn respond and produce secondary noise such as rattles. Noise levels produced by non-Ex™ depend largely on the type and nature of the rock broken

charge weight, burden, depth of the hole and the effectiveness of the stemming used. A well-stemmed non-Ex™ cartridge in granite will generally produce a noise level in the range 80 to 85 dBl at 50 meters from the hole. Noise levels can be attenuated by the use of conveyor belting, or other matting, to cover the holes being fired.

Ground Vibration

Ground borne vibrations from blasting can cause damage to buildings and infrastructure which are in the vicinity of the blast. The degree of the vibration-induced damage caused by blasting is dependent on the magnitude, frequency and duration of the vibration. Generally, low frequency, long duration vibrations are more damaging than higher frequency, short duration vibration. The vibration waves produced by non-EXTM are mostly of a higher frequency with a mean of 450 Hz, and of short duration and are therefore the least harmful to sensitive structures. In addition, the magnitude of the vibration levels produced by non-ExTM is particularly low when compared to explosives over the same distance from the shot hole. When the propellant mixture is a non-ExTM cartridge deflagrates, the almost instantaneous change from solid to gaseous matter is accompanied by a very sharp increase in the blasthole pressure and temperature. This is accompanied by a pressure wave that radiates from the drillhole, its amplitude decreasing as the distance from the drillhole increases. The primary factors known to influence the level of ground vibration from the non-ExTM cartridges include:

- The weight of propellant per cartridge.
- The distance between the drillholes and the point of measurement.
- The local geological conditions, and the influence of geology and topography on vibration attenuation.

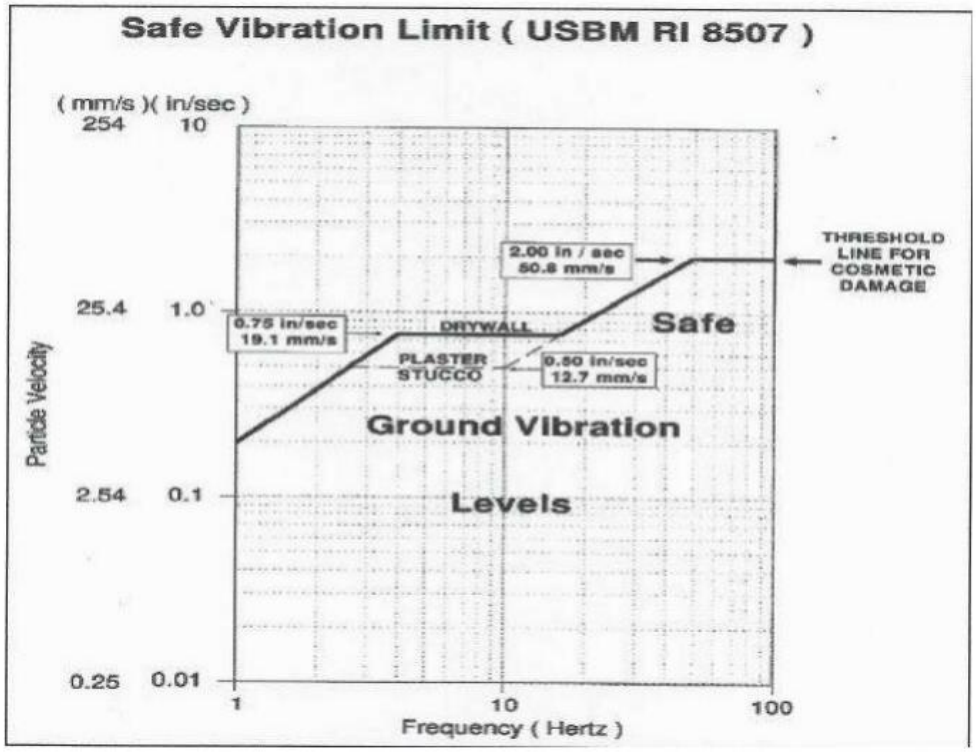
Vibration Limits for Structures

The degree of vibration-induced damage caused by blasting is dependant on the magnitude, frequency and duration of the vibration. Generally, low frequency, long duration vibrations are more damaging than higher frequency, short duration vibrations.

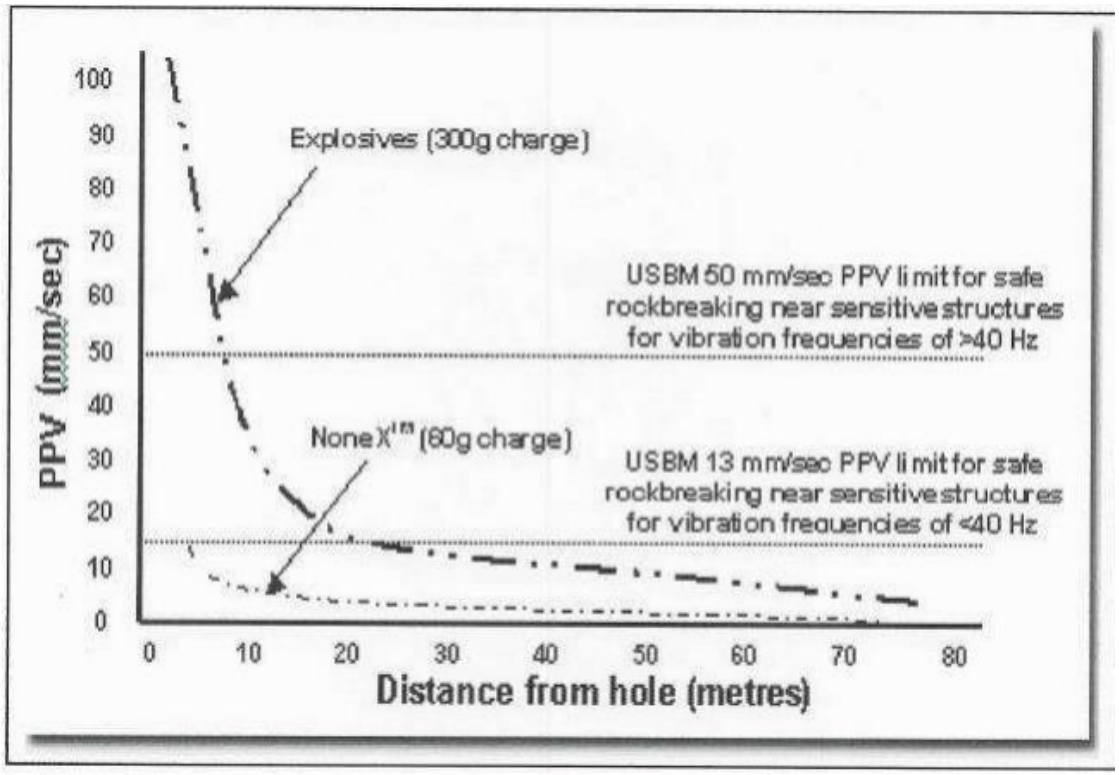
This general rule is contained in recommendations by both the US Bureau of Mines (ÜSB") and the British Standard ("BS"), both of which are widely used in vibration specifications for rock breaking near sensitive structures. The USBM criteria are as follows:

- Frequencies above 40 Hz
  - PPV less than 50 mm/s- safe zone
  - PPV greater than 50 mm/s- damage zone

- Frequencies below 40 Hz
  - PPV less than 13 mm/s- safe zone (old wooden house)
  - PPV greater than 19.5 mm/s- safe zone (modern house)



The vibrations generated by non-ExTM are well within most imposed restrictions for rock breaking close to sensitive structures



Comparative vibration results of explosives and Nonex (Nonex,n.d.)

As can be seen from the above figure, safe vibration levels for rock breaking, as defined in the USBM guidelines, can be achieved by non-ExTM within 5 metres of a sensitive structure.

Safety Distances

One of the significant advantages of the Non-Ex Rock Breaking Cartridges is that the safety distances are approximately 50 metres from blasting over-sized rock in the open, without any covering. This means that personnel and equipment only require local clearance instead of complete site evacuation. This benefit is that rocks and boulders can be broken in shifts and close to working operations.

The safety distance to infrastructure and sensitive equipment is further reduced by covering the blast with mats and soft soil.

Noxious fumes

The Non-Ex™ cartridge is oxygen balanced so that sufficient oxygen is available for the chemical reaction to achieve optimal oxidation to produce gases consisting of carbon dioxide, nitrogen and steam and thus avoiding the production of noxious gases such as carbon monoxide and nitrous fumes. The reduced quantities of propellant required to break the rock compared to explosives means that considerably less fumes are emitted by the rock breaking event. As a result of the degree of oxidation achieved in the deflagration process, through the incorporation of an effective oxidizing agent and the relatively small amount of propellant used in each hole, the Non-Ex™ cartridge produces a negligible level of noxious gases which are cleared in minutes when an adequate standard of airflow (nominally a velocity of 0.25 metres per second) is available.

Fly rock

Normally, blasting using conventional explosives requires the rock breaking area to be evacuated for a distance of 500m which means disruption of the production operations and delays to operating equipment. The generation of unpredictable fly rock rules out the use of lay-on charges in any situation where fly rock is restricted.

In contrast, a Non-Ex™ cartridge produces an optimal pressurization of the hole for a given burden and type of rock. By controlling the characteristics of the pressure pulse, the velocity and distance travelled by the dislodged rock can be limited.

Controlled gas release from the non-ExTM cartridge, at a relatively low pressure, results in a minimal quantity of low velocity fly rock, which is generally contained within 10m of the rock breaking event.

The table below shows clear advantages in the use of non-Ex.

Table 7: Comparison of conventional explosives and Nonex Cartridge *(Nonex, n.d)*

Nonex™ RBC's Compared to Conventional Explosives

Particulars	Conventional Explosives	Nonex Cartridge
Environmental effect	Adverse Effects – Landslides, crevasses in earth strata, tunnel collapse etc.	No adverse effect.
Fly Rock	High velocity, uncontrolled, fly rocks up to 500metres	Controllable low velocity fly rocks up to 50m
Shockwave	Supersonic shock wave with significant damage	No shock wave
Dust levels	High level of dust produced by crushing effect.	Minimal dust due to better fragmentation.
Vibrations	High level vibrations – unfit for use in built up areas	Low vibrations – ideal for built up areas/sensitive projects
UN Hazard Division	1.1	1.3C
Functions on	Detonation	Deflagrating
Reaction speed	3,000 -10,000 m/sec.	300 – 1000 m/sec.
Pressure	1200 GPa	450 MPa
Working principle	Produces SHOCK WAVE, resulting in Blast and Shattering effect	NO SHOCK WAVE- Produces gases only which split the rock.
Safety Distance	Minimum 500m	Average 100m
Noxious fumes	Underground mines – 3 hour re-entry time	30 minutes re-entry time

Due to an increase in coal usage, the company identified a need for coal in the area. The applicant identified the proposed areas as the preferred and only viable site alternative in this light. From extensive work conducted previously in this area, it is known that this area contains the resource being sought. This land may have contamination levels on the property that are thought to have a higher significance without the need or motivation to justify it. Various project alternatives were considered during the project's planning phase.

These included the following:

Open cast mining (preferred alternative) vs. underground mining

- The open cast mining method is used when deposits of commercially useful minerals or rock are found near the surface, where the overburden is relatively thin, or the material is structurally unsuitable for tunnelling.
- Underground mining is used where the mineral occurs deep below the surface and the overburden is thick.
- Open cast mining of Coal has been identified as the most cost-effective method to produce the desired coal as it is found near the surface, with only a narrow layer of overburden that needs to be removed.
- The geology of the area and depth of coal to be mined is structurally unsuitable for tunnelling.
- The open cast mining method will not produce any residual waste to be disposed of. Due to the location of the proposed coal pits, the potential impact on the surrounding environment is

expected to be insignificant. It is proposed that all mining-related infrastructure be contained in the boundary of the mining area.

Temporary infrastructure (preferred alternative) vs. permanent infrastructure

- Temporary infrastructure use will entail the use of track-based or easily removable infrastructure. This includes a mobile in-pit crusher plant, temporary weigh bridge and chemical toilet, with off-site vehicle and equipment servicing (at the applicant's existing workshop). The off-site office (see figure 15 below) will be used for project administration purposes.
- **Positive aspects:** The infrastructure can be moved around in the mining area boundaries as mining progresses, decreasing the distance material has to be transported from the crusher plant to the stockpile area. In addition, the crusher plant and other equipment can move out of the mining area (and onto the existing road) during a blast to prevent potential fly rock damage. During the decommissioning phase, infrastructure will be removed from the mining area, making site rehabilitation easy and effective.

Figure 8: Typical Example of the Mobile Office. (Google Photos,2022)

- Permanent infrastructure will entail the construction of an office building with ablution facilities, installation of a septic tank to be connected to the ablution facilities, installation of a permanent weigh bridge and permanent crusher plant.
- The use of permanent infrastructure will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, necessitate the use of concrete products on site to establish this infrastructure, lengthen the period required for rehabilitation as

well as increase the rehabilitation cost as the permanent infrastructure will either have to be decommissioned or be maintained after the closure of the site.

- Due to the small size of the mining area the infrastructure may be exposed to fly rock damage during blasting events.
- The construction of permanent infrastructure on site will increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.
- In the light of the above, the use of temporary infrastructure is deemed to be the most viable preferred alternative.

Access onto provincial road (preferred alternative) vs. national road

- There is no alternative for the proposed access road to the project area, the area can only be accessed through unnamed road connecting to N4 followed by a gravel road.

No-go alternative

The no-go alternative entails no change to the status quo and should therefore not be considered. The no-go zone is the area that must be demarcated and protected from any pollution and no mining activities must be conducted in that area including assembling of mobile infrastructures. From the desktop study, it was discovered that the area falls within a heavily modified terrestrial as shown in Figure 16 below. The site assessment conducted, confirms that the area is heavenly modified however the is a stream about 500 m away from the mining permit area which is the sensitive area that will need to be protected from any mining activities that will be conducted.

10. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

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 will be incorporated into the Final BAR & EMPr to be submitted to the competent Authority being the Department of Mineral Resources & Energy for Adjudication

10.1 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).

10.2 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.

10.3 Regulatory framework

- Chapter 6, regulation 40(2)(3) of EIA Regulations (GNR 326, 7 April 2017) requires that the PPP provides access to all information that may have the potential to influence the decision regarding the applications. It further outlines that the potential interested and affected parties (I&APs) be provided with an opportunity to comment on project reports and plans.
- The Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002) and EIA regulations 2014, published under Government Notice No. 982 in Gazette No. 3822 of 4 December 2014, amended on 7 April 2017.

10.4 Details of the Public Participation Process Followed

The stakeholder engagement process was initiated and employed several techniques to establish contact and raise awareness amongst stakeholders regarding the application.

10.5 Interested and Affected Parties Identification Procedure

The Interested & Affected Parties for this particular project were identified through telecommuting (via e-mail media communications and telecommunications). Other means of Identification & notification adopted was through the print media in a form of newspaper advert and placement of A2 size notices in prominent spaces.

10.6 Newspaper advertisements

A newspaper advertisement was placed and published in the local paper, Excelsior to notify all the Interested & Affected Parties of the proposed

10.7 Public Space Notices

A2 size notices will be placed in farm Boundaries, adjacent properties and places often frequented by community members such as Dirkiesdorp Police Station, KwaNgema Clinic, Tuck shops, Mkhondo Local Municipality & Mkhondo Public Library.

10.8 Conclusion of the consultation process followed

Background Information Documents (BIDs) were provided to Governmental Departments, to introduce the project and to invite them to forward views, comments and recommendations about the project. Stakeholder engagement & consultation through BID commenced for 30 days from the day of announcement.

The Draft BAR and EMPr will be released for a period of 30 days excluding public holidays declared in terms of Section 2A of the Public Holidays Act of 1994.

Hard copies of the Draft BAR and EMPr will be submitted to organs of state and relevant authorities i.e Mpumalanga Tourism Parks Agency (MTPA), Department of Agriculture, Land Reform and Rural Development (DALRRD), South African National Roads Agency Ltd (SANRAL) & Inkomati Usuthu Catchment Management Agency. Additionally, copies will be available at the following places: Mkhondo Local Municipality & Mkhondo Public Library. The electronic copies will be made available upon request from Singo Consulting (Pty) Ltd, using the detailed EAP'S contact's below, via emails; Dropbox link; Google drive; WeTransfer, etc.

Windeed results

Deeds Office Property
IT, DRIEFONTEIN, 388, 4, MPUMALANGA

Lexis® WinDeed

SearchInsure Activated

This report is compiled exclusively from the very latest data directly supplied to WinDeed by the Deeds Office.

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.

** ASTERISKS INDICATE THE INFORMATION IS ENRICHED FROM THE WINDEED DATABASE.

SEARCH CRITERIA			
Search Date	2022/09/23 08:39	Farm Number	388
Reference	-	Registration Division	IT
Report Print Date	2022/09/23 08:42	Portion Number	4
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

PROPERTY INFORMATION			
Property Type	FARM	Diagram Deed Number	T4036/907
Farm Name	DRIEFONTEIN	Local Authority	MKHONDO LOCAL MUNICIPALITY
Farm Number	388	Province	MPUMALANGA
Registration Division	IT	Remaining Extent	NO
Portion Number	4	Extent	725.6311H
Previous Description	PTN 1-LG647/966	LPI Code	T0IT00000000038800004
Suburb / Town**	11KM NORTH OF KWANGEMA	Co-ordinates (Lat/Long)**	-26.960433 / 30.453885

OWNER INFORMATION (1)			
MASIHAMBISANE DRIEFONTEIN TRUST			Owner 1 of 1
Company Type**	TRUST	Document	
Registration Number	6597/95	Microfilm / Scanned Date	
Name	MASIHAMBISANE DRIEFONTEIN TRUST	Purchase Price (R)	
Multiple Owners**	NO	Purchase Date	
Multiple Properties**	NO	Registration Date	
Share (%)	-		

LexisNexis®

0861 946 333
windeed.support@lexisnexis.co.za
search.windeed.co.za | www.windeed.co.za

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

11. THE BASELINE RECEIVING ENVIRONMENT

This section describes the baseline receiving environment of the Mining Permit application area. Information in this section is based on specialist studies undertaken in support of this application, desktop studies and a site visit by the EAP as well as input from the public through the I&AP questionnaire. As such, the descriptions below of environmental features represent a consolidation of relevant information to the application area.

11.1 Socio Economic Environment

The proposed project area is located in Mkhondo Local Municipality within Gert Sibande District Municipality (GSDM), Mpumalanga Province. The socio-economic analysis is based on a desktop study of existing socio-economic information and development strategies contained in the governmental national, regional and local databases (Statistics SA: Census 2011/2016 and Community Survey 2016), IDP and Census data from the Municipal IDP (2017- 2022).

Table 8 : Mkhondo Local Municipality Structure

Urban nodes	Rural nodes/Settlements
• eMkhondo (Town) • eThandakukhanya • Amsterdam • KwaThandeka	• Saul Mkhizeville • KwaNgema • Mahamba • Dirkiesdorp/Mabola • Iswepe • Stafford • eNtombe • Commondale

The Municipality comprises of forestry plantations and much of its economy originates from this source. Mondi, Sappi, TWK and Komati Land Forests are the major companies that lead the forestry industry in the municipality. Mkhondo Local Municipality is known for wood processing, furniture, manufacturing, and coal briquettes manufacturing. A number of timbers producing companies are located within the municipality, including Mpact, Tafibra and PG Bison and Normandien which are national businesses. Large-scale agriculture is limited in the municipality due to the extensive

use of land for forestry.

The municipality's primary economic components are forestry, mining, and subsistence farming. Mkhondo Local Municipality is home to two significant mining firms (Jindal and Kangra Coal Pty (Ltd). In comparison to other local municipalities in Mpumalanga, Mkhondo Local Municipality ranks low in terms of tourism. There is, nevertheless, a lot of tourism potential within the municipality, thanks to the South African heritage sites that are located there. The area of interest has natural vegetation used for grazing. The surrounding areas are natural vegetation and other land used for crop farming. Adding mining to the area does not compromise the security of food in the municipality.

11.1.1 Key Issues

According to Mkhondo Municipality IDP, the municipality has issues to create higher densities around economic nodes thereby stimulating purchasing power and economic development which eventually leads to higher levels of asset ownership and standards of living.

- **Severe Environmental Degradation**: The district continuously experiences challenges related to the degradation of biodiversity and environmentally sensitive areas. This is caused by factors such as extensive agriculture, mining, forestry, and urban development continuously encroaching onto these sensitive areas.
- **Environmental Management:** Poor environmental management processes lead to excessive water and air pollution, and the insufficient rehabilitation of land when coal deposits are depleted. This sterilises the land permanently for agriculture and/ or tourism activities.
- **Conflicting Economic Activities:** Mining, agriculture and tourism are in constant conflict over the use of land. More often, this results in the loss of high value agricultural land and/ or land featuring high biodiversity or eco-tourism potential. In many instances this is at the expense of short-term benefits associated with mining.
- **Connectivity and Accessibility:** The former homeland area of KaNgwane is geographically isolated from areas of work and economic activities in the remaining parts of the district.
- **Land Use-Transport Integration:** There is a need to improve transport planning in the district and have it integrated with land use planning. Multi-modal transport facilities and transport-oriented developments must be prioritised and linked to land use planning in order to achieve spatial integration.
- **Road Maintenance:** Maintenance of coal routes remains a challenge and concerted effort to support the 'Road to Rail' Initiative is required.
- **Swaziland Linkages:** The missing rail link between the GSDM and Swaziland limits economic activity and growth between the two areas which would hugely benefit the rural communities of Chief Albert Luthuli. Similarly, the border posts with Swaziland are not optimally utilised for economic co-operation between the two areas.
- **Population Income:** The strongest individual municipality in terms of income is Govan Mbeki which recorded 39% of its population with an income higher than R3200 per month. All the other municipalities recorded significantly lower figures with Mkhondo and Chief Albert

Luthuli recording figures of only 12% and 11% respectively. This indicates that the level of poverty in these two municipalities is higher than any of the other municipalities in the district.

- **Human/ Social Development Issues:**
  - The Gini-coefficient for GSDM suggests that levels of inequality have worsened in almost all municipalities over the past decade. Most LM's within GSDM have levels of inequality that are above the national levels. Growing inequality points to the slow pace of economic integration between the first and second economy.
  - Approximately 37% of the population which are 20 years and older, have not obtained matric which will make it difficult for these people to find employment.
  - Poverty incidence predominates in rural areas and mostly among women.
  - The absence of focused strategies and investment in education and skill-training are contributing factors of low levels of competitiveness, lack of beneficiation, poor growth of the entrepreneurial sector, and transition of the informal to the formal economy.
- **Land Reform and Security of Tenure:** The majority of rural communities in the district have no/ limited access to land (as an economic resource) and even if they legally occupy land in rural areas, they do not have security of tenure. This applies to communities in traditional authority areas, commercial farming areas and in the forestry areas.

11.1.2 Economic Issues:

- The mining and petrochemical industries made a significant contribution to the overall increase in economic output in GSDM but have limited impact in reducing unemployment in the District. These sectors also are characterised by very weak linkages with the rest of the economy.
- Agriculture and forestry, both of which are labour intensive, continue to under-perform due to lack of investment in critical infrastructure, market development and lack of beneficiation. This represents failure to translate comparative to competitive advantages.
- Farmers also need support services, mentorship and investment towards ensuring sustainability and effective utilisation of farms attained through Land Reform Programme.
- There is a need for identification and implementation of high impact LED projects/ programmes like Bio-Fuel Plant as part of rural economic development in response to Land Reform Programmes.
- Need for informal sector development and second economy interventions (i.e. skills development).
- Constraints within the mining sector include a lack of forward and backward linkages, especially in terms of the beneficiation of mining produce. The vulnerability of the mining

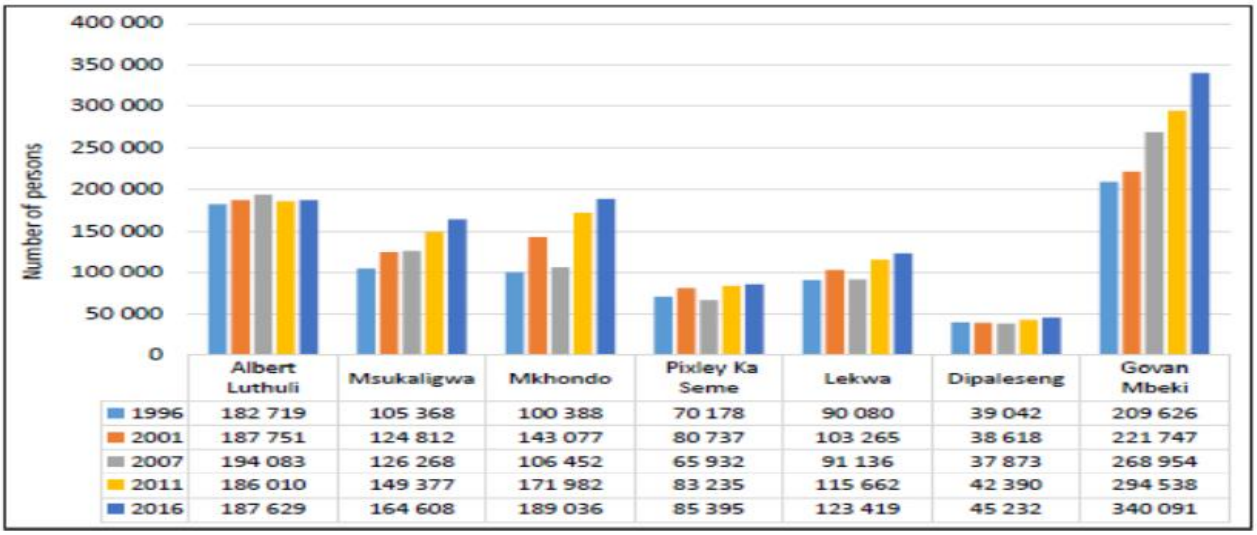
11.1.3 Population Distribution

According to Stats SA (2016) the population of Mpumalanga Province has increased. The population of Gert Sibande District Municipality has increased from 1 043 194 in 2011 to 1 135 409

in 2016 and that of Mkhondo Local Municipality has also increased (from 171 982 in 2011 to 189 036 in 2016). It is evident that the Gert Sibande District recorded an increase in population of 92216 people between 2011 and 2016. It noteworthy that Mkhondo Local Municipality grew at a rate of 2.0 % during the 2011 to 2016 period. This shows that the Gert Sibande District is ever-growing in population, between 2001 and 2011, there was an increase of +152 496 people.

Table 9: Mkhondo Local Municipality Population Distribution (IDP 2017- 2022)

	2011	2016	Growth rate	Projected 2030 number
Population	**171 982**	**189 036**	**2.0%**	**252 874**
Number of House Hold	**37 433**	**45 595**		
House Hols living in RDP House	**11 733**			
House Hold in Shacks within Informal Settlements	**642**	**508**		



	Albert Luthuli	Msukaligwa	Mkhondo	Pixley Ka Seme	Lekwa	Dipaleseng	Govan Mbeki
1996	182 719	105 368	100 388	70 178	90 080	39 042	209 626
2001	187 751	124 812	143 077	80 737	103 265	38 618	221 747
2007	194 083	126 268	106 452	65 932	91 136	37 873	268 954
2011	186 010	149 377	171 982	83 235	115 662	42 390	294 538
2016	187 629	164 608	189 036	85 395	123 419	45 232	340 091

Figure 9: Educational Background 1996 vs 2001 vs 2011 vs 2016

11.1.4 Education & Unemployment

The number of people with 'no schooling' has declined from 2001 to 2011, while those with 'matric 'has increased. According to the Final MLM Draft SDF (2016) the settlements with the lowest education level are Ngema Tribal Trust, Mkhondo Non-urban, Saul Mkhizeville and KwaNgema. These are the settlements that are in close proximity to traditional areas or informal settlements. Settlements with the highest education levels are eMkhondo, Iswepe and Amsterdam (UP Enterprise, 2016).

EDUCATION BACK-GROUND	1996	2001	2011	2016
No Schooling	18 000	22 806	15 914	38 045
Grade 7	3 360	4 304	4 543	7880
Grade 12	5 594	8 674	22 600	30841
Higher than Grade 12	1 759	2 411	4 575	

Sources: STATS SA 2016

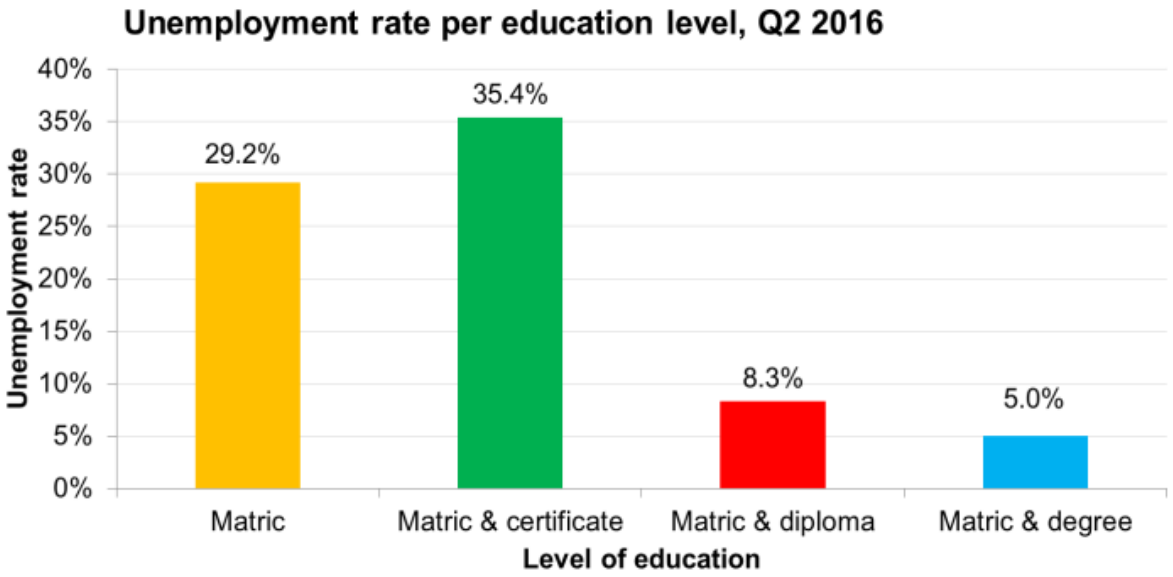


Figure 10: Unemployment rate per education level, Q2 2016

11.1.5 Gross Value Added (GVA) Contribution for Mkhondo Local Municipality

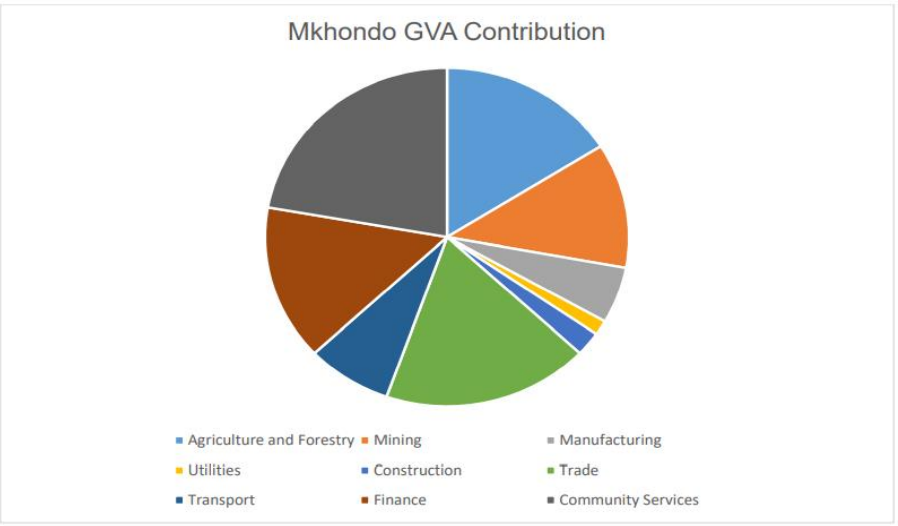


Figure 11: Mkhondo GVA Contribution (2017- 2022)

The sector or industry that contributes the most to the GVA of the municipality is community services (22.2 %) followed by trade (18.4 %), agriculture and forestry (16 %), finance (14.8 %), mining (11.9 %), transport (7.6 %), manufacturing (5.4%), construction (2.3%) and utilities (1.4 %).

11.1.6 Concluding Remarks

Socio-economic information detailed in this section of the report provides an understanding of the need for economic development which is to further create employment opportunities. The people most affected by the proposed project is the community residing near/around the project area. Although there are economic/agricultural activities taking place in close proximity to the application area, most of the people residing within the 20 km radius; in this context being Driefontein remain unemployment and underprivileged. Not implementing the activities will result in a loss of potential economic development and opportunities that comes with the development.

11.2 Geology

The Geology of the proposed site is underlain by Vryheid formation which is characterized by fine-to coarse-grained sandstone, shale, and coal seams. The Permian Vryheid formation hosts most of Southern Africa's economic coal reserves. The Witbank coalfield has produced a large proportion of coal mined for export as well as for the local market. As such, it is one of the most important geographic as well as geological regions with respect to coal distribution and coal production (Cadie, 1987).

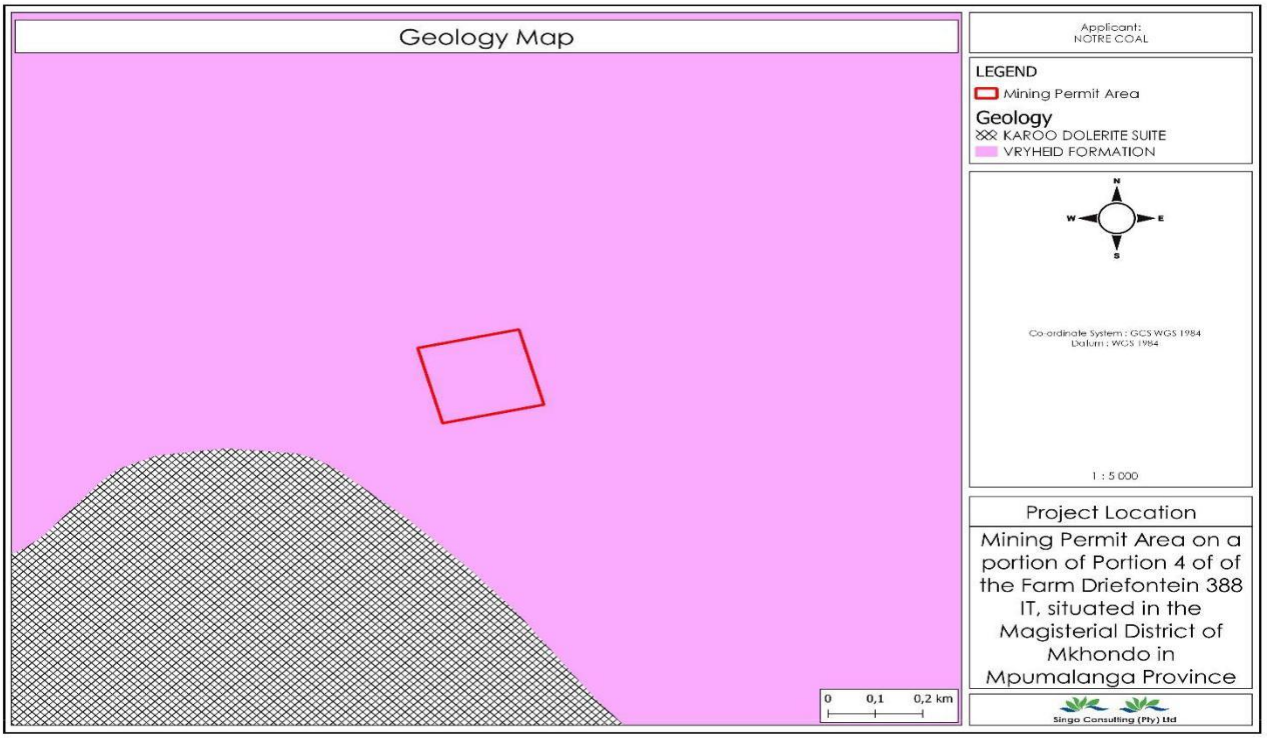


Figure 12: Geology of the proposed project(Singo Consulting GIS Team, 2022)

Karoo Supergroup

The proposed project area follows under the main Karoo supergroup, under Ecca group. The sedimentary part of the Karoo Supergroup is subdivided into four main lithostratigraphic units, which from the base up are the Dwyka, Ecca, 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 fills in both the MKB and in the northern basins is heterogeneous (Bordy et al., 2004; 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.

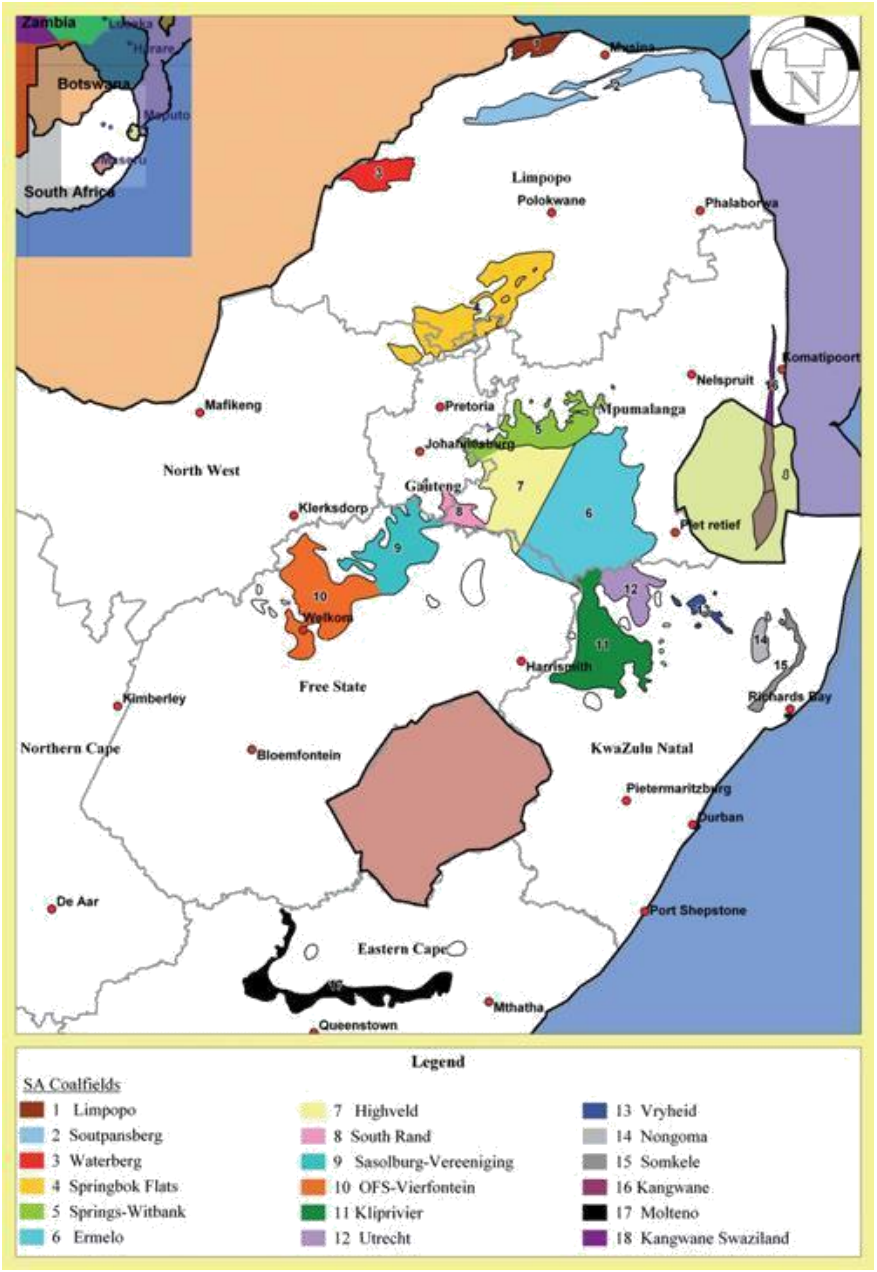


Figure 13: Coalfield map of South Africa.

Ecca Group

In the 1970s several 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

Ermelo coalfield

The Emerlo Coalfield's southeasterly region contains the project area. The Carolina Dirkiesdorp, Hendrina, Breyten, Davel, Ermelo, and Morgenzon districts in the southeast Mpumalanga Province are home to the Ermelo Coalfield. It covers an area of around 11,250,000 acres and stretches for about 75 km east to west and 150 km north to south. The sub-outcrop of the coal-bearing strata against pre-Karoo basement determines the northern and eastern limits of the Ermelo Coalfield. The Ermelo Coalfield borders the Witbank and Highveld coalfields to the west and the Klip River and Utrecht coalfields of KZN to the south. There is a weak (thin) coal development area between Ermelo and the Highveld Coalfield's westernmost portion, where no coal mining is done

11.3 Soils

According to the soil map (see Figure 15), the mining permit area is largely covered with Association of soil Classes 1 to 4: Undifferentiated structureless soils.

Association of Classes 1 to 4: Undifferentiated 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.

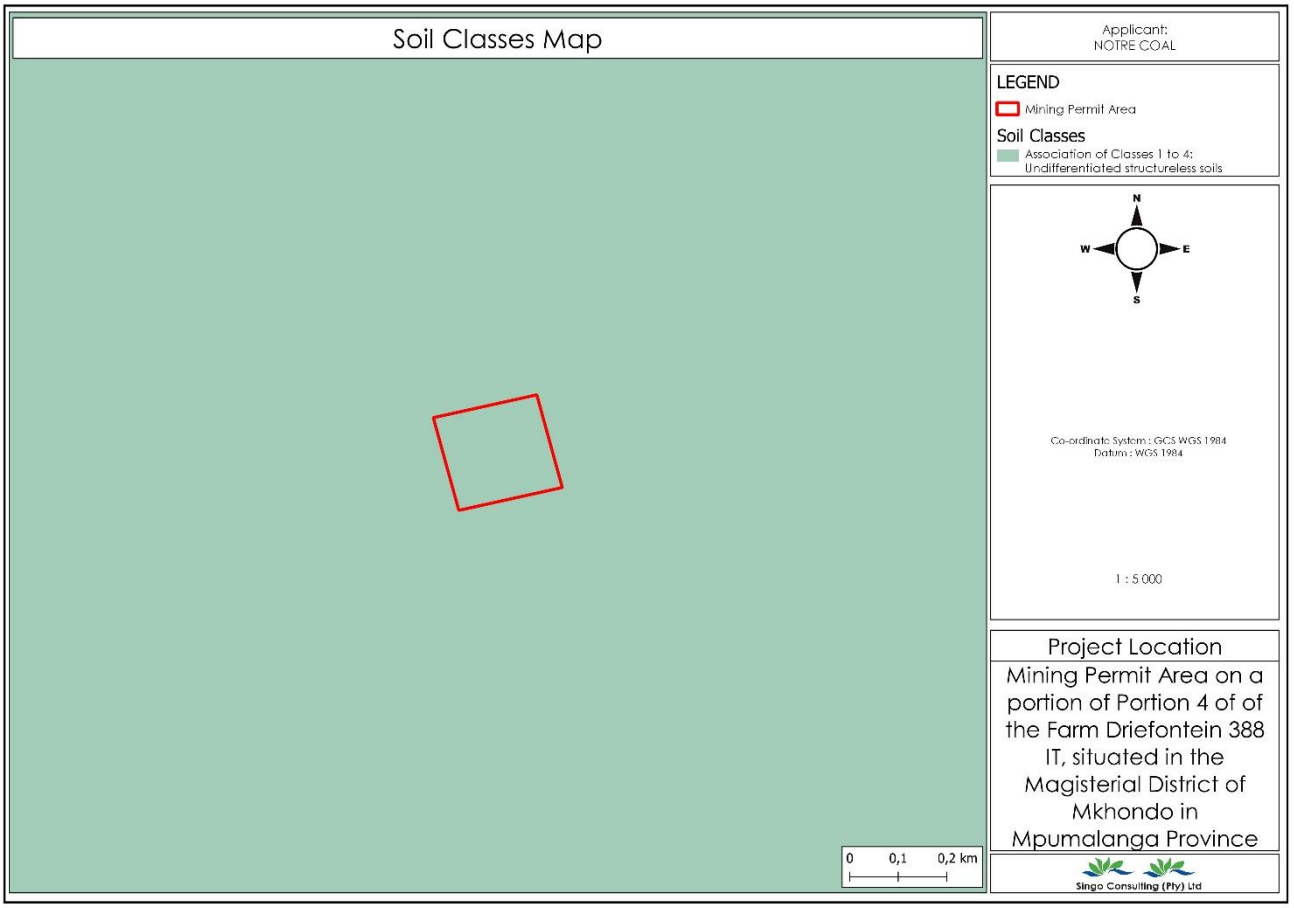


Figure 14: Soil classes map for the project area (Singo Consulting GIS Team, 2022).

Mining operations have the potential to damage soil resources through physical loss of soil and/or the contamination of soils, thereby impacting on the soils ability to sustain natural vegetation and altering land capability. Due to the increased activity of trucks and heavy machinery the possibility of soil contamination by leaking oils and fuels is increased. The contamination of soils may contribute to the contamination of surface and groundwater resources. Increased soil erosion can be caused by a loss in vegetative cover resulting in increased water runoff. This is especially likely to occur on sloping terrain. Impacts on soil structure can result in changes to soil drainage,

increasing runoff and erosion, and may also result in further potential knock on effects impacting on surface and underground water resources. Loss of the topsoil resource reduces chances of successful rehabilitation and restoration. The above impacts on soil resources will be negative but site specific. Following the potential impacts on the soils, mitigation measures have been proposed in the EMPr. Although the impacts cannot be completely avoided, they can be controlled and mitigated, and their significance will remain low to moderate if and when mitigation measures are implemented.

Figure 15: Soils observed (Site Visit, 2022)

11.4 Land Capability

The land capability is classified into arable. In this classification the arable soils are grouped according to their potentialities and limitations for sustained production of the common cultivated crops that do not require specialized site conditioning or site treatment. Nonarable soils (soils unsuitable for long time sustained use for cultivated crops) are grouped according to their potentialities and limitations to produce permanent vegetation and according to their risks of soil damage if mismanaged. The land capability of the proposed area is classified as an arable land. Arable land is any land capable of being ploughed and used to grow crops.

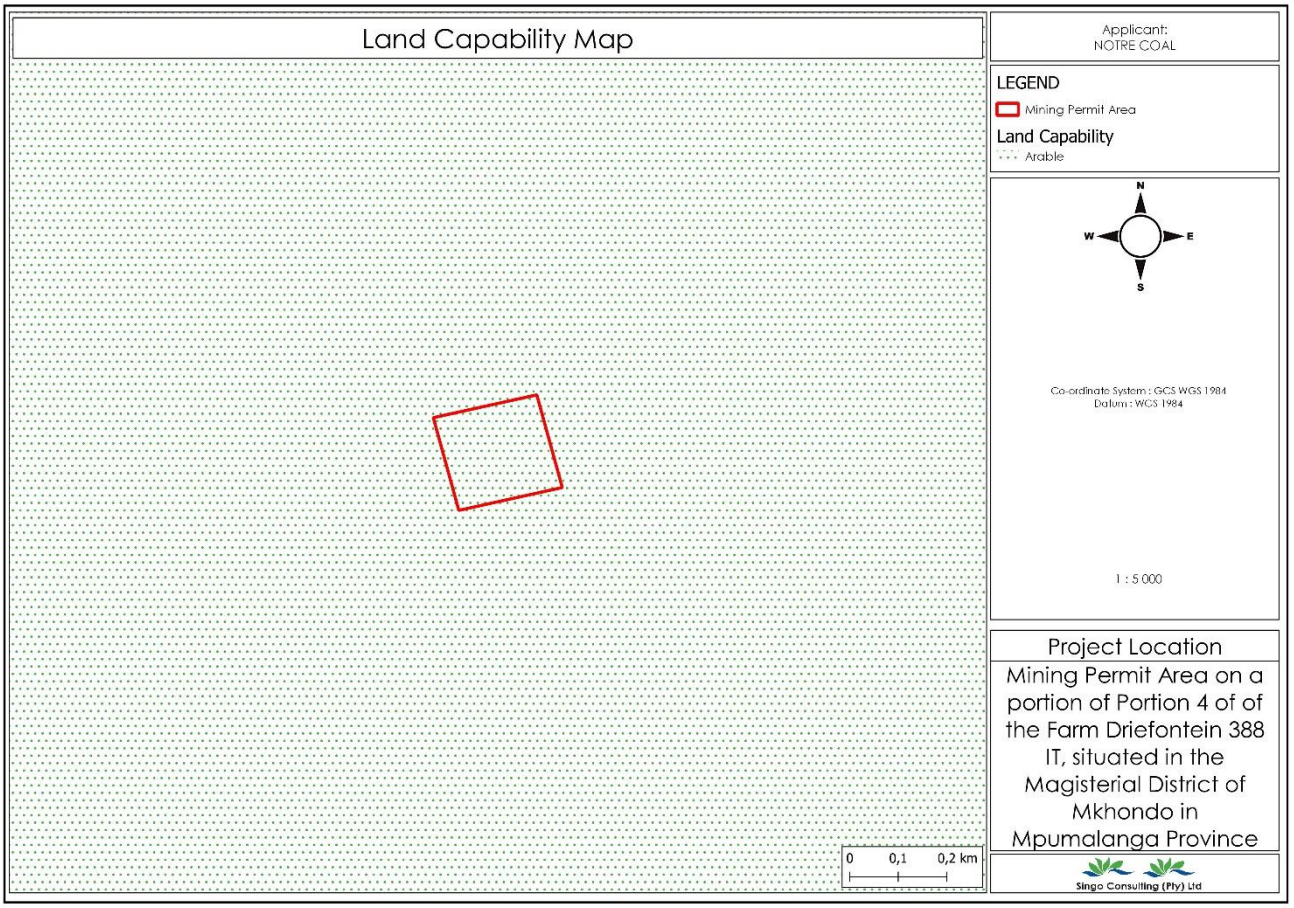


Figure 16: Land Capability map of the project area (Singo Consulting GIS Team, 2022)

11.5 Climate

Mkhondo has a Temperate highland tropical climate with dry winters climate (Classification: Cwb) The climatic conditions described in this section are based on the W5E009 weather station, which is the closest to the project site, at about 18 km southwest.

11.5.1 Temperature

Over the course of the year, the temperature typically varies from 0,1°C to 2°C.Table 9 below shows the monthly minimum, maximum and average temperatures for January 2016 - December 2018. December is the hottest month with temperatures reaching up to 32°C, followed by the months October, November and January ranging from 30°C – 30,5 °C. July is the coldest month, with temperatures as low as 0.1°C.

***Table 10*: Monthly minimum, maximum and average temperatures for January 2016 - December 2018.**

MONTHLY MINIMUM, MAXIMUM AND AVERAGE TEMPERATURES (°C) 2016 – 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Minimum	8.8	10.8	8.6	5.6	3.2	1.6	0.1	1.1	3.6	3.1	5.0	9.4
Maximum	30.5	29.4	27.8	27.1	21.2	19.4	19.0	23.1	27.2	30.2	30.0	32.0
Average	19.2	19.4	18.8	16.3	12.2	10.2	9.4	12.1	15.8	16.1	18.0	20.0

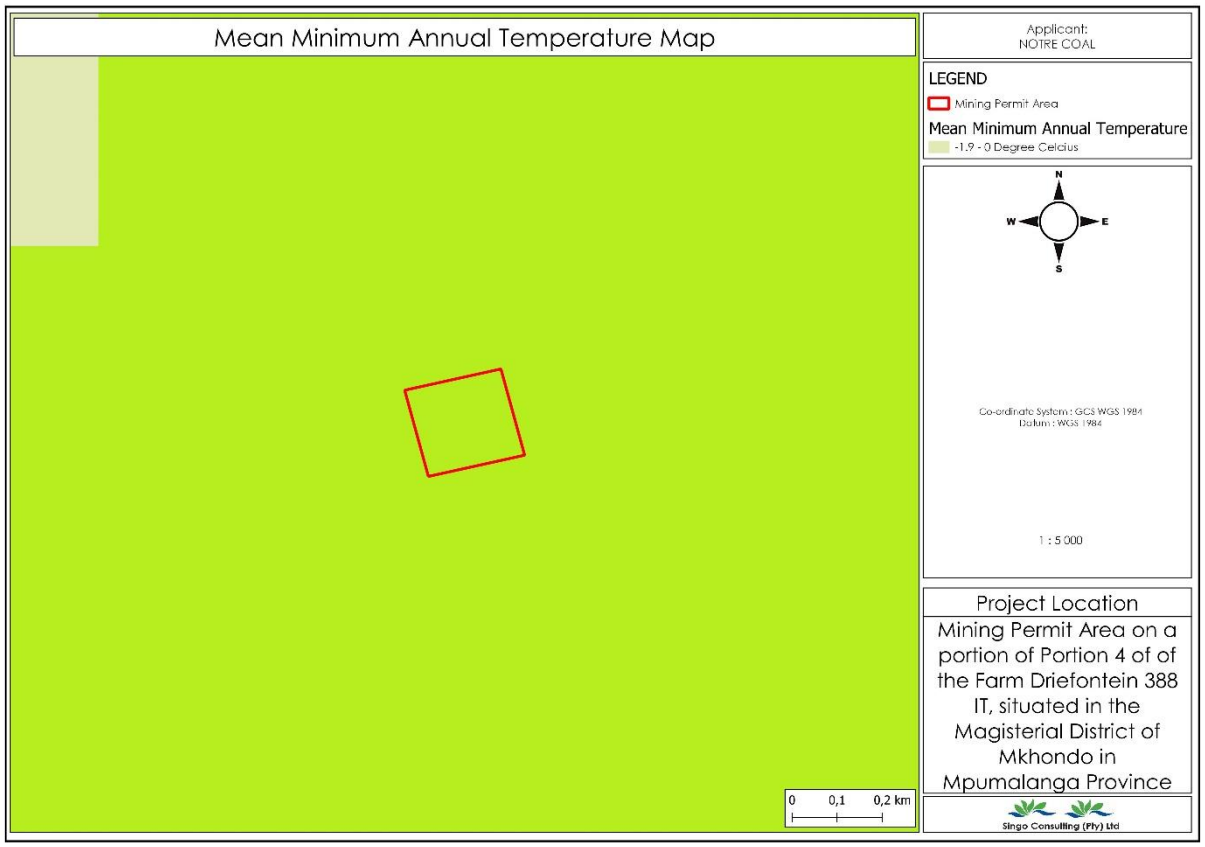


Figure 17: Mean annual Temperature for the project area (Singo Consulting GIS Team, 2022)

11.5.2 Rainfall

In Mkhondo, the wet season is comfortable and partly cloudy, and the dry season is cool and mostly clear. The monthly rainfall in the project region varies greatly depending on the season. The monthly rainfall in the project region varies greatly depending on the season. The average annual rainfall ranges from 801 to 1000mm, with January having the greatest rain and July receiving little to none. Figure 28 shows the monthly rainfall and evaporation for the project area, whereas Figure 27 shows the mean yearly rainfall.

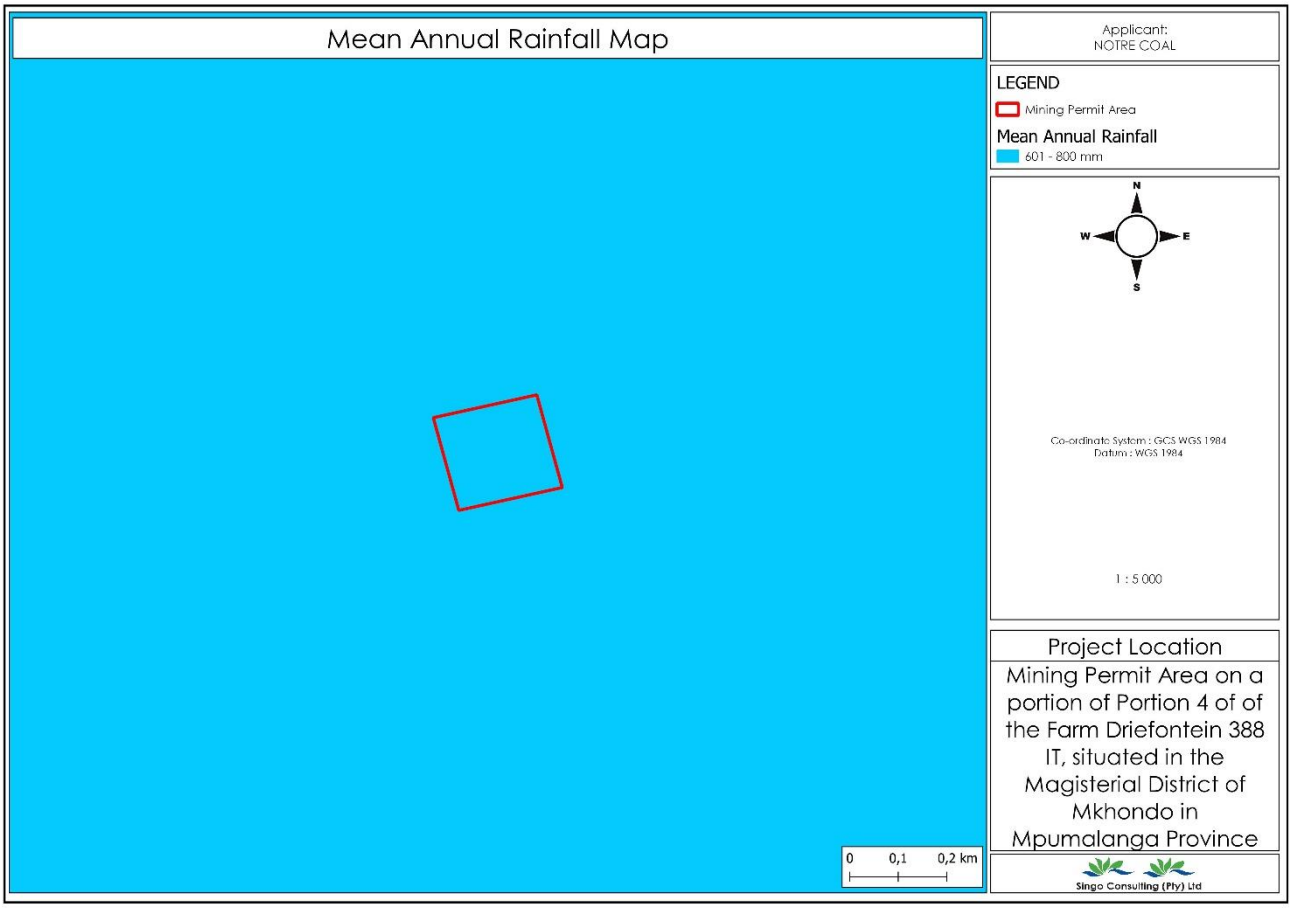


Figure 18: Mean annual Rainfall for the project area (Singo Consulting GIS Team, 2022)

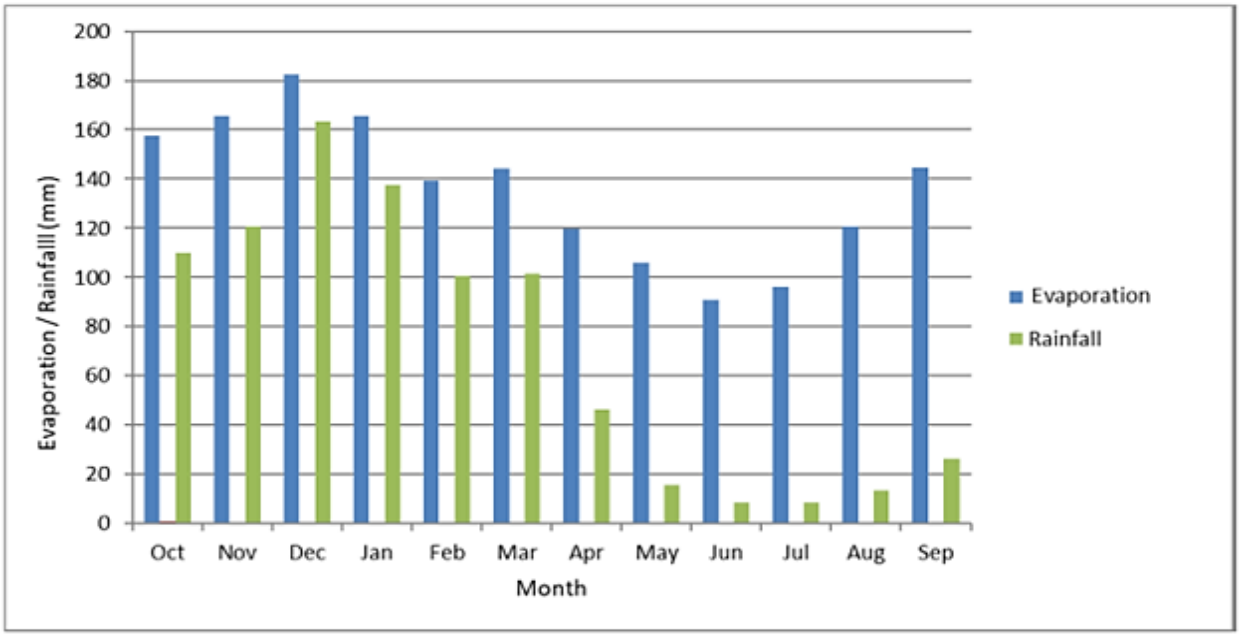


Figure 19: Monthly rainfall and evaporation, from saws station W5E009.

11.5.3 Wind

From January 2016 to December 2018, the prevailing wind direction was 13.8 percent west and 11% east-northeast; wind speeds with calm circumstances were usually moderate to high, as illustrated in Figure 29.

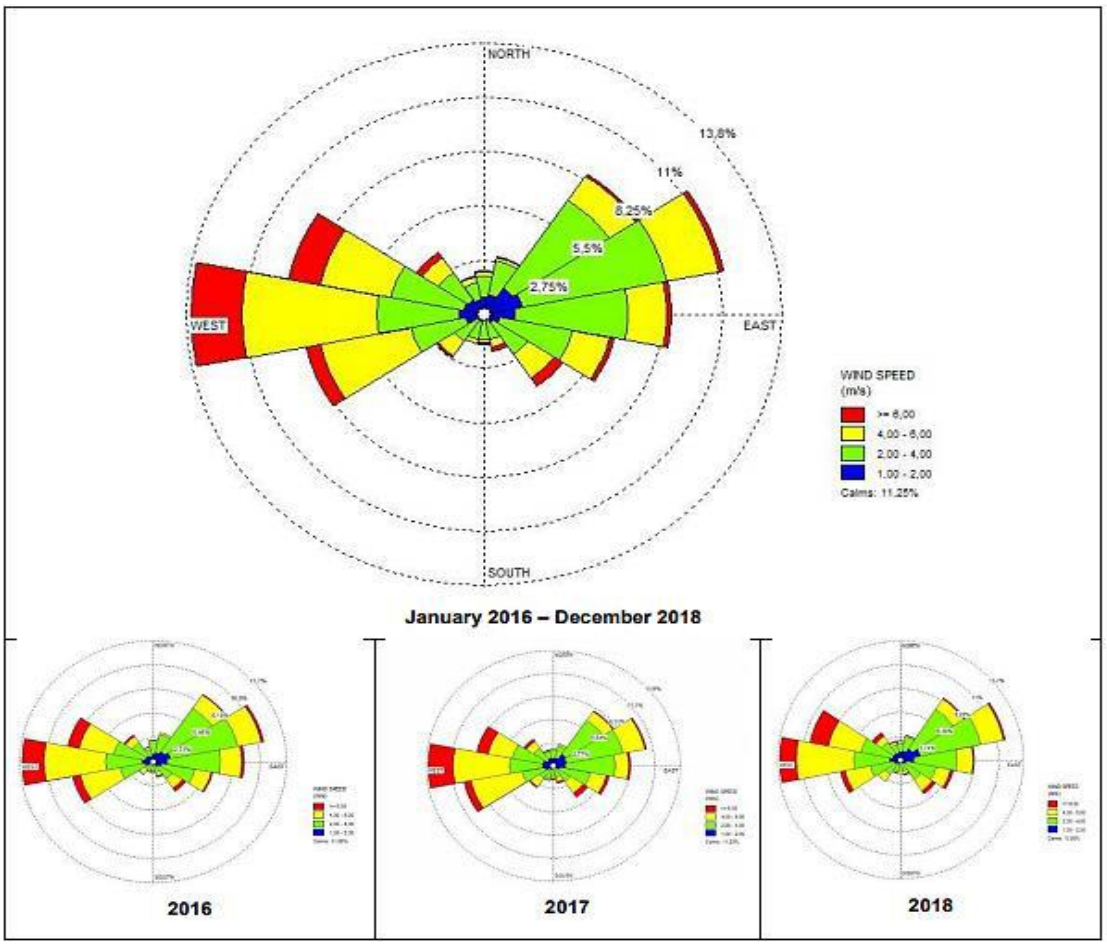


Figure 20: Windrose data from Jan 2016-Dec 2018

11.6 Environmental Sensitivity

Table 8 summarises the environmental sensitivities identified for the proposed project. These sensitivities are indicative only and must be verified on-site by a suitably qualified person before the specialist assessments identified can be confirmed.

According to the site visit conducted on the 09th of September 2022, the area of interest does not have any sensitive features except for water bodies that are located 100m away from the proposed project area. The area was burnt and there were cattle grazing around.

Table 11: Proposed mining permit area environmental sensitivity.

Theme	Very high	High	Medium	Low

	sensitivity	sensitivity	sensitivity	sensitivity
Agriculture		X		
Animal species			X	
Aquatic biodiversity	X			
Archaeological and cultural heritage				X
Civil aviation				X
Defence				X
Palaeontology	X			
Plant species			X	
Terrestrial biodiversity	X			

Figure 21: Proposed project area. (Singo Consulting (Pty) Ltd , 2022)

11.7 Surface and Ground water

The proposed Coal mining permit area falls within the W51B quaternary catchment in the Inkomati-Usuthu Water Management. The identified water bodies within the mining permit area and in the close proximity of the project include the channeled valley-bottom wetland and a non-perennial river. The non-perennial river is situated `100m southern side and western side of the proposed project

and is flowing towards the Heyshope Dam. Figure 3 below is a hydrological map illustrating Seep wetland and non-perennial river

10.8 catchment and water management area

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). 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

the area falls within the Olifants Water Management Area (WMA). The quaternary catchment is the W51B. The WRC 2012 study, presents hydrological parameters for each quaternary catchment including area, mean annual precipitation (MAP) and mean annual runoff (MAR).

Table 12: Quaternary Information Data

Quaternary Catchment	Water Management Area	S-Pan Evaporation		Rainfall		Catchment Area (KM2)
		Evaporation Zone	MAE (mm)	Rainfall Zone	MAP (mm)	
W51B	Inkomati-Usuthu	13A	1400	W5A	903	678

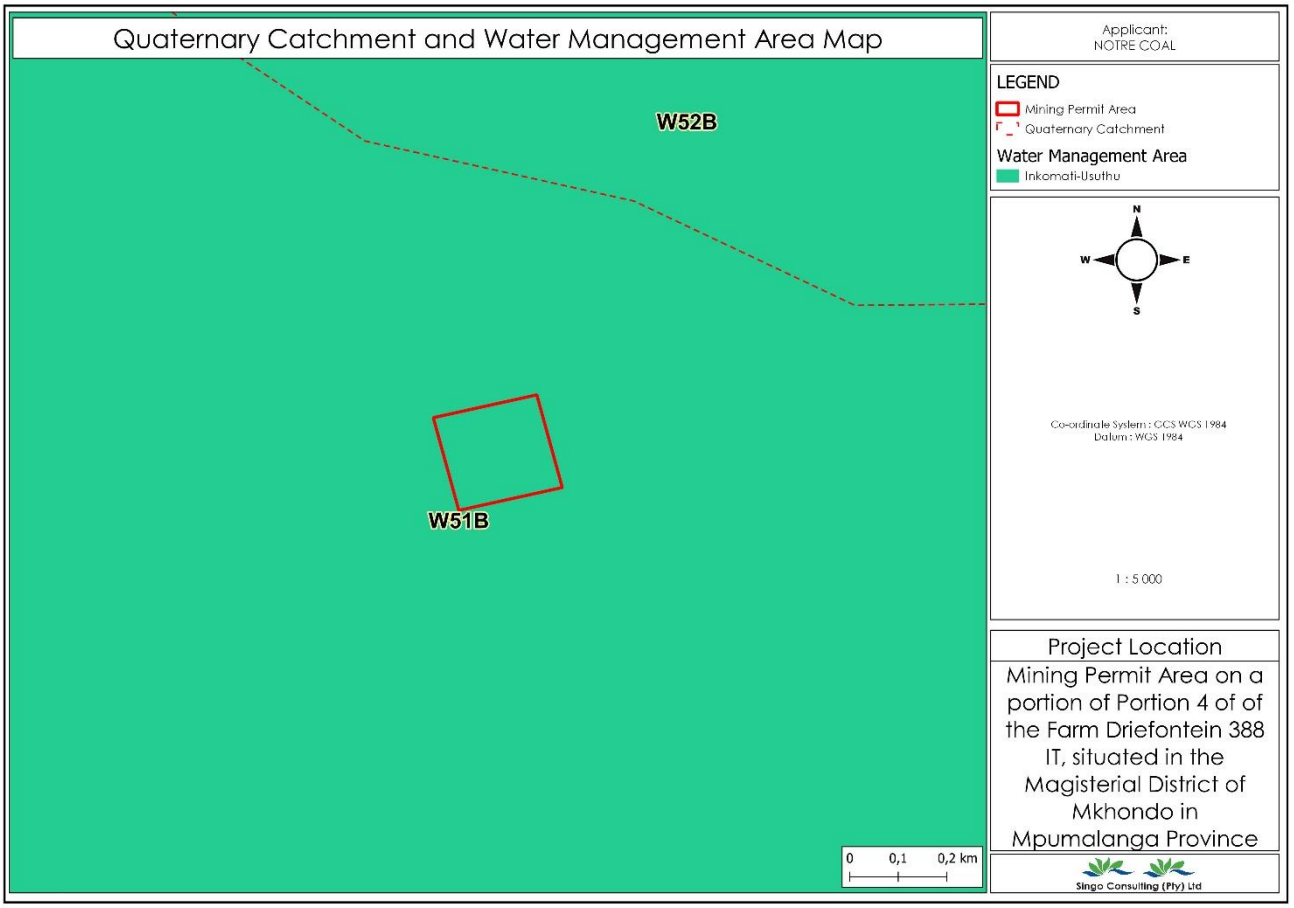


Figure 22: Quaternary Catchment and Water Management Areas (Singo Consulting GIS Team, 2022)

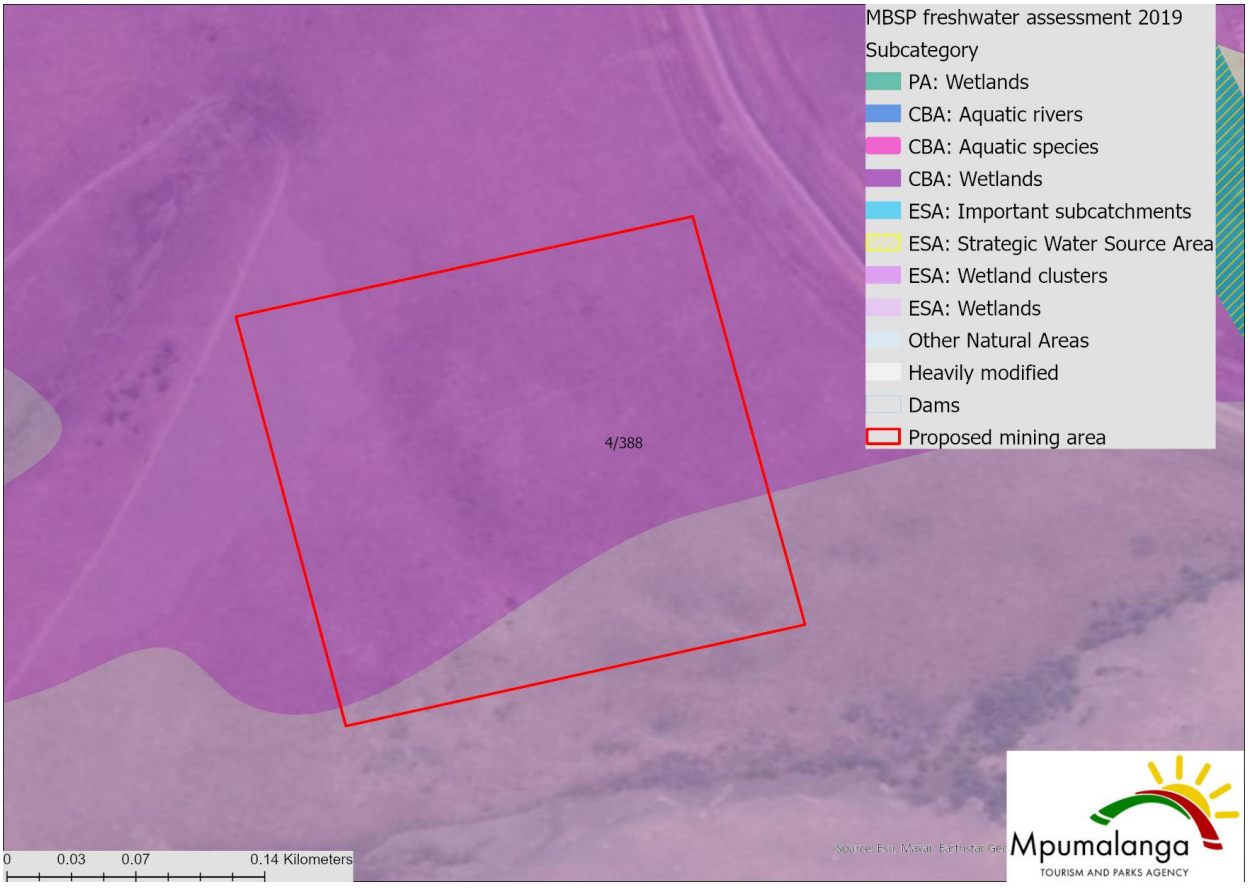


Figure 23: MBSP Freshwater assessment 2019 (MTPA, 2022)

According to the topology map below, the proposed project area is situated on a flat slope with the topology ranging from 1360 m to 1440 m above mean sea level. On the site visit conducted on the 9th of September 2022, confirms the map produced by the GIS Technician (see figure 25)

Site survey was conducted as part of environmental assessment to take pictures of the current environmental condition before the commencement of mining. Though there are no waterbodies found on site, the surface topography is scattered with noticeable dirty water supply trench within the project area.

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.

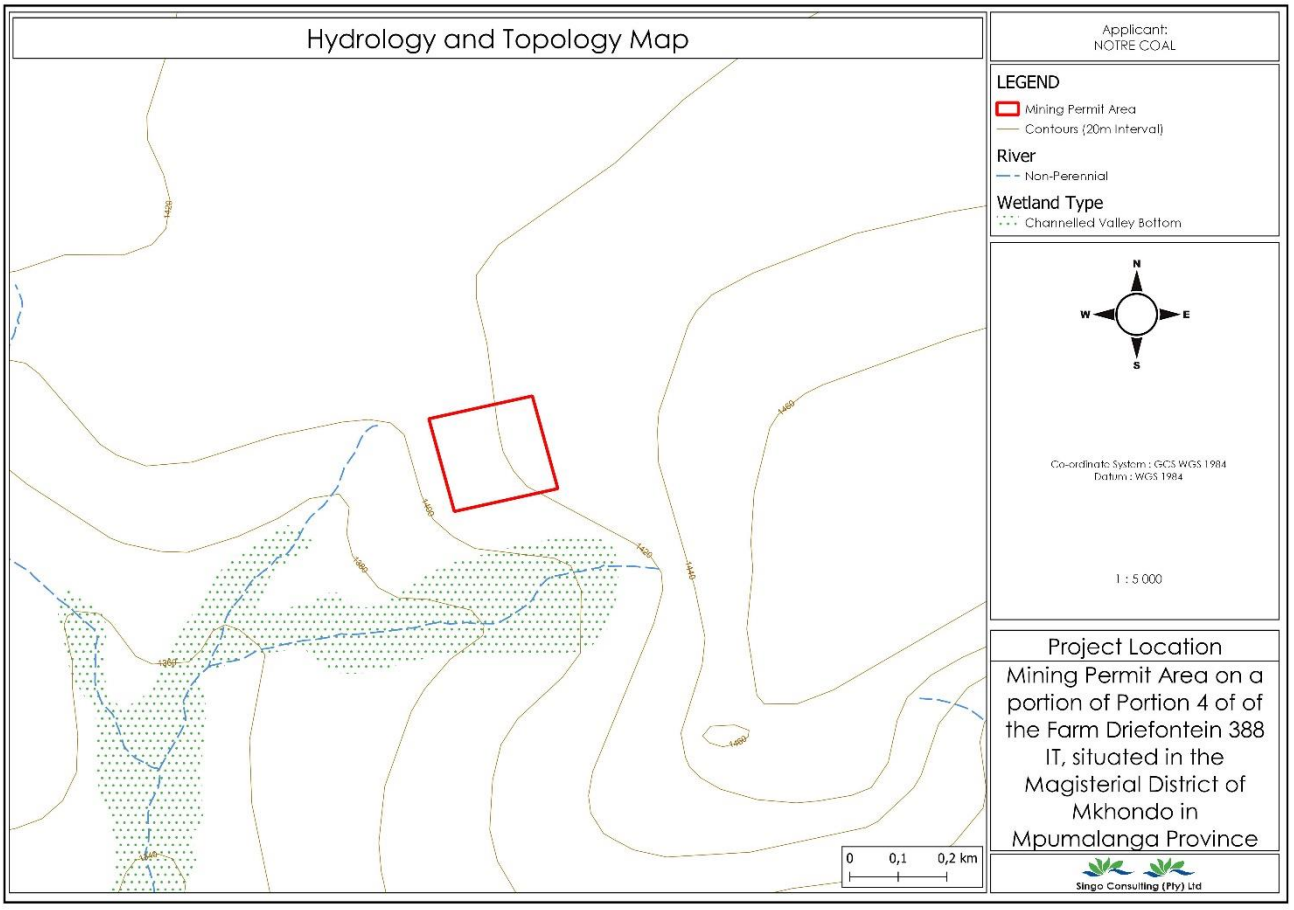


Figure 24: Hydrology & topology map of the proposed project area (Singo Consulting GIS Team, 2022)

The conceptual hydrogeological model of the area is based on the generally accepted model for the Mpumalanga coal fields. In this model three principal aquifers are identified: the weathered aquifer; the fractured Karoo aquifer; and the fractured pre-Karoo aquifer (Hodgson & Krantz, 1998). The Karoo rocks are not known for large scale development of aquifers, but occasional high yield boreholes can be present. The aquifers that occur in the area can therefore be classified as minor aquifers (low yielding), but of high importance (Parsons, 1995) and are understood to have a low

to medium development potential, mostly used for small-scale domestic purposes or occasionally for large-scale irrigation. Three distinct superimposed groundwater systems are present within the area (Hodgson and Krantz, 1998, Woodford and Chevallier, 2002) and can be classified as:

- The upper weathered Ecca aquifer (shallow, intergranular type aquifer formed in the weathered zone of the Karoo sediments; can locally form a perched aquifer on top of fresh bedrock);
- The fractured aquifers within the unweathered, fractured Ecca sediments; and
- The aquifer below the Ecca sediments (deeper aquifer formed by fracturing of older Karoo sediments and dolerite intrusions).

These types of groundwater systems are common to the groundwater regime in the Karoo environment. The systems do not necessarily occur in isolation and often form a composite groundwater regime that is comprised of one, some, or all of the systems. Good hydraulic connectivity often exists between the two top aquifers, and these have consequently been treated as a single unit in the modelling of groundwater flow-related systems. In general, the shallow aquifer depth ranges between five to 20 m overlying the fractured rock formations throughout the region. The shallow primary aquifer is understood to be highly susceptible to pollution such as mining operations in the area as the pollutants travel shorter distance to reach the aquifer system (Hodgson and Krantz, 1998).

Figure 25: Dirty water trench on-site (Site Visit, 2022)

11.8 Biodiversity

According to the terrestrial biodiversity map produced by GIS specialist, it shows that the proposed area falls within Other Natural Areas and Moderately modified-Old land. Other Natural Areas are natural areas which are not identified as CBAs or ESAs but which provide a range of ecosystem services from their ecological infrastructure. Moderately modified-Old and are areas were modified within the last 80 years but now abandoned including old mines and old cultivated land.

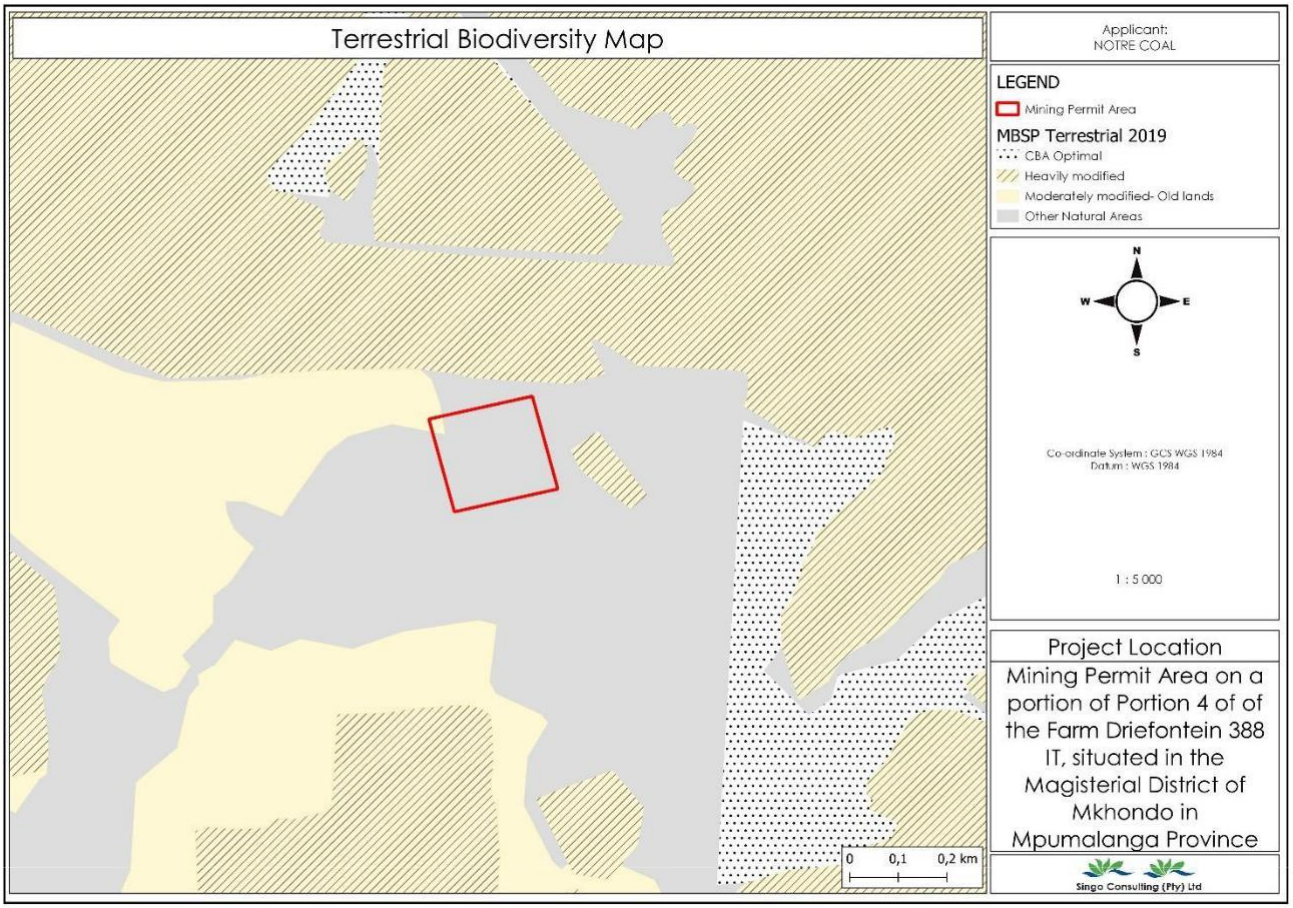


Figure 26: Terrestrial Biodiversity map for the proposed project area(Singo Consulting GIS team, 2022)

The vegetation of the proposed project area is dominated by Northeastern Mountain Grassland (see Figure 28). The grassland is dominated by Indigofera Hybrida. The distribution of this vegetation is controlled by rainfall on the cold, frosty, eastern Mpumalanga highveld together with sandy soils. It is generally very suitable for crop production while areas of natural vegetation are heavily grazed by cattle.

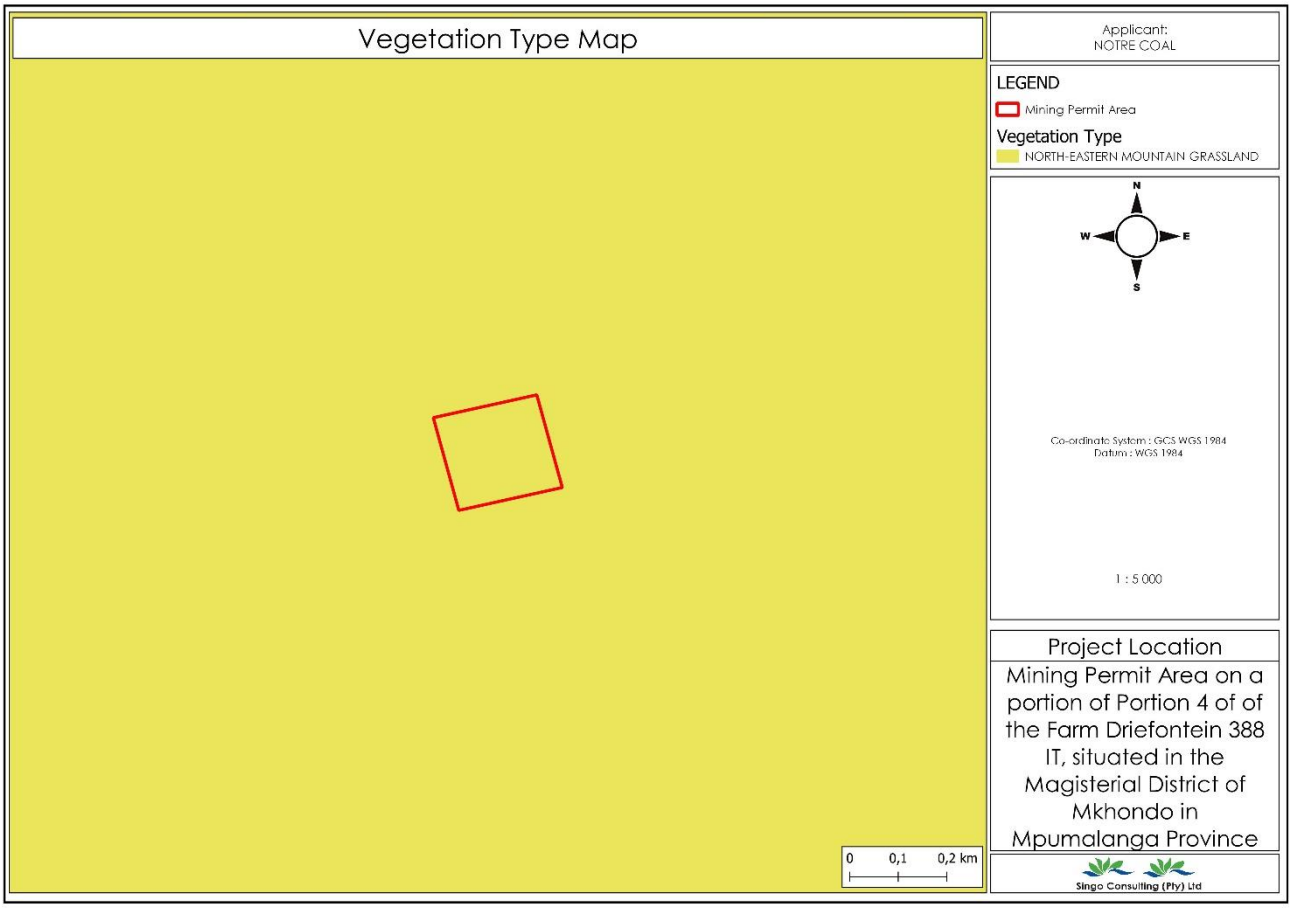


Figure 27: Vegetation type map of the proposed project area (Singo Consulting GIS Team, 2022)

Figure 28: Visible vegetation of project area, *(Singo Consulting (Pty) Ltd , 2022)*

11.8.1 Plant species of conservation concern

The screening report shows that the proposed project area is of low sensitivity.

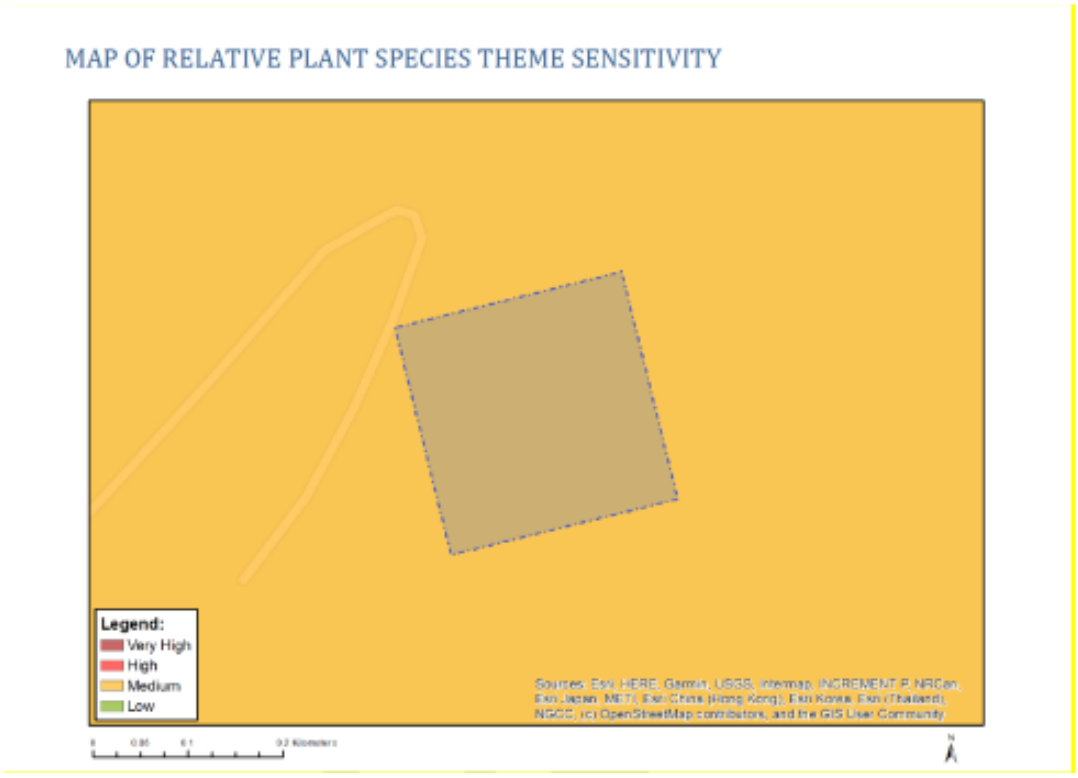


Figure 29: Map of relative plant species theme sensitivity (source, screening report)

11.8.2 Mammals

During the desktop study, no red data mammal species were found on the proposed site. The screening report shows that the proposed project area is of medium sensitivity with the following mammal species: Eudopotis Senegalensis, Ourebia Ourebi Ourebi, Clonia Lalandei, Doratogonus praealtus. During site assessment all the medium sensitivity mammal species were not observed but cow dung was observed during site visit.

Figure 30 : Cow dung observed on site (Singo Consulting (Pty) Ltd, 2022)

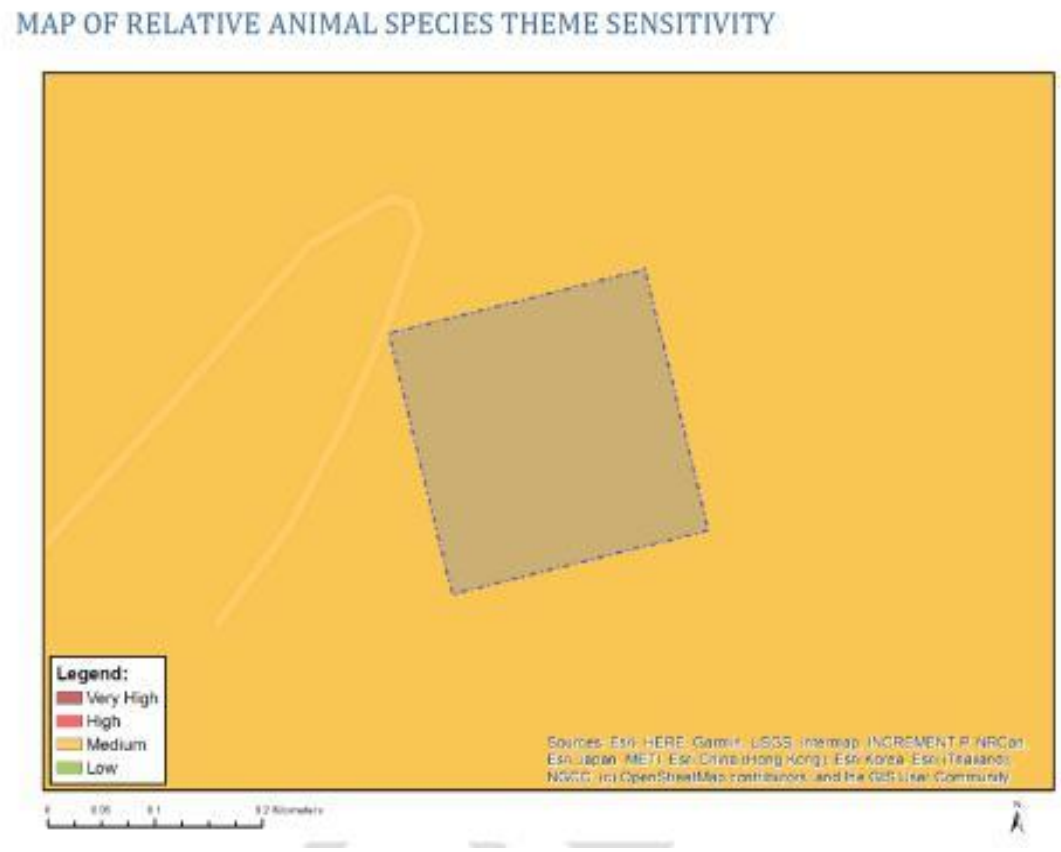


Figure 31: Map of relative animal species theme sensitivity (source, screening report

11.8.3 Birds

Birds are considered good ecological indicators, since their presence or absence indicate whether the ecosystem is functioning properly or not. During ground truthing, no medium sensitivity or vulnerable bird species observed onsite. Bird communities and ecological condition are linked to land cover, as the types of bird species in the area change when land cover changes. Habitat-specific species are sensitive to environmental change, with habitat destruction being the leading cause of species decline worldwide. It is widely accepted that vegetation structure, rather than the actual plant species, influences bird species distribution and abundance (Harrison et al., 1997).

Table 13: Loss of vegetation and natural habitat during mining

Impact phase	**Mining phase**				
Possible impact	Loss of vegetation and natural habitat				
Type of impact	Direct and indirect impact				
Rating criteria	**Extent**	**Duration**	**Magnitude**	**Probability**	**Significance**
Calculation	3	5	8	5	High (80)
Can the impact be reversed					No
Will impact cause irreplaceable loss of resources					Yes
Can impact be avoided, managed, or mitigated					Yes
Impact mitigation measures • **Limit vegetation clearing to what is necessary for mining activities.** • **Carry out a pre-vegetation clearing walk to identify SCC which might be present onsite.** • **Prioritise development in low sensitive/already disturbed areas.** • **Offer environmental awareness and training before mining commences.** • **Implement a biodiversity action plan prior to mining and ensure adherence thereto.** • **Fence-off mining site to demark working extent and prevent mining impacts on biodiversity.** • **Minimise areas affected during mining and establish buffer zones.** • **Use available farm roads to avoid unnecessary disturbance of natural and indigenous vegetation.** • **Supervise (to be done by an ecologist) the rescue operation to ensure its success.** • **Disturbed areas must be rehabilitated with indigenous plants as soon as mining concludes.**					

Table 14: Introduction of alien invasive species during rehabilitation.

Impact phase	Rehabilitation phase after mining activities				
Possible impact	Introduction of alien invasive species				
Type of impact	Direct and indirect impact				
Rating criteria	**Extent**	**Duration**	**Magnitude**	**Probability**	**Significance**
Calculation	2	5	8	4	Medium (60)
Can the impact be reversed					No
Will impact cause irreplaceable loss of resources					Yes
Can impact be avoided, managed, or mitigated					Yes
Impact mitigation measures • Establish buffer zones and implement strict measures to prevent mining in these zones. Do not clear vegetation in buffer zones. • The best mitigation measure for alien and invasive species is early detection and eradication of these species using a monitoring programme. • An alien invasive management programme should be developed and implemented to control alien invasive species. • Disturbed area should be rehabilitated with indigenous plant species to avoid colonisation of the area by invasive species.					

Table 15: Impacts of mining on birds and its associated roosting site.

Impact phase	Mining phase				
Possible impact	The fragmentation, clearing, and alteration of natural habitat have a huge impact on birds breeding and roosting sites.				
Type of impact	Direct Impact				
Rating criteria	**Extent**	**Duration**	**Magnitude**	**Probability**	**Significance**
Calculation	3	5	8	4	High (64)
Can the impact be reversed					No
Will impact cause irreplaceable loss of resources					Yes
Can impact be avoided, managed, or mitigated					Yes
Impact mitigation measures • Ensure that there is no-alteration of vegetation patches that will provide space for breeding and roosting site for birds. • Ensure that there is no disturbance to bird species, nests, breeding sites if identified and create artificial site for birds.					

- Prohibit activities like trapping, hunting, and killing of birds onsite during mining.
- ECO to conduct regular site inspections and remove any snares erected onsite.
- A conservation-orientated plan should be developed personally for contractors so that there will be a penalty clause for non-compliance.

Table 16: Loss of mammals due to mining.

Impact phase	Mining phase				
Possible impact	Loss of mammals due to habitat fragmentation and degradation				
Type of impact	Direct Impact				
Rating criteria	**Extent**	**Duration**	**Magnitude**	**Probability**	**Significance**
Calculation	3	5	8	4	High (64)
Can the impact be reversed					No
Will impact cause irreplaceable loss of resources					Yes
Can impact be avoided, managed, or mitigated					Yes

Impact mitigation measures

- Pre-mining walk to be carried out onsite to ensure the absence of mammal habitats.
- Hunting weapons are prohibited onsite.
- Dogs are prohibited on the worksite as they are threats to wild animals.
- A low-speed limit should be enforced onsite to reduce animal-vehicle collisions
- No animals should be intentionally killed/poached if identified, and hunting is not permitted on site.
- Relocate any threatened mammal species identified before commencement of mining.
- Offer environmental induction for all employees to raise awareness on the value of wild animals (if identified) and the importance of their conservation.
- ECO to conduct regular site inspections and remove any traps erected onsite.
- Contractual fines to be imposed and contract employees to be immediately dismissed if found attempting to snare or otherwise harm faunal species identified.
- Ensure that sensitive mammal habitats like drainage lines and wetlands area avoided.

Table 17: Impacts of the mining on sensitive areas

Impact phase	Mining phase				
Possible impact	Destruction of streams and wetlands and its associated vegetation				
Type of impact	Direct Impact				
Rating criteria	**Extent**	**Duration**	**Magnitude**	**Probability**	**Significance**

Calculation	3	5	8	5	High (80)
Can the impact be reversed					No
Will impact cause irreplaceable loss of resources					Yes
Can impact be avoided, managed, or mitigated					Yes

Impact mitigation measures

- No disturbance in drainage lines, rivers, and wetlands, including mining across wetlands and rivers, fill dumping, road construction, and all forms of temporary disturbance.
- Storm water and erosion control measures to be implemented and monitored as per EMPr to prevent siltation or erosion of sensitive environment identified onsite.
- Do not lower the original stream bed/profile of the wetland, as this may result in scouring in an upstream direction and further alteration of bed conditions.
- Prioritise development in low sensitive/already disturbed areas.
- Immediately and appropriately clean any accidental chemical, fuel, and oil spill from machines.
- Store all materials appropriately to prevent contamination of sensitive sites.

11.8.4 Results of the Archaeological/Heritage Assessment Study

The main cause of impacts to archaeological sites is direct, physical disturbance of the archaeological remains themselves and their contexts. It is important to note that the heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position.

The severe impacts are likely to occur during clearance at the proposed mining development site; indirect impacts may occur during movement of mining and construction vehicles and machinery. The excavation for foundations and fence line posts will result in the relocation or destruction of all existing surface heritage material. Similarly, the clearing of access roads will impact material that lies buried below the surface. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to any mining activities at the site. It is important to note, that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed mine site.

Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during mining, construction of site offices, clearance of the site and actual mining. The purpose of the AIA is to assess the sensitivity of the area in terms of archaeology and to avoid

or reduce the potential impacts of the proposed development by means of mitigation measures (see appended Chance Find Procedure). The study concludes that the impacts will be negligible since the site did not yield any confirmable archaeological remains. The following section presents results of the archaeological and heritage survey conducted within the proposed development project site.

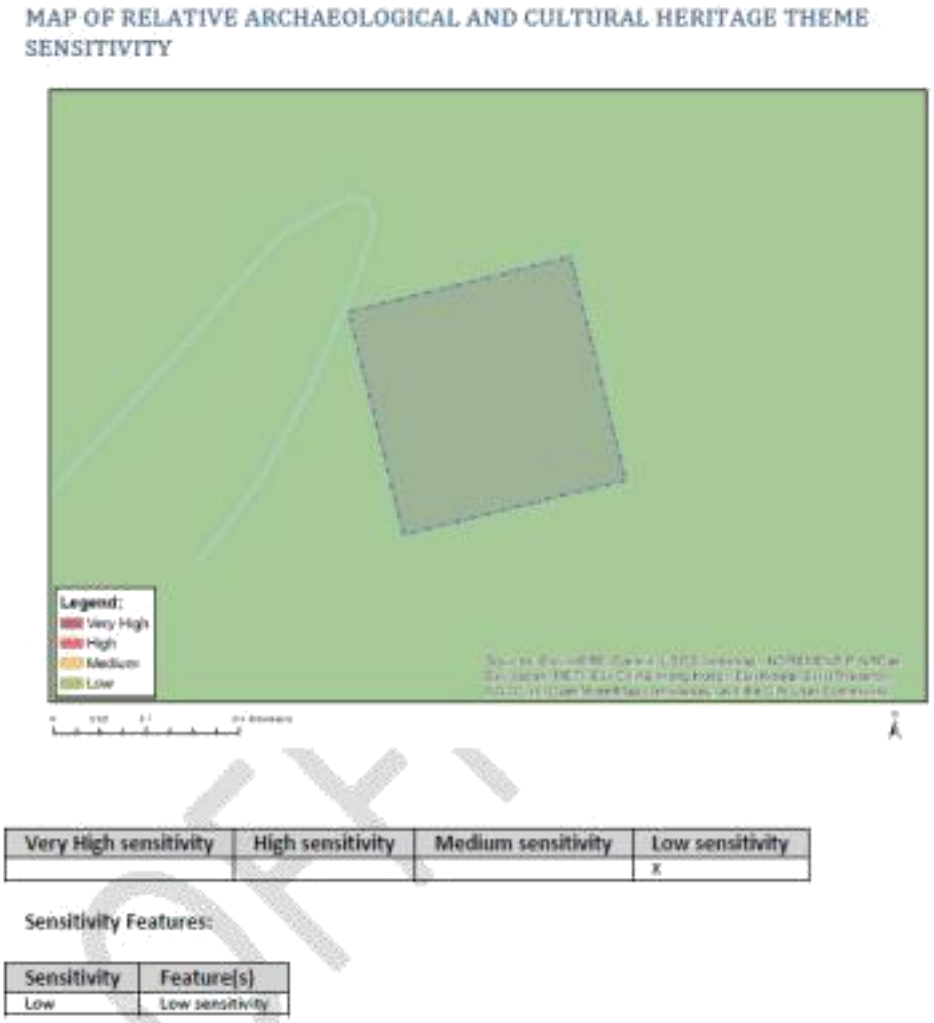


Figure 32: Map of relative animal species theme sensitivity (source, screening report)

11.8.5 Archaeological Sites

The study did not record any confirmable archaeological remains on the mining permit application site. The surface of the proposed permit area was covered by natural vegetation. The chances of

recovering significant archaeological materials were seriously compromised and limited due to agriculture activities and other destructive land use activities. Based on the field study results and field observations, it is the considered opinion of the author that the receiving environment for the proposed mining development site is low to yield previously unidentified archaeological sites during subsurface excavations and mining.

11.8.6 Buildings and Structures older than 60 years

In terms of built environment, there are no houses within the proposed area.

Burial grounds and graves

Human remains and burials are commonly found close to archaeological sites; they may be found in abandoned and neglected burial sites or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked on the surface. Archaeological and historical burials are usually identified when they are exposed through erosion, mining and earth moving activities for infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials. The site visit on the farm confirmed that there are no graves in the permit area thus no further investigation is required in this regard.

11.9 Access Road

The national roads are relatively far from the project area. The project area is easily accessible via the gravel road from a tertiary road to Driefontein village. The connecting from the unnamed road to the project area is in reasonable condition.

Figure 33: Access roads to the project area (Photograph by SC, 2022)

11.10 Description of current land uses

The current land uses within 3 km:

- Residential **(A)**
- Natural vegetation **(B)**
- Access roads **(C)**
- Powerlines **(D)**
- Plantation **(E)**
- Water body **(F)**

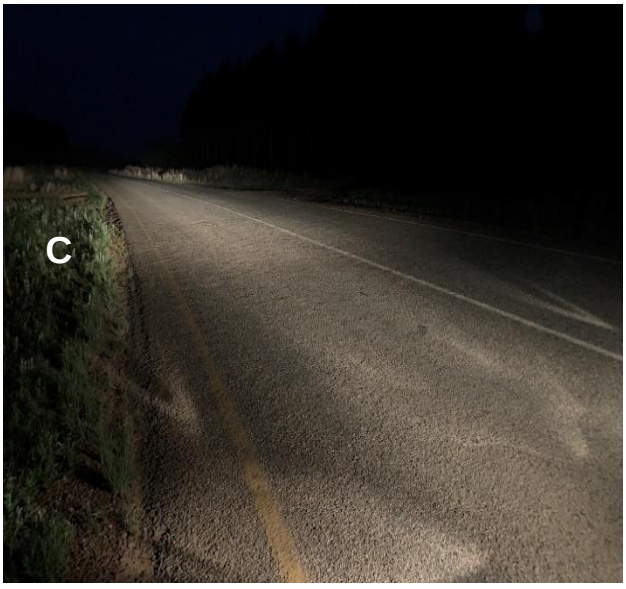


Figure 34: Current Land uses within 3km of the project area (Photograph by SC, 2022)

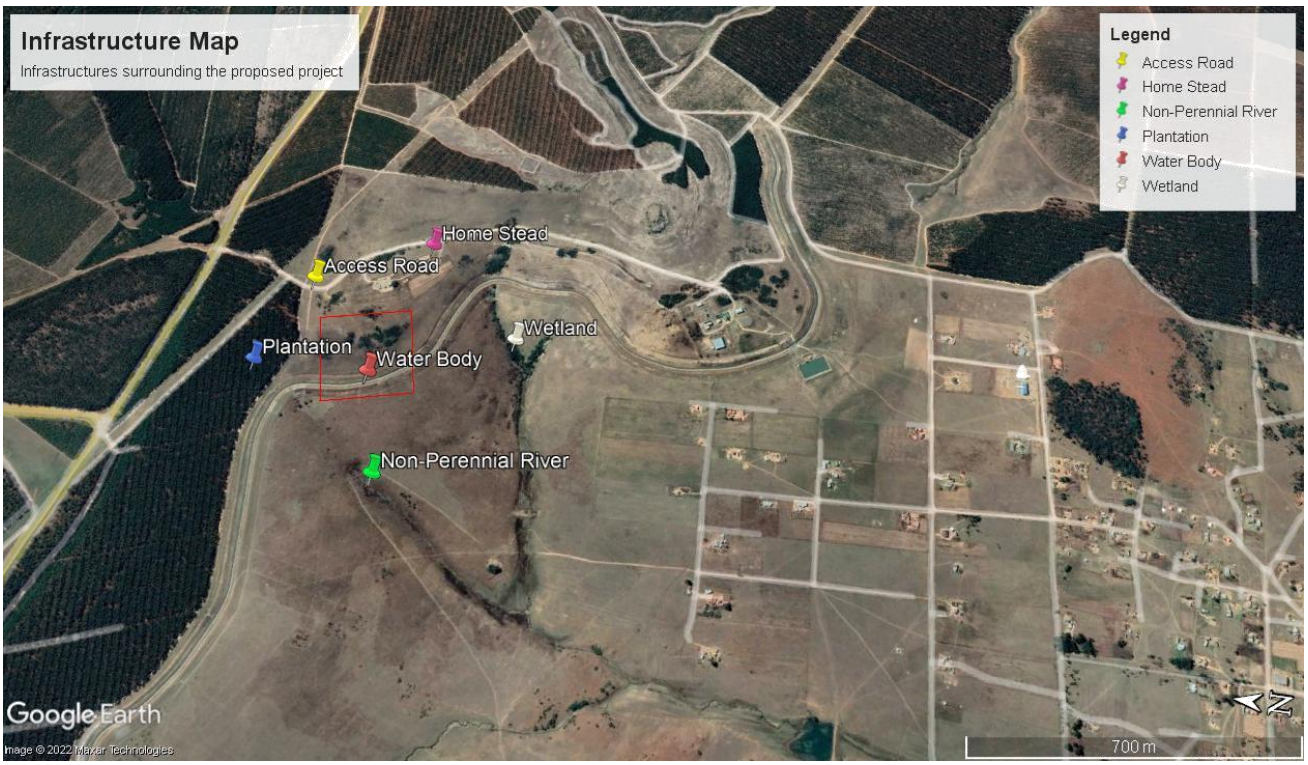


Figure 35: infrastructure map

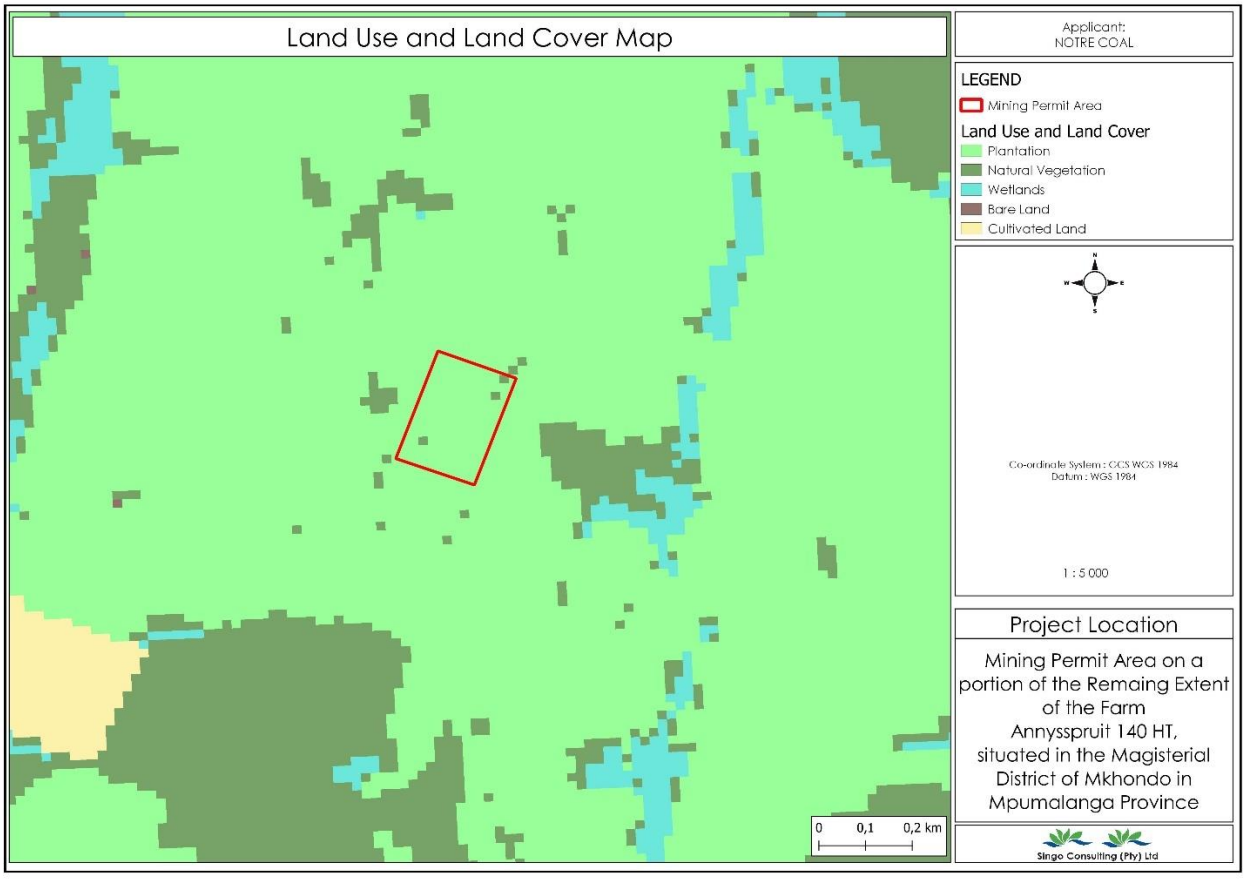


Figure 36: Land use map (Singo Consulting GIS Team, 2022)

12. IMPACTS AND RISKS IDENTIFIED, INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE 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 described in section 12 below. 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.

12.1 Stripping and stockpiling of topsoil

Significant impacts:

- Visual intrusion associated with the establishment of the mining area
- Dust nuisance caused by soil disturbance.
- Noise nuisance caused by machinery stripping and stockpiling the topsoil.
- Infestation of the topsoil heaps by weeds or invader plants.
- Loss of topsoil due to incorrect storm water management.
- Contamination of area with hydrocarbons or hazardous waste materials.

12.2 Ripping/Blasting

Significant impacts:

- Health and safety risk posed by blasting/ripping activities.
- Dust nuisance caused by blasting/ripping activities.
- Noise nuisance caused by blasting/ripping activities.

12.3 Excavation

Significant impacts:

- Visual intrusion associated with the excavation activities.
- Dust nuisance due to excavation activities.
- Noise nuisance generated by excavation equipment.
- Unsafe working conditions for employees.
- Negative impact of the fauna and flora of the area.
- Contamination of area with hydrocarbons or hazardous waste materials.

- Weed and invader plant infestation of the area.

12.4 In-pit crushing

Significant impacts:

- Dust nuisance due to the crushing activities.
- Noise nuisance generated by the crushing activities.
- Contamination of area with hydrocarbons or hazardous waste materials.

12.5 Stockpiling and transporting

Significant impacts:

- Visual intrusion associated with the stockpiled material and vehicles transporting material. Loss of material due to ineffective storm water handling
- Weed and invader plant infestation of the area due to the disturbance of the soil
- Dust nuisance from stockpiled material and vehicles transporting the material
- Degradation of access roads
- Noise nuisance caused by vehicles
- Contamination of area with hydrocarbons or hazardous waste materials

12.6 Sloping and landscaping during rehabilitation

Significant impacts:

- Soil erosion
- Health and safety risk posed by un-sloped areas
- Dust nuisance caused during sloping and landscaping activities
- Noise nuisance caused by machinery
- Contamination of area with hydrocarbons or hazardous waste materials

12.7 Replacing of topsoil and rehabilitation of disturbed area

Significant impacts:

- Loss of reinstated topsoil due to the absence of vegetation
- Infestation of the area by weed and invader plants

13. METHODOLOGY FOR THE ASSESSMENT OF THE POTENTIAL ENVIRONMENTAL, SOCIAL AND CULTURAL IMPACTS

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

The impact assessment process may be summarized as follows:

- Identification of proposed mining activities including their nature and duration.
- Screening of activities likely to result in impacts or risks.
- Utilization of the above-mentioned methodology to assess and score preliminary impacts and

risks identified.

- ❖ Inclusion of I&AP comments regarding impact identification and assessment.
- ❖ Finalization of impact identification and scoring.

The impact significance rating methodology is guided by the requirements of the NEMA 2014 EIA Regulations (as amended). Please refer to Section 16 for a full description of the impact assessment methodology. Please refer to Section 5 for a description of the activities and associated impacts.

13.1 The Impact Assessment Methodology

The subsections below present the approach to assessing the identified potential environmental impact with the aim of determining the relevant environmental significance.

13.2 Method of Assessing Impacts

The requirements of the NEMA 2014 EIA Regulations guide the impact assessment process (as amended). The Environmental Risk (ER) is calculated by comparing the Consequence (C) of each effect (which includes Nature, Extent, Duration, Magnitude, and Reversibility) to the Probability/Likelihood (P) of the impact occurring. The Environmental Risk is determined by this. Other criteria, including as cumulative impacts, public concern, and the risk of irreversible resource loss, are also considered when determining a Prioritization Factor (PF), which is then applied to the ER to establish the overall Significance (S).

13.3 Determination of Environmental Risk

The significance (S) of an impact is determined by applying a Prioritization Factor (PF) to the Environmental Risk (ER).

The Environmental Risk is dependent on the Consequence (C) of the particular impact and the Probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M) and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the Consequence of the impact is represented by:

C = (E+D+M+R) x N 4

Each individual aspect in the determination of the Consequence is represented by a rating scale as defined in ***Table 18***.

Table 18: Criteria for determination of impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years)
	3	Medium term (6-15 years)
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way)
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease) or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease)
Reversibility	1	Impact is reversible without any time and cost
	2	Impact is reversible without incurring significant time and cost
	3	Impact is reversible only by incurring significant time and cost

	4	**Impact is reversible only by incurring prohibitively high time and cost**
	5	**Irreversible Impact**

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per Table 19.

Table 19: Probability scoring.

Probability	1	Improbable (the possibility of the impact materializing is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows (Table 20):

ER= C x P

Table 20: Determination of Environmental Risk.

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Probability				

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in **Table 21**.

Table 21: Significance classes.

Environmental Risk Score	
Value	Description
< 10	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥ 10; < 20	Medium (i.e. where the impact could have a significant environmental risk),
≥ 20	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre- mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/ mitigated.

13.4 Impact Prioritization

In accordance with Appendix 3(1)(j) of the NEMA 2014 EIA Regulations (as amended) (GNR 326 of 2017), and in addition to the assessment criteria presented in the Section above, each potentially significant impact must be evaluated in terms of cumulative impacts and the degree to which the impact may cause irreplaceable resource loss.

Furthermore, public opinion and attitude about a potential development, as well as its potential consequences, must be considered during the decision-making process.

An impact Prioritization Factor (PF) will be assigned to each impact ER in order to ensure that these considerations are considered (post-mitigation). This element is used to direct the attention of the decision-making authority on the higher priority/significant issues and impacts, rather than to distract from the risk assessments. The PF will be applied to the ER score assuming that all recommended management/mitigation measures are executed.

Table 22: Criteria for the determination of prioritization.

Public response (PR)	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact

		will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criterion. The impact priority is therefore determined as follows:

Priority = PR + CI + LR

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (***Table 23***).

Table 23: Determination of prioritization factor.

Priority	Ranking	Prioritization Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67

8	Medium	1.83
9	High	2

To determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance ***(Table 24)***.

Table 24: Environmental significance rating.

Environmental Significance Rating	
Value	Description
≤ 1	Very low (impact is negligible. No mitigation required)
>1≤2	Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area).
>2≤3	Moderate negative (i.e. where the impact could influence the decision to develop in the area).
>3≤4	High negative (i.e. where the impact must have an influence on the decision process to develop in the area).
>4≤5	Very high negative (impact is of highest order possible. Mitigation is required to lower impacts to acceptable levels. Potential fatal flaw
0	No impact
>1≤2	Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area).
>2≤3	Moderate positive (i.e. where the impact could influence the decision to develop in the area).
>3≤4	
>4≤5	High positive (i.e. where the impact must have an influence on the decision process to develop in the area)

14. THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY (IN TERMS OF THE INITIAL SITE LAYOUT) AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

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

The proposed coal mine will be established on a heavily modified area with invasive plant species. The adjacent land hosts the Amandla Operation (Pty) Ltd on farm Klipspruit 138 HT located approximately 5 km away from the proposed project area, and some parts are being utilized for agricultural (grazing and plantations). Upon closure of the mining area, the land will, once again, be used for agricultural (grazing) purposes.

The existence of a new mine in the proposed area will lead to increased significant negative impacts on the receiving environment and the surrounding communities as a result of the already existing operations on site such as Amandla Operations and identified adjacent mines. The dust and noise impacts that may emanate from the mining area during the operational phase will have unacceptable negative impacts on the surrounding community if the mitigation measures proposed in this document are not implemented and managed on-site. The operation of the mine will, however, also have a number of positive impacts, such as permanent job creation for skilled, semi-skilled and un-skilled workers. The proposed mine will, therefore, contribute to upgrading/ maintaining infrastructure in and around Piet Ritief area, which will indirectly contribute to the economy of the area.

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

Regarding the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigation 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.

Visual mitigation

The risk of the proposed mining activities having a negative impact on the aesthetic quality of the surrounding environment can be reduced to medium risk through the implementation of the following mitigation measures:

- The site must be always kept neat and in good condition.
- Upon closure, the site must be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is minimal.

Dust handling

The risk of dust generated from the proposed mining activities having a negative impact on the surrounding environment can be reduced to low medium through the implementation of the

following mitigation measures:

- Dust liberation into the surrounding environment must be effectively controlled by the use of, *inter alia*, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Access road speeds must be limited to 40km/h to prevent excessive dust generation.
- Roads must be sprayed with water or an environmentally friendly dust allaying agent, that contains no PCBs (e.g., DAS products), if dust is generated above acceptable limits.
- The in-pit crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.

Figure 37:Example of a dust suppression (water spraying)

Noise handling

The risk of noise, generated from the proposed mining activities, having a negative impact on the surrounding environment can be reduced to low medium through the implementation of the following mitigation measures:

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- No loud music may be permitted at the mining area.

- All mining vehicles must be equipped with silencers and kept roadworthy in terms of the Road Transport Act.
- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity.
- Surrounding landowners must be notified, in writing, prior to blasting occasions.

Management of weed or invader plants

The risk of weeds or invader plants invading the disturbed area can be reduced to low through the implementation of the following mitigation measures:

- A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983).
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled or cut off and destroyed completely.
  - The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide.
  - The temporary topsoil stockpiles must be kept free of weeds.

Storm water handling

- The risk of contamination through dirty storm water escaping from work areas, or erosion or loss of material caused by uncontrolled storm water flowing through the mining area, can be reduced to low by implementing the following mitigation measures:
- Storm water must be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material.
- Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.
- Mining must be conducted in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions the DWS may impose:
  - Clean water (e.g., rainwater) must be kept clean and routed to a natural watercourse by a system separate from the dirty water system. Clean water must be prevented from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling/seeping into clean water systems.
  - The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).

- The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

Management of health and safety risks

The health and safety risk posed by the proposed mining activities can be reduced to low through the implementation of the following mitigation measures:

- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity,
- The surrounding landowners and communities must be informed, in writing, ahead of any blasting event.
- Measures to limit fly rock must be taken.
- Audible warning of a pending blast must be given at least 3 minutes before the blast.
- All fly rock (with diameters of 150 mm and larger) which falls beyond the working area, together with the rock spill, must be collected and removed,
- Workers must have access to the correct PPE, as required by law.
- All operations must comply with the Occupational Health and Safety Act (OHSA).

Waste management

The risk of waste generation having a negative impact on the surrounding environment can be reduced to low through by implementing the following mitigation measures:

- No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.
- Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. If emergency repairs are needed on equipment unable to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200L closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage and the polluted soil and disposing of it at a recognised facility. Proof hereof should be filed.
- Suitable covered receptacles should be available at all times and conveniently placed for waste disposal.
- Non-biodegradable refuse, such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point, collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent

refuse from being dumped on or in the vicinity of the mine area.

- Biodegradable refuse generated should be handled as indicated above.

Figure 38: Typical example of types of waste and full spill kit

Management of access roads

The risk on the condition of the roads, as a result of the proposed mining activities, can be reduced to low medium by implementing the following mitigation measures:

- Storm water must be diverted around the access roads to prevent erosion.
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent criss-crossing of tracks through undisturbed areas. Rutting and erosion of the access road as a result of the mining activities should be repaired by the applicant.

Topsoil handling

The risk of topsoil loss can be reduced to low by implementing the following mitigation measures:

- Where applicable, the first 300 mm of topsoil should be removed in strips and stored along the boundary of the mining area. Stockpiling of topsoil must be done to protect it from erosion, which includes mixing it with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles of each removed strip must be kept weed free.
- Topsoil stockpiles must be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rain/storm water.
- Topsoil heaps should not exceed 1.5 m, to preserve micro-organisms in the topsoil, which can be lost due to compaction and lack of oxygen.
- Should natural vegetation not establish on the heaps within 6 months of stockpiling, it must be planted with an indigenous grass species.
- Storm and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

Protection of fauna and flora

The risk on the fauna and flora of the footprint area, as well as the surrounding environment, as a result of the proposed mining activities, can be reduced to low by implementing the following mitigation measures:

- The site manager must ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.
- No plants or trees may be removed without the approval of the ECO.

14.2 Motivation where no alternative sites were considered

Notre Coal (Pty) Ltd identified the growing need for coal resources due to an increase in power demand. In this light, the applicant identified the proposed area as the preferred and only viable site alternative because of its immediate availability backed by data reviewed in the CPR, which has proven that coal resources are available in the area. The establishment of a coal pit in this un-utilised area was found to be most viable.

Various project alternatives were considered during the planning phase of the project and the preferred alternatives proved to be:

- The open cast mining of the coal has been identified as the most effective method to produce the desired coal product.
- The use of temporary infrastructure will reduce the impact on the environment and decrease closure objectives regarding infrastructure decommissioning.
- It is recommended that the existing farm road connected to the R543 be used.

14.3 Statement motivating the alternative development location within overall site

Provide a statement motivating the final site layout that is proposed.

The open cast mining of the coal has been identified as the most cost-effective method to produce the desired coal product. The proposed method will produce any residual (overburden) waste to be disposed of. Due to the remote location of the coal pit, the potential impacts on the surrounding environment, associated with open cast mining, is considered of low significance. It is proposed that all mining-related infrastructure will be contained within the boundaries of the mining area. As no permanent infrastructure will be established on site, the layout/position of the temporary infrastructure will be determined by the mining progress and available space in the mining area after excluding the CBA irreplaceable area.

14.4 Process undertaken to identify, assess and rank impacts and risk of site activities

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.

During the impact assessment process, several potential impacts were identified of each main activity in each phase. An initial significance rating was determined for each potential impact,

should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process continued to identify mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment. A significance rating was again determined for each impact using a relevant methodology. The impact ratings listed in the following section was determined for each impact after bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

14.5 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 I&APs)

Unite Number	Activity	Aspect	Impact	Significance Rating Before Mitigation Measures									Mitigation Measures	Significance Rating after Mitigation Measures								
				I	F	D	E	P	S	C	IS	SIGNIFICANCE		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**	(P) Moderate	Emphasis to employ local individuals must be maximised, reducing the need for migrant labour; Construction contractors should prioritise employment of the local community	**4**	**5**	**5**	**2**	**1.0**	**4.7**	**3.3**	**3.3**	(P) High

members and contracts must include employment targets as part of their contractual agreements;

Employment requirements should be broadly publicised to ensure that job-seekers do not have unrealistic job expectations;

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; and SAEC should liaise with the ELM to ensure that population influx is taken into account in infrastructure development planning of the ELM.								🟩	

2.0	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 to gravel or unpaved roads that are in use; Vehicles will obey speed limits; and Bulk delivery of materials should be maximised to reduce the frequency of deliveries. Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; Vehicles will	2	2	1	1	0.8	1.7	1.3	1.1	Low

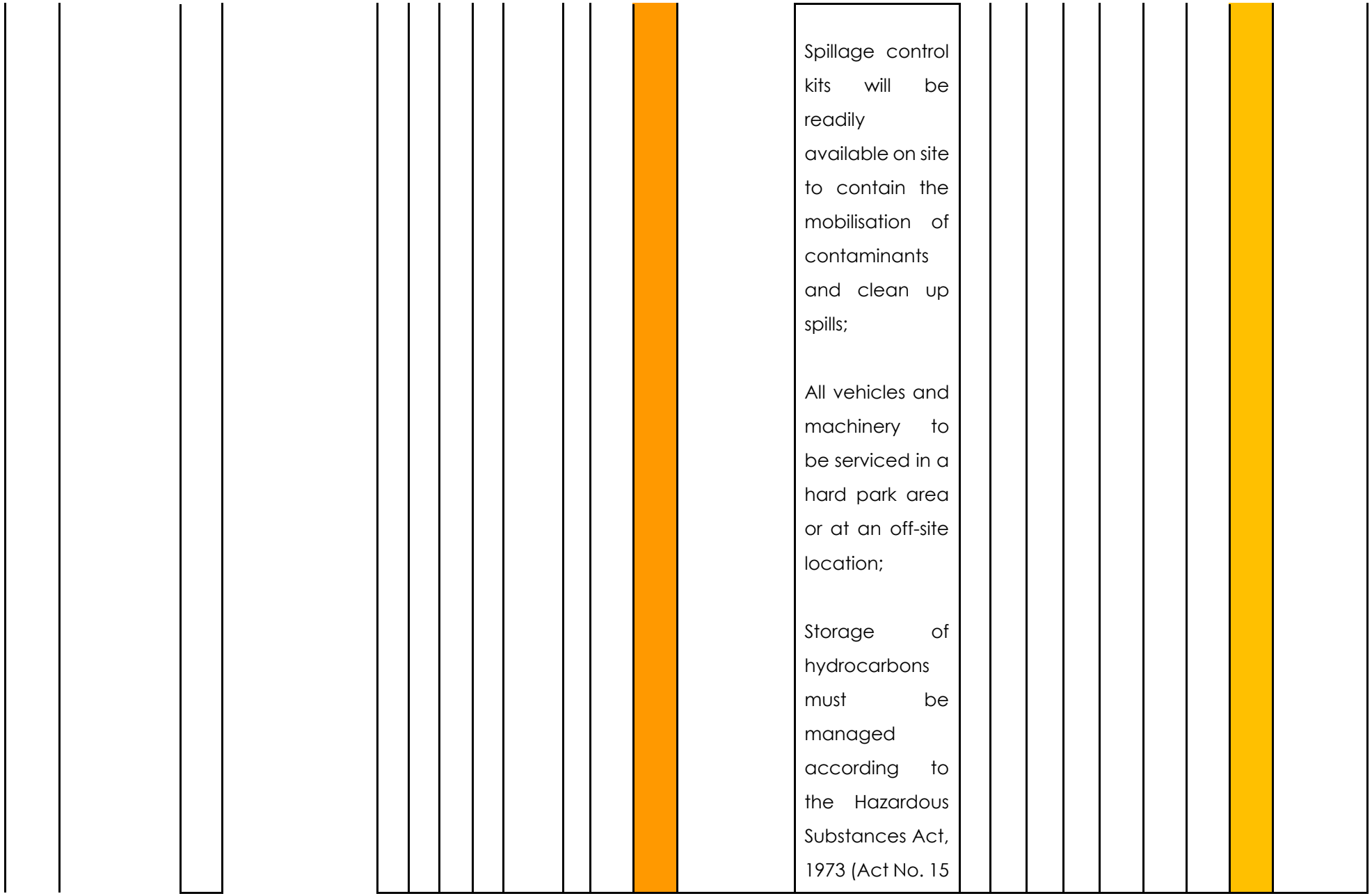
												obey speed limits; and Bulk delivery of materials should be maximised to reduce the frequency of deliveries.									
		Topography and Visual Environment.	Topographical change Negative visual impact caused by vehicular activity to transport construction material.	4	4	4	1	0.8	4.0	2.5	2.0	Low	Ensure liaison 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	2	5	5	2	0.6	4.0	3.0	1.8	Low

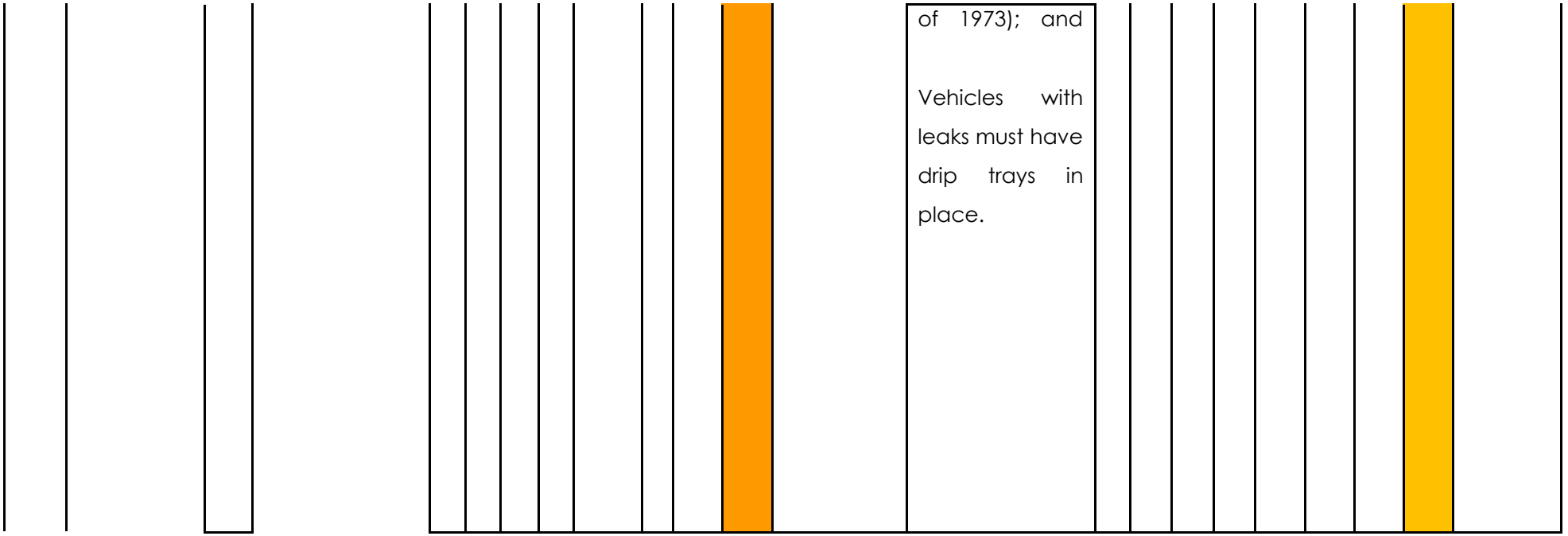
												obey speed limits.										
		Surface Water	Negative impacts on surface water resources as a result of hydrocarbon spills.	2	5	4	1	0.8	3.7	2.3	1.9	Low	All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up	2	5	5	2	0.6	4.0	3.0	1.8	Low

													spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); Hydrocarbons and explosives storage facilities must be in a hard park bunded facility;									

												and Vehicles with leaks must have drip trays in place.											
		Traffic	The degradation of the road structures	2	4	4	1	0.6	3.3	2.2	1.3	Low	Adhere to the Mine's Traffic Management Plan; and Gravel roads used must be graded and compacted regularly, should the roads	1	4	4	1	0.4	3.0	2.0	0.8	Very low

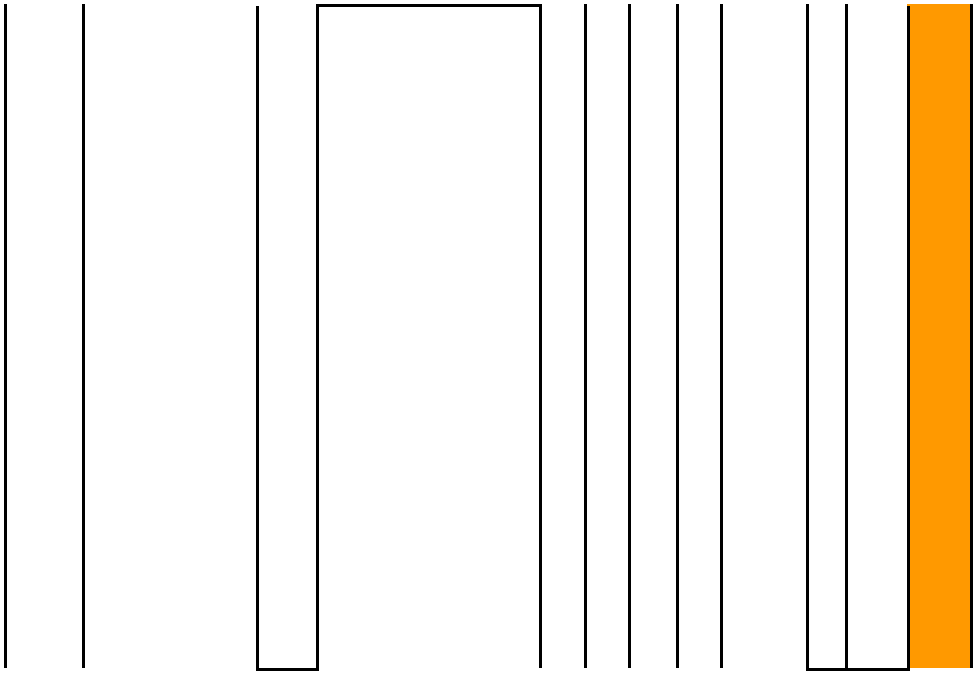
													remain unpaved.									
3.	Development and Operation of the mine	Soil	Soil contamination and degradation.	4	5	5	2	0.8	4.7	3.3	2.7	Moderate	In case whereby contractors bring on site mobile bowsers and lubricants, these are to be stored in a bunded area when parked at the construction areas; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated;	2	5	5	2	0.6	4.0	3.0	1.8	Low

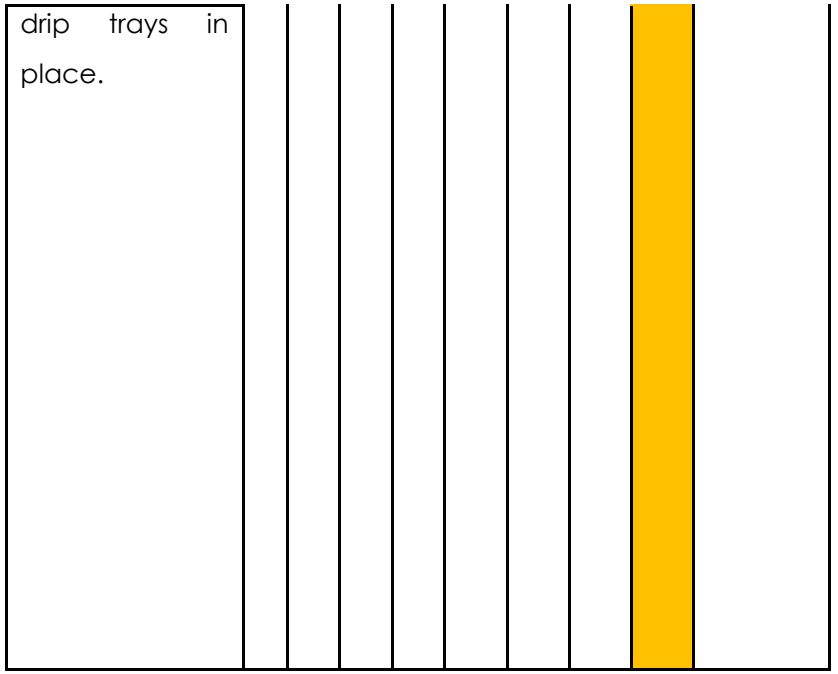

Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills;
All vehicles and machinery to be serviced in a hard park area or at an off-site location;
Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15


of 1973); and
Vehicles with leaks must have drip trays in place.

		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	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; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily	1	5	4	1	0.8	3.3	2.2	1.7	Low

	available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have

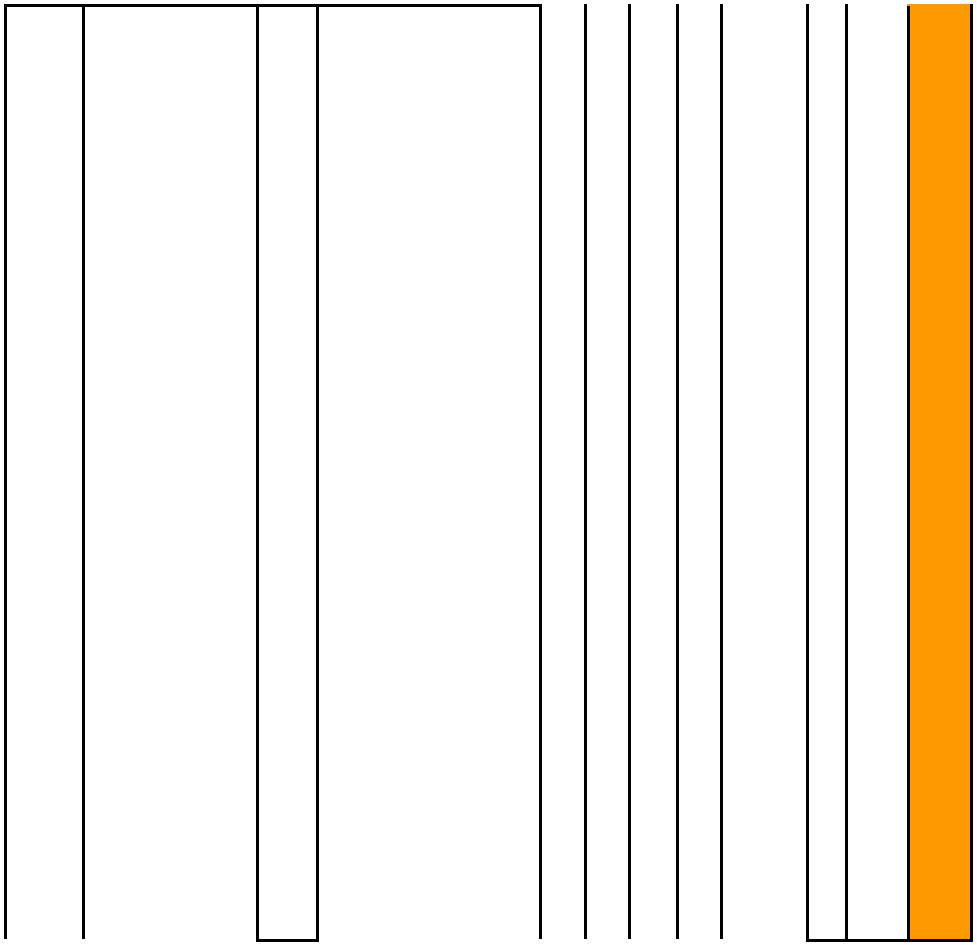



drip trays in
place.

		Groundwater	Groundwater contamination	4	4	4	3	1.0	4.0	3.5	3.5	High	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; All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; Spillage control kits will be readily	3	2	3	2	0.8	2.7	3.2	2.5	Moderate

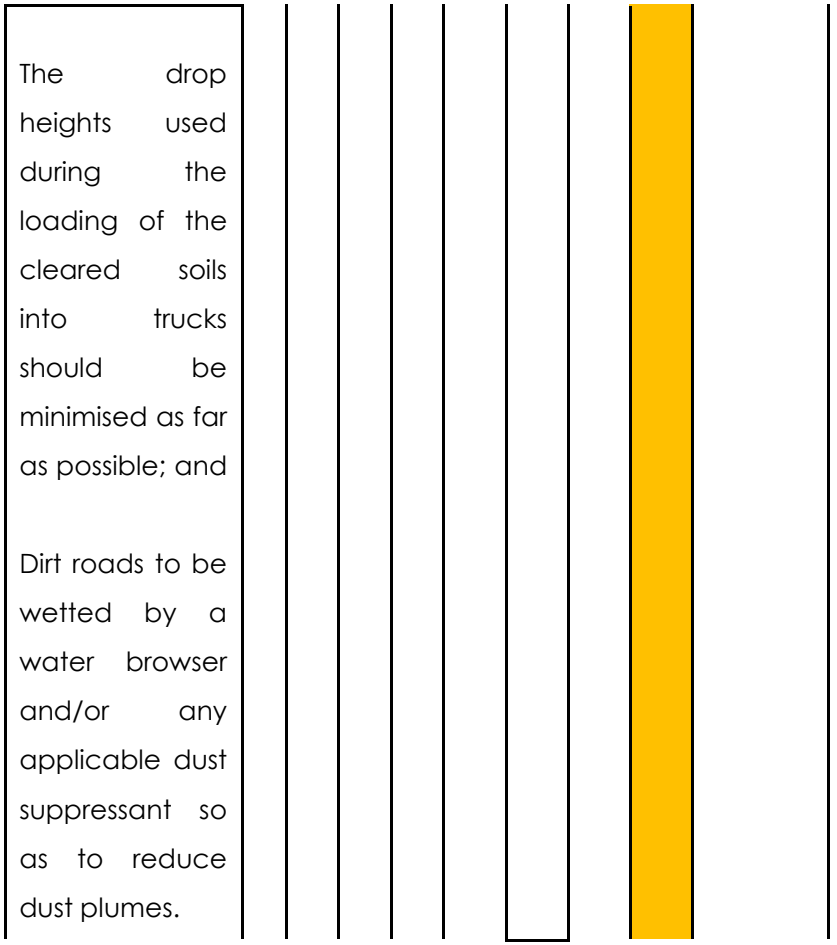
											🟧		available on site to contain the mobilisation of contaminants and clean up spills; All vehicles and machinery to be serviced in a hard park area or at an off-site location; Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and Vehicles with leaks must have								🟧	

													drip trays in place.											
4.0	4. Site clearance and topsoil removal as a result of the proposed Project.	Air Quality	Dust generation emanating from the activities associated with the Khutala 5 Seam Mining Project areas	4	4	4	2	1.0	4.0	3.0	3.0	Moderate	The area of disturbance must be restricted to the required footprint size; Ensure that only vegetation within the designated areas is removed;	2	5	5	2	0.6	4.0	3.0	1.8	Low



The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and

Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plumes.



		Topography and Visual Environment	Topography change and the disruption of surface water flow. Soil erosion and topsoil loss. Visual impact caused by vegetation and topsoil removal.	3	3	4	1	0.8	3.3	2.2	1.7	Low	Ensure vegetation and topsoil is only be cleared when necessary and within the demarcated areas; Ensure topsoil stockpiles are vegetated as soon as possible; and Ensure topsoil stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment.	1	4	4	1	0.4	3.0	2.0	0.8	Very low

													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.									
		Soil	Soil contamination and degradation during soil stripping and management	3	4	4	1	0.8	3.7	2.3	1.9	Low	Excavation and long-term stockpiling of soil should be limited within the demarcated	2	4	4	1	0.6	3.3	2.2	1.3	Low

			Soil erosion and generation of dust.	3	4	4	1	0.8	3.7	2.3	1.9	Low	areas as far as practically possible; Ensure all stockpiles (especially topsoil) are clearly and permanently demarcated and located in defined no-go areas; Restrict the amount of mechanical handling, as each handling event increases that compaction level and the changes to the soil structure;	2	4	4	1	0.6	3.3	2.2	1.3	Low

Soil stripping should be done in line with a topsoil stripping plan;

Where possible, separate stockpiling of different soil to obtain the highest post-mining land capability;

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; and Temporary berms can be constructed, around stockpile areas whilst vegetation cover has not established to avoid soil loss through erosion.									
			Soil compaction.	4	5	4	1	1.0	4.3	2.7	2.7	Moderate	If possible, vegetation clearance and commencement of mining related activities (construction of haul road), can	2	3	3	2	0.8	2.7	2.3	1.9	Low

													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; The movement of heavy vehicle should be limited to existing roads and be limited to areas where construction of haul road is to take place.									

			Loss of land capability and land use potential	2	1	4	1	0.8	2.3	1.7	1.3	Low	• Any compacted soils must be ripped to alleviate compaction; • Stored topsoil should be replaced (if any) and the footprint graded to a smooth surface; • The landscape should be backfilled and reprofiled to mimic the natural topography for potential agricultural activities and grazing opportunities	2	4	4	1	0.6	3.3	2.2	1.3	Low

post mining. If possible, ensure a continuation of the pre mining surface drainage pattern;

- Slopes of the backfilled surface should change gradually since abrupt changes in slope gradient increase the susceptibility for erosion initiation;
- The soil fertility status to be determined by soil chemical analysis after levelling (before seeding/re-

vegetation).

- Soil amelioration should be completed, if necessary, according to recommendations by a soil specialist, to correct the pH and nutrition status before revegetation; and
- The footprint should be re-vegetated with a grass seed mixture as soon as possible, preferably in spring and early summer to stabilise the soil and prevent soil

														loss during the rainy season.												
			Loss of vegetation communities.	4	1	5	1	0.8	3.3	2.2	1.7	Low	• Ensure site clearing is restricted to the footprint of the designated areas to limit the degradation and destruction of natural habitats; • Vegetate open and	2	3	3	1	0.4	2.7	1.8	0.7	Very low

											🟨		exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; • Restrict access and avoid areas of identified faunal and floral SSC, that are adjacent to the mining activities; • Floral and faunal SSC within the mining activities must be rescued and relocated; • Restrict access and avoid sensitive landscapes,									

													such as wetlands and ridges, that are adjacent to the mining operations; and • Topsoil that will be used for rehabilitation within one year must be 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	3	3	4	1	0.8	3.3	2.2	1.7	Low	Alien invasive vegetation to be identified and removed	2	4	4	1	0.6	3.3	2.2	1.3	Low

			invasive vegetation.										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	• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; • Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; • Implement and maintain alien vegetation management	2	3	4	2	0.4	3.0	2.5	1.0	Low

													programme; • Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be 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	• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; • Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; • Implement and maintain alien vegetation management programme; • Limit the footprint area of the	2	5	5	2	0.6	4.0	3.0	1.8	Low

												construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils; • All erosion noted within the construction footprint should be remedied immediately and included as part of an ongoing rehabilitation plan; • All delineated watercourses									

													and their associated 100 m zones of regulation in terms of GN704 should 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 unless authorised as part of the IWUL; • No unnecessary crossing of the watercourses should take									

											🟧		place and wherever possible, existing infrastructure should be utilised; • Suitably designed culverts should be installed under road crossings where any watercourses are anticipated to be crossed; • The number of culverts installed should 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; • Crossings should make use of existing roads wherever possible and should either utilise or be constructed downgradient of barriers associated with impoundments on the affected systems; • No material may be dumped or stockpiled									

													within delineated watercourses; • No vehicles or heavy machinery may be allowed to drive indiscriminately within any delineated watercourses. All vehicles must remain on demarcated roads and within the construction footprint; • All vehicles must be regularly inspected for leaks; • Re-fuelling must take place									

													on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil; • All spills should be immediately cleaned up and treated accordingly; and.									

			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	• Ensure that as far as possible all infrastructures are placed outside of delineated watercourse areas and their associated zones of regulation; • Ensure that sound environmental management is in place during the planning phase; • Design of infrastructure should be environmentally and structurally sound and all possible	2	5	5	2	0.6	4.0	3.0	1.8	Low

													precautions taken to prevent spillage and/or seepage to the surface and groundwater resources present; • It must be ensured that the design and construction of all infrastructures prevents failure.									

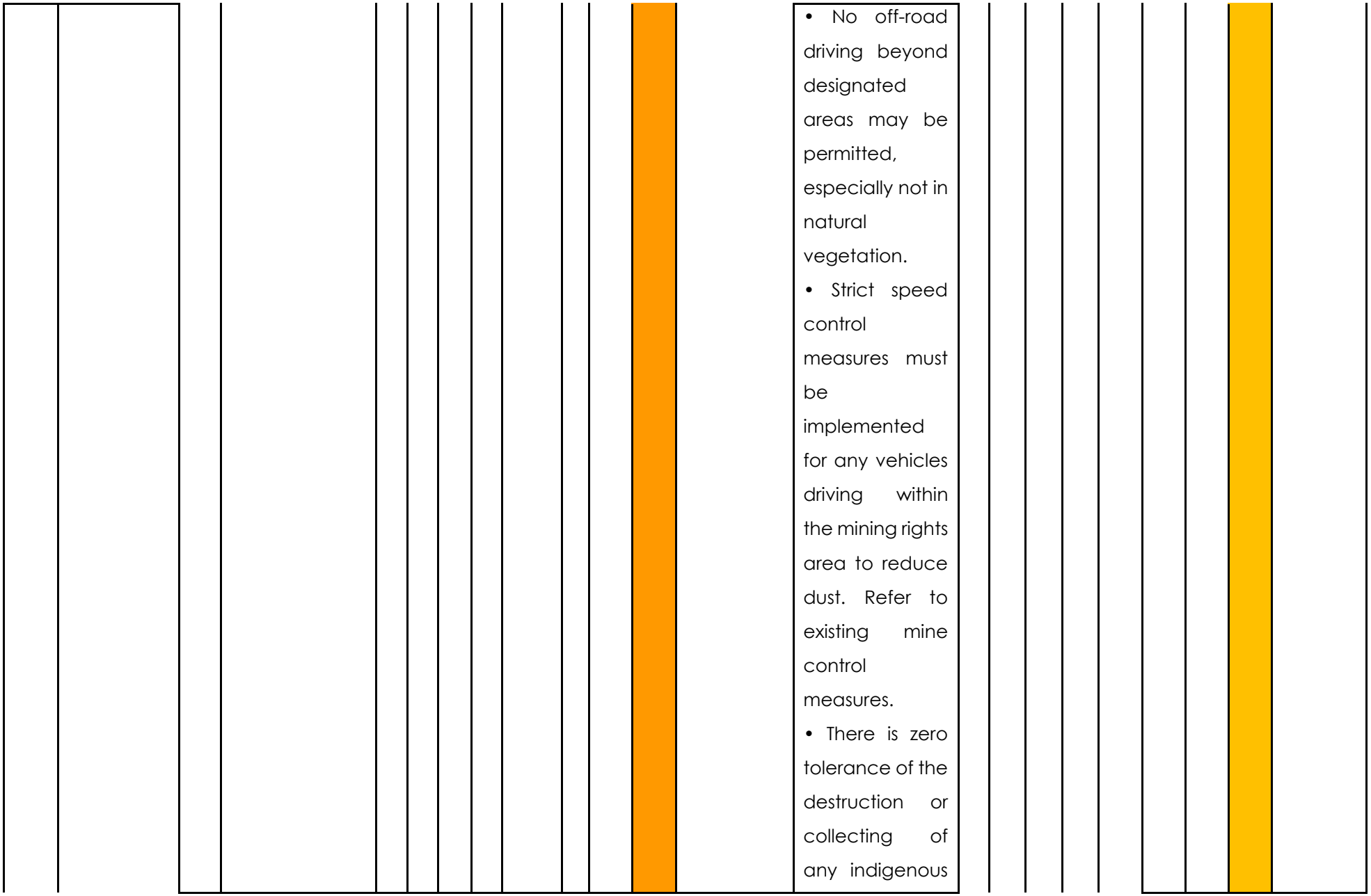
			Destruction of natural habitat and animal life within the development area and to maintain ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.	4	5	4	1	1.0	4.3	2.7	2.7	Moderate	• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions. • Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas. • Ensure safe speed limits in the development area and no open fires.	2	5	5	2	0.6	4.0	3.0	1.8	Low

											🟧		• 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. • 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. • Regularly (daily) inspect the haul road and clear coal spills and clear coal fines to reduce coal dust contamination to the neighbouring wetland areas.								🟨	

		Flora	Loss of vegetation and/or declining species, alteration, and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater due to localised destruction / removal of vegetation and vegetated topsoil.	4	5	4	1	1.0	4.3	2.7	2.7	Moderate	• 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. • No building of temporary infrastructure should be allowed in moist grasslands without a WUL. • Prevent spillage of hazardous material and other pollutants, contain, and	2	4	4	1	0.6	3.3	2.2	1.3	Low

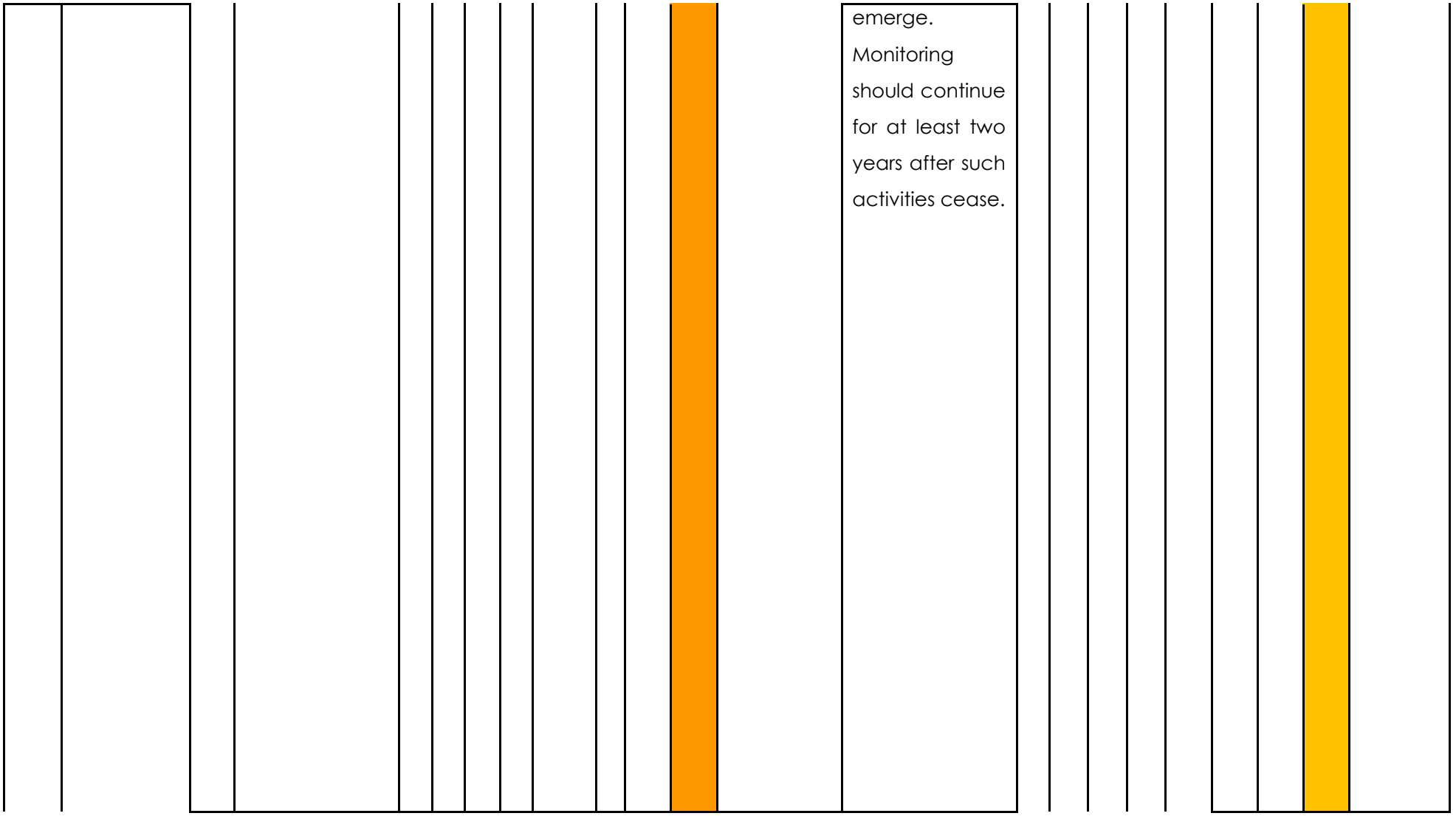
											🟧		treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr • After any above ground activities within the site, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to the activity.								🟨	


• No off-road driving beyond designated areas may be permitted, especially not in natural vegetation.
• Strict speed control measures must be implemented for any vehicles driving within the mining rights area to reduce dust. Refer to existing mine control measures.
• There is zero tolerance of the destruction or collecting of any indigenous

biodiversity or part thereof by anybody working for or on behalf of the mine.

• Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed

• Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they


emerge.
Monitoring
should continue
for at least two
years after such
activities cease.

			The destruction or degradation of watercourse vegetation.	1	1	4	2	0.6	2.0	2.0	1.2	Low	• Ensure the flow of water through the moist grassland areas remain unchanged. • Monitor the presence of hydrophytes and species with an affinity for moist soils within the moist grasslands. Should such species decrease of be replaced by terrestrial species, then it is likely that the hydrological regime on the site has changed. • If moist	2	3	3	1	0.4	2.7	1.8	0.7	Very low

													grasslands are found to become drier, the Crinum species must be relocated to suitable habitat. • Input of sediment due to any related mining activities should be prevented at all cost. • Pollution of the surface and groundwater. Mitigation for this potential impact includes: o In the case of pollution of any surface or groundwater, the Regional									

												Representative of the Department of Water Affairs must be informed immediately; o Store all litter carefully so it cannot be washed or blown into the water course; 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.; 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; 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.

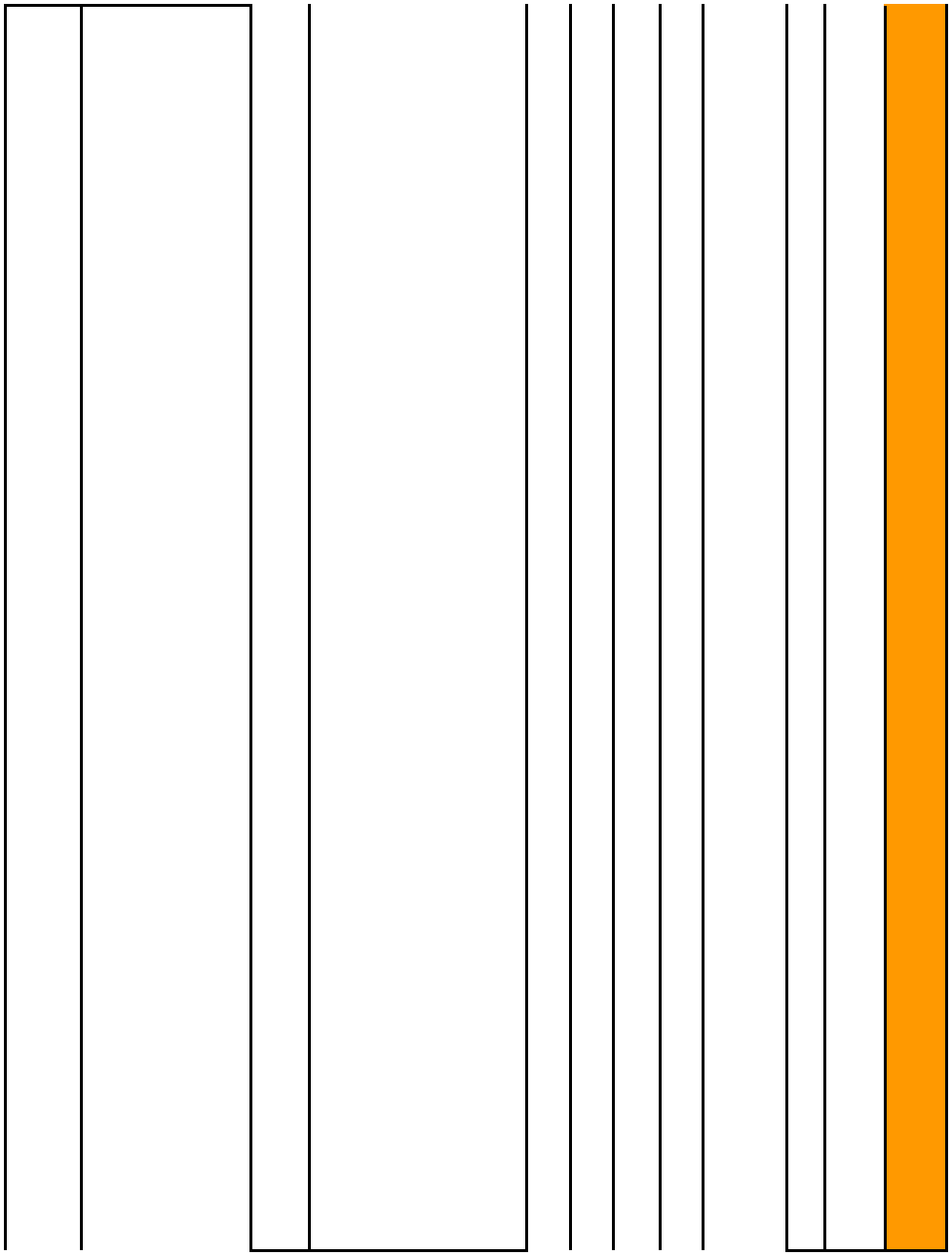
			Destruction of vegetation.	4	5	4	1	1.0	4.3	2.7	2.7	Moderate	An independent Environmental Control Officer (ECO) should be appointed to oversee construction activities and ensure the following: • Keep the development footprint in Medium categories as small as possible. • A temporary fence or demarcation must be erected around the construction area (include	2	4	4	1	0.6	3.3	2.2	1.3	Low

											🟧		the actual footprint, as well as areas where material is stored) to prevent access to adjacent sensitive vegetation. • Maintain site demarcations in position until the cessation of construction work. • Only remove vegetation where necessary and retain vegetation in place for as long as possible prior to removal. • Prohibit								🟨	

													vehicular or pedestrian access into natural areas beyond the demarcated boundary of the construction area. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Implement a vegetation rehabilitation plan to ensure areas that can									

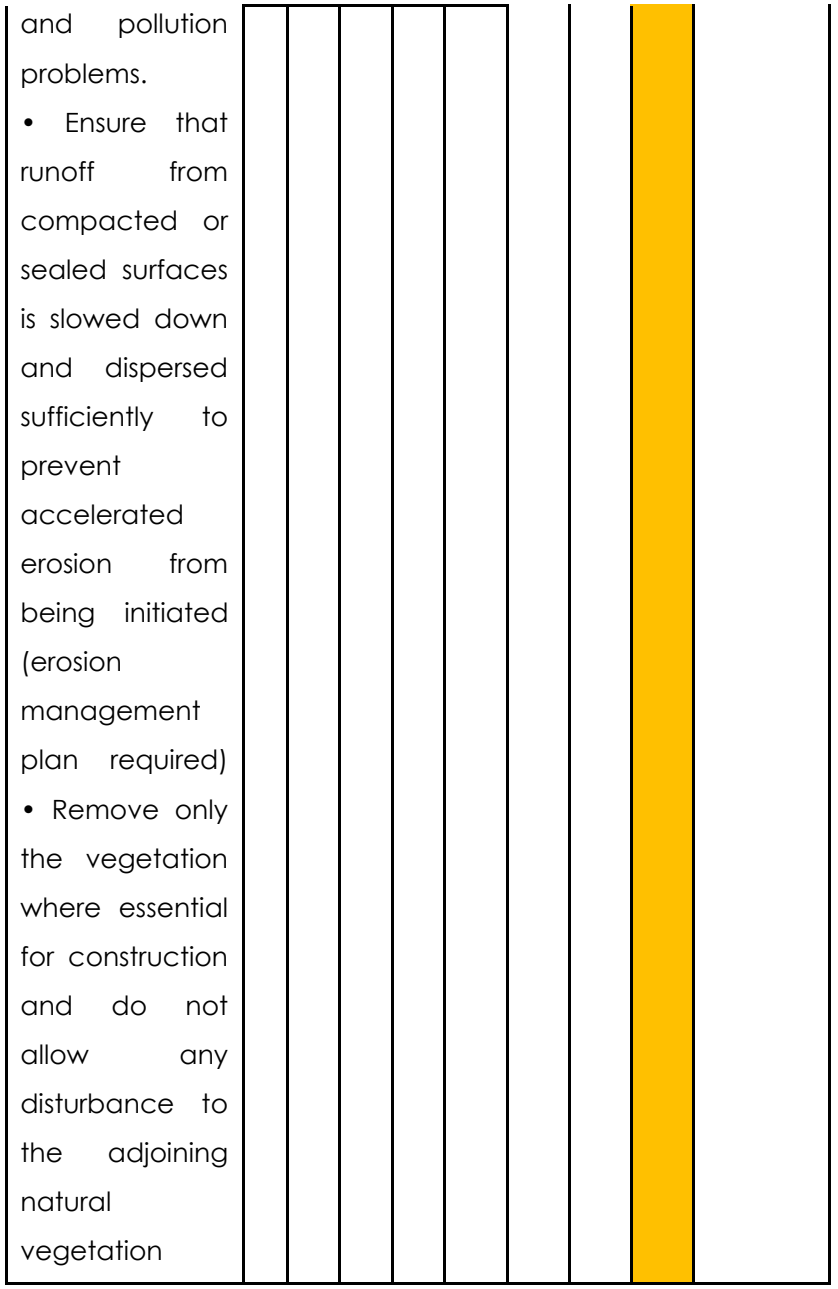
													be rehabilitated post construction are adequately vegetated with indigenous grass species. • After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.									

			5.0	4	5	4	1	0.8	4.3	2.7	2.1	Moderate	• Make use of existing roads and tracks where feasible, rather than creating new routes through grassland areas. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). • Runoff from access roads must be managed to avoid erosion	3	5	4	1	0.6	4.0	2.5	1.5	Low



and pollution problems.

- 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)
- 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.

- 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.

- 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.
- 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. • After construction clear any temporarily impacted areas of all foreign materials, re-apply and/or loosen topsoils and landscape to surrounding level.								🟨	

			Alien invasive plant species.	3	5	5	1	1.0	4.3	2.7	2.7	Moderate	• Areas cleared of invasive to be monitored in the growing season (summer). • If re-sprouting or reseeding is noted, follow-up control to be initialised. • Cleared and denuded areas to be rehabilitated as soon as possible with indigenous grass species. • Monitor the establishment of invasive species and remove as soon as detected, whenever possible before	2	5	5	2	0.6	4.0	3.0	1.8	Low

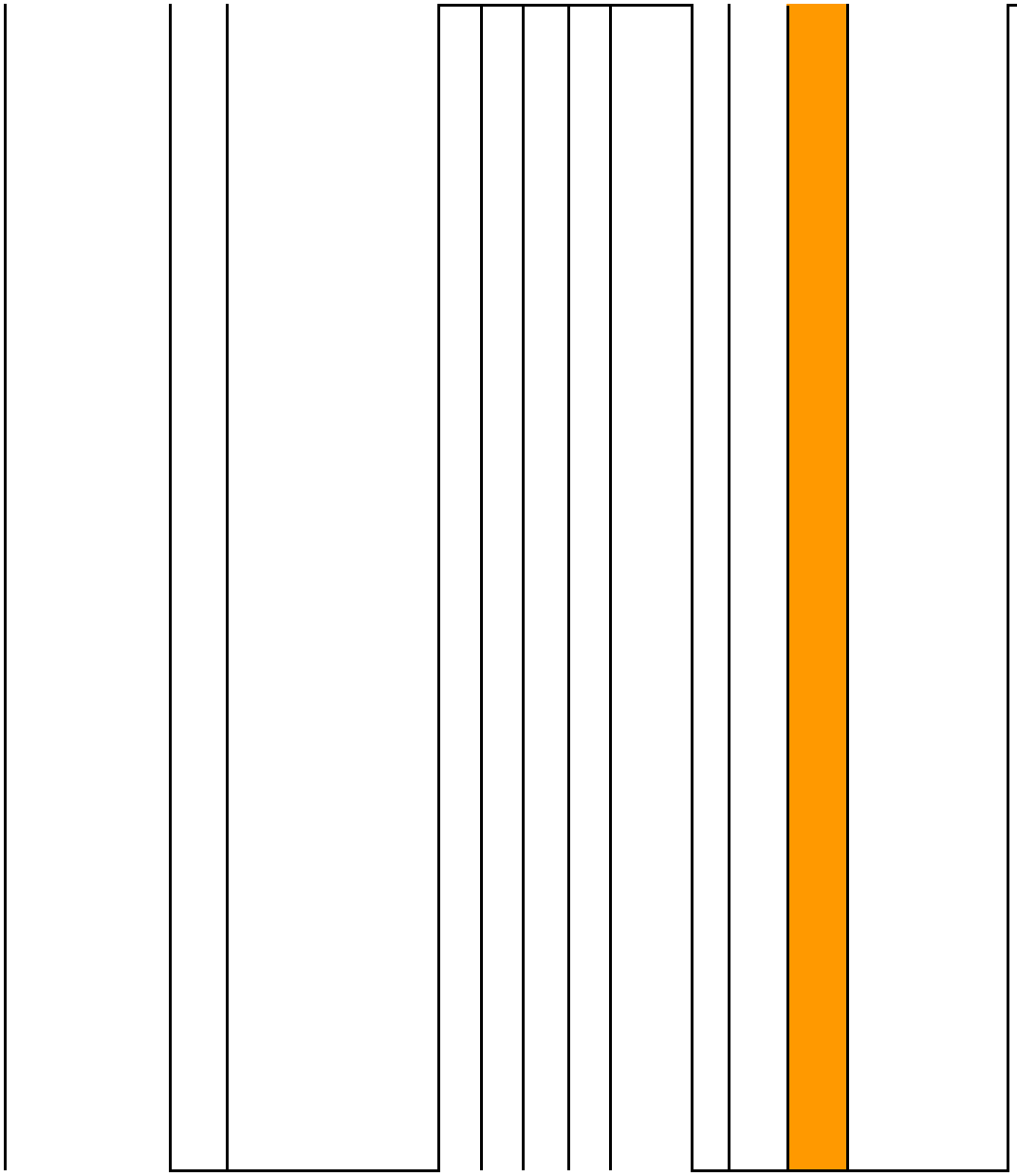
													regenerative material can be formed. • Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge. • Monitoring should continue for at least two years after such activities cease.									
		Surface Water	Siltation of surface water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure site clearing is limited to the designated areas, and • Implement Stormwater Management	3	5	4	1	0.6	4.0	2.5	1.5	Low

												designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs).										
			Contamination of groundwater resources	4	5	5	3	1.0	4.7	3.8	3.8	High	• Ensure that a stormwater management plan is in place to separate clean and dirty water; and • Groundwater monitoring of the water quality and levels must take place quarterly, especially for the water supply boreholes to ensure a sustainable	4	4	5	2	0.8	4.3	3.2	2.5	Moderate

													resource and identify impacts on local users.										
		Noise	Noise emanating from the construction machinery and vehicles impacting on surrounding sensitive receptors.	4	5	4	2	1.0	4.3	3.2	3.2	HIgh	• Ensure site clearing activities are only undertaken during daylight hours; • 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 • Ensure equipment and	2	4	4	1	0.6	3.3	2.2	1.3	Low

													machinery is switched off when not in use.											
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	Moderate	• The area of disturbance must be restricted to the required footprint size; • Ensure that only vegetation within the designated areas is removed; • The drop heights used during the loading of the cleared soils into trucks should be minimised as far as possible; and	2	4	3	1	0.6	3.0	2.0	1.2	Low

												• Dirt roads to be wetted by a water browser and/or any applicable dust suppressant so as to reduce dust plume										
		Safety and security risks to landowners and lawful occupiers	3	4	4	1	0.6	3.7	2.3	1.4	Moderate	• Ensure vegetation and topsoil is only be cleared when necessary and within the demarcated areas;Ensure topsoil stockpiles are vegetated as soon as possible; and • Ensure topsoil	2		3		0.6	1.7				Low



										🟧		stockpiles are contoured and have a steepness of less than 18° to prevent slope failure and erosion and aid in vegetation establishment. 4 • 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 vegetatio								🟨	

6.0	Drilling and blasting	Air Quality	Fugitive dust generation emanating.	4	2	1	1	0.8	2.3	1.7	1.3	Low	• Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; and • Ensure that dust suppressants are applied to exposed surfaces.	2	5	5	2	0.6	4.0	3.0	1.8	Low
		Topography and Visual Environment	Topography change and disruption of surface water flow. Soil erosion. visual impact caused by the construction of	4	2	5	3	0.8	3.7	3.3	2.6	Moderate	• Limit the footprint areas of the of the surface infrastructure, where possible, especially the width of the link road to be within the servitude; • Ensure that	2	5	5	2	0.6	4.0	3.0	1.8	Low

		surface infrastructure								🟧		access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography; • Establish vegetation, where possible, to aid in screening infrastructure; • Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape; and • Limit construction								🟨	

												activities at night and down lighting must be used to minimise light pollution.												
		Soils	Soil contamination and degradation.	2	5	4	1	0.8	3.7	2.3	1.9	Low	• Ensure soils are stripped and stockpiled prior to the excavation of infrastructure areas; and • Implement Stormwater Management designs to prevent erosion.	2	4	4	1	0.6	3.3	2.2	1.3	Low
		Fauna and	Loss of vegetation communities.	2	5	5	2	0.8	4.0	3.0	2.4	Moderate	• Vegetate open and exposed areas	2	4	4	1	0.6	3.3	2.2	1.3	Low

			Influx and establishment of alien invasive vegetation.	2	5	5	2	0.6	4.0	3.0	1.8	Low	to prevent soil erosion and the establishment of alien invasive vegetation; • Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.	2	4	4	1	0.6	3.3	2.2	1.3	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	• Environmental awareness training must include the prohibition of any harm or hindrance to any indigenous fauna species and the consequences of such actions. • Allow unhindered movement of fauna to allow them the opportunity to freely leave activity areas. • Ensure safe speed limits in the development area and no open fires.	2	5	5	2	0.6	4.0	3.0	1.8	Low

												• 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. • 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. • Regularly (daily) inspect the haul road and clear coal spills and clear coal fines to reduce coal dust contamination to the neighbouring wetland areas.									
		Flora	Alien invasive plant species.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Areas cleared of invasive to be monitored in the growing season (summer). • If re-sprouting or reseeding is noted, follow-up control to be initialised. • Cleared and denuded areas	2	5	5	2	0.6	4.0	3.0	1.8	Low

												to be rehabilitated as soon as possible with indigenous grass species. • Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed. • Monitor all sites disturbed by localised activities for colonisation by exotics or invasive plants and control these as they emerge.									

												• Monitoring should continue for at least two years after such activities cease.											
		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	• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; • Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after	2	4	4	2	0.6	3.3	2.7	1.6	Low

												construction;• Implement and maintain alien vegetation management programme;• Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be removed to an appropriate waste facility.									

		Surface Water	Siltation of surface water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; • Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; • Implement and maintain alien vegetation management programme; • Limit the footprint area of the	4	4	4	1	0.6	3.0	2.0	1.2	Low

												construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils; • All erosion noted within the construction footprint to be remedied immediately and included as part of an ongoing rehabilitation plan; • 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; • No unnecessary crossing of the watercourses to take place and wherever possible,								🟨	

										🟧		existing infrastructure should be utilised; • Suitably designed culverts to be installed under road crossings where any watercourses are anticipated to be crossed; • 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; • 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; • No material may be dumped or stockpiled within delineated watercourses;									

		Noise	Increased noise levels.	4	2	3	1	0.8	3.0	2.0	1.6	Low	• Ensure soil management programme is implemented and maintained to minimise erosion and sedimentation; • Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after construction; • Implement and maintain alien vegetation management programme; • Limit the footprint area of the	2	2	3	1	0.6	2.0	2.0	1.2	Low

												construction activities to what is absolutely essential in order to minimise impacts as a result of vegetation clearing and compaction of soils; • All erosion noted within the construction footprint to be remedied immediately and included as part of an ongoing rehabilitation plan; • 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; • No unnecessary crossing of the watercourses to take place and wherever possible,								🟨	

												existing infrastructure should be utilised; • Suitably designed culverts to be installed under road crossings where any watercourses are anticipated to be crossed; • 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; • 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; • No material may be dumped or stockpiled within delineated watercourses;									

	Poultry Farming	Vibrations caused by blasting and drilling	4	2	3	1	0.8	2.0	2.0	1.6	Low	• Do blast design that considers the actual blasting and the ground vibration levels to be adhered too. • Change the initiating system to facilitate less blast holes detonating simultaneously, making use of electronic initiation that allow for single hole firing. • Do design for smaller diameter blast holes that will use fewer explosives per blasthole.	3	2	3	1	0.6	2.0	2.0	1.2	Low

6.0	Construction of RoM Stockpile and associated Water Management Infrastructure.	Air Quality	Fugitive dust generation emanating the RoM Stockpile construction activities.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; • Public complaints and actions registry should be established to capture public perceptions and complaints regarding increased air quality impacts; • Dust fallout monitoring must be conducted throughout the life of operation of Khutala Colliery to confirm model	2	5	5	2	0.6	4.0	3.0	1.8	Low

										🟧		predictions. • Reduce, control and manage the height of material drops (e.g., Transfer chute to RoM Stockpile); and • Increase moisture content of material by using water sprays prior to or during conveying, crushing, and screening material.								🟨	

	Topography and Visual Environment	Topography change and disruption of surface water flow. Soil erosion and topsoil loss. visual impact caused by stockpiling of coal.	2	5	5	2	0.6	4.0	3.0	1.8	Low	• Ensure that the stockpile is constructed with the planned disturbed areas; • Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and maintenance manual.	2	3	3	1	0.6	2.7	1.8	1.1	Low
	Soils	Soil degradation.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Minimise topsoil stockpile heights as far as possible; • Ensure soils are stripped and stockpiled prior to the excavation of infrastructure	2	5	5	2	0.6	4.0	3.0	1.8	Low

												foundations; • Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for macro nutrients and pH on an annual basis; • Traffic and access to the stockpiles will be restricted; • Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and									

												• Implement Stormwater Management designs to prevent erosion.										
	Fauna and Flora	Loss of vegetation communities	2	5	5	2	0.6	4.0	3.0	1.8	Low	Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified	2	4	4	1	0.6	3.3	2.2	1.3	Low

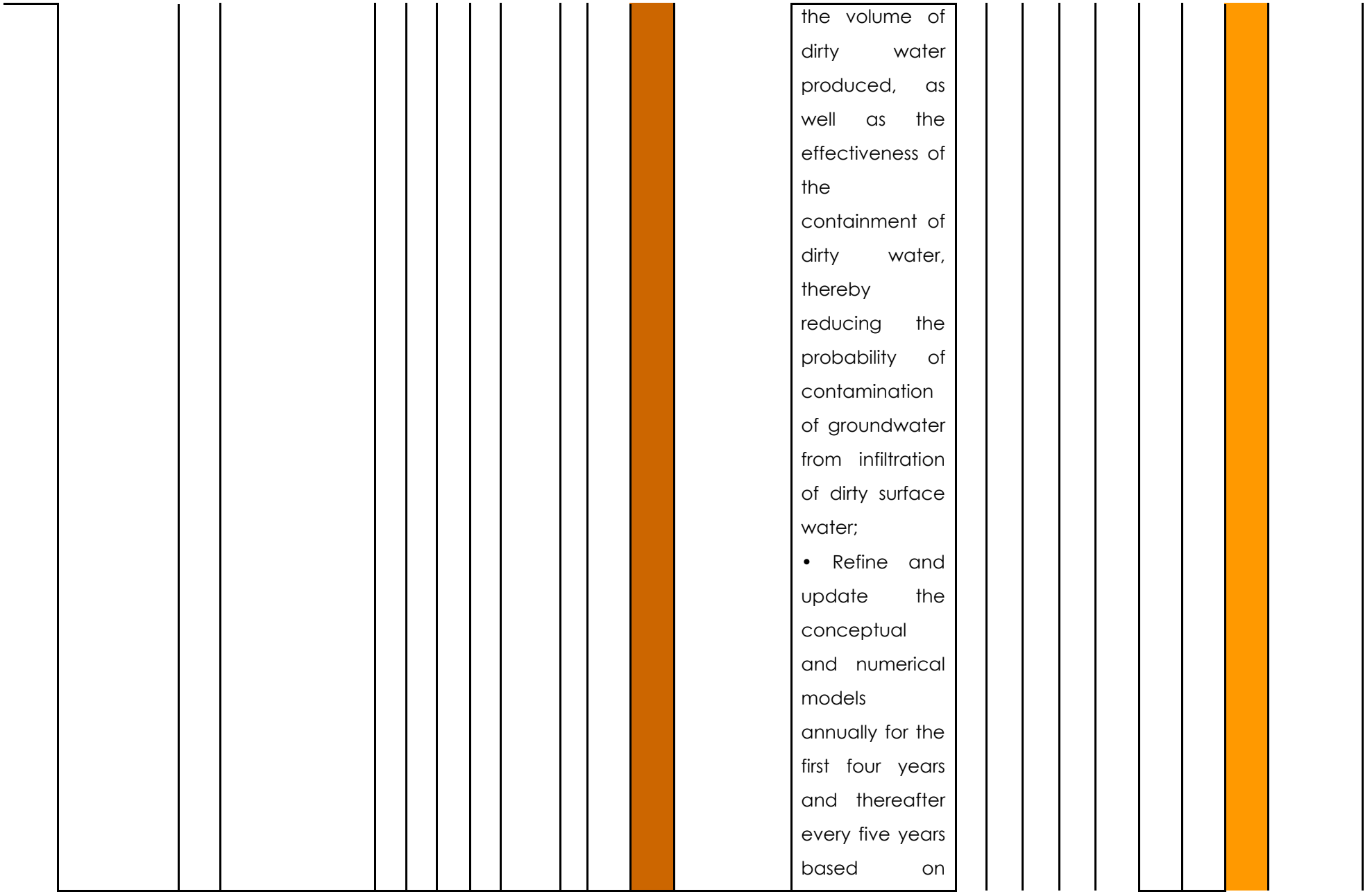
												and removed throughout the LoM.										
	Wetlands and Aquatic Ecology	Contamination and sedimentation of the wetland systems and aquatic ecosystems.	2	5	4	1	0.8	3.7	2.3	1.9	Low	Ensure the statutory buffers are implemented from the wetlands systems and watercourses, unless otherwise stated in the IWUL; Ensure a Storm Water Management Plan is implemented; and Implement a	2	4	4	2	0.6	3.3	2.7	1.6	Low

												biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.										
	Surface Water	Siltation of surface water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate	2	4	4	1	0.6	3.3	2.2	1.3	Low

												storage dams (PCDs); and The 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	2	2	2	1	0.6	2.0	1.3	0.8	Very low

												expected that additional noise levels contributed by Mines around will be insignificant. Trucks, machinery, and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Silencers will be utilised where possible.									

		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	• 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; • Implement a Surface Water Management Plan to minimise	4	4	5	2	0.8	4.3	3.2	2.5	Moderate


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;
• Refine and update the conceptual and numerical models annually for the first four years and thereafter every five years based on

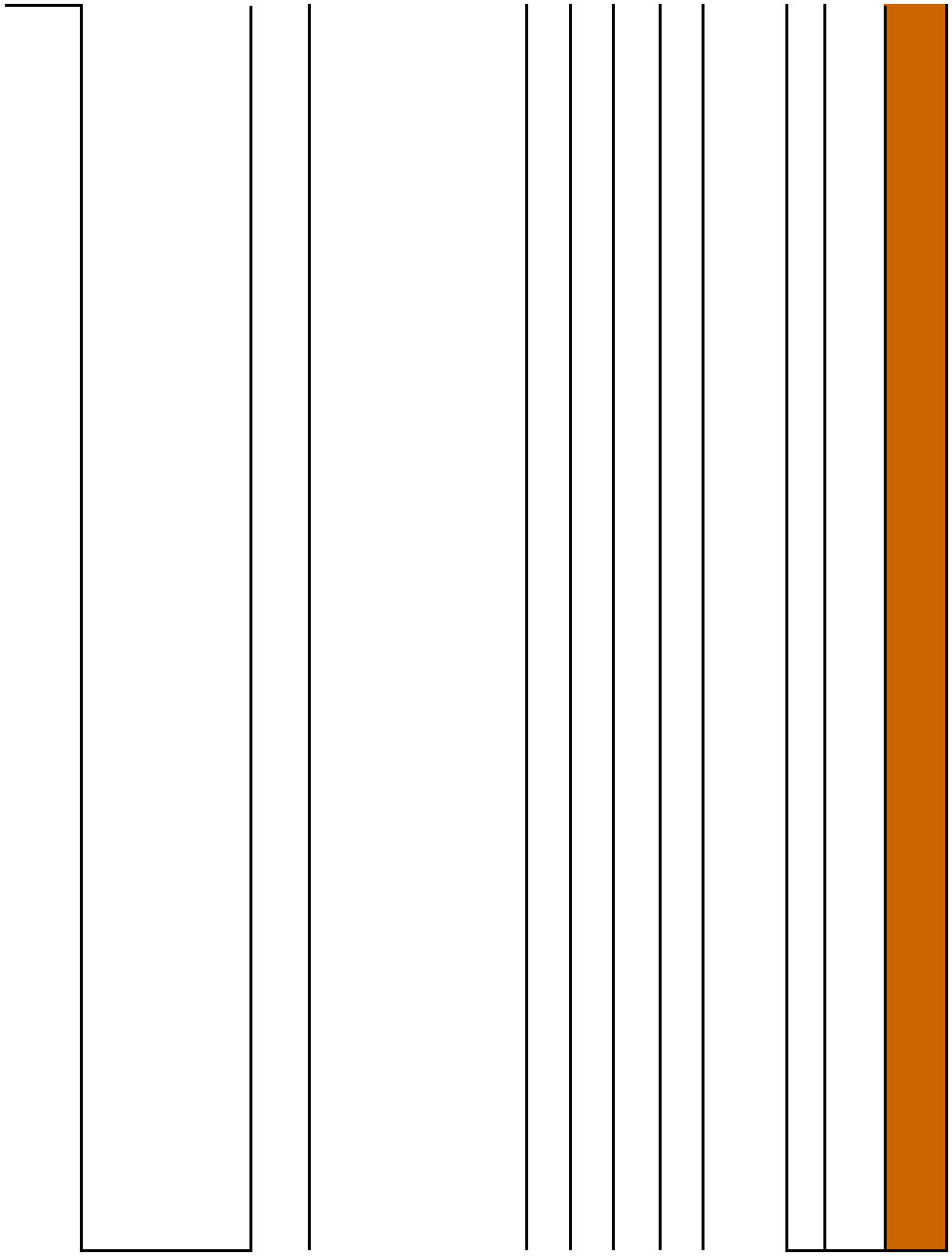
groundwater monitoring results. This will help to better quantify impacts to water quantity and quality; and

- 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.

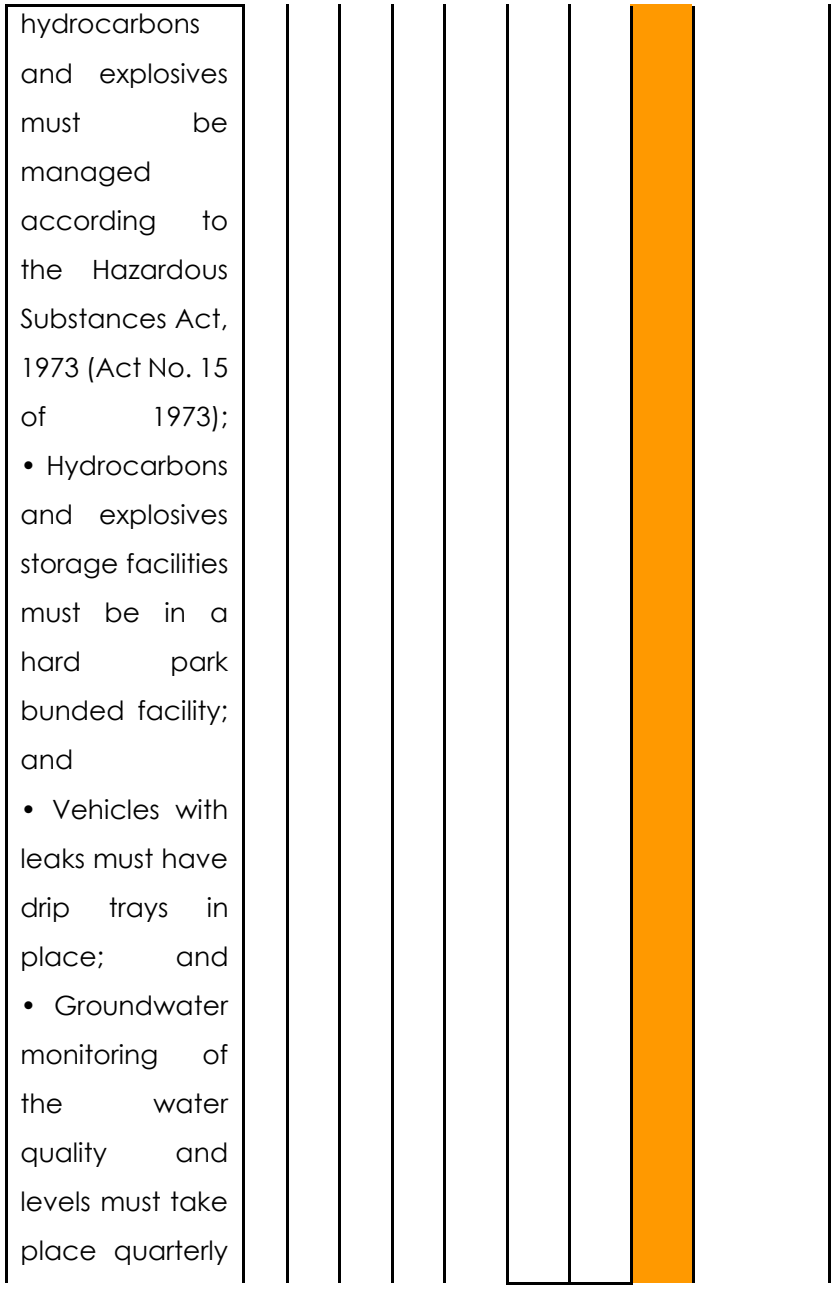
10.0	Storage, use and control of fuel and lubricants to be used for the undergrou nd mining activities.	Soil	Soil contamination and degradation	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of hydrocarbons and explosives	2	4	4	1	0.6	3.3	2.2	1.3	Low

												must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); • Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and • Vehicles with leaks must have drip trays in place.									

		Groundwater	Groundwater contamination	5	5	5	3	1.0	5.0	4.0	4.0	High	• All potential hydrocarbon leaks must be repaired immediately and spillages be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of	5	5	4	2	0.8	4.7	3.3	2.7	Moderate



hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973);
• Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and
• Vehicles with leaks must have drip trays in place; and
• 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.										
11.0	Operation of the RoM Stockpile and associated Water Management Infrastructure.	Air Quality	Fugitive dust generation emanating the RoM Stockpile operational activities.	2	3	4	1	0.8	3.0	2.0	1.6	Low	• Ensure that the areas of disturbance are minimised and restricted to the required footprint areas; • Public complaints and actions registry should be established to capture public perceptions	2	4	4	1	0.6	3.3	2.2	1.3	Low

													and complaints regarding increased air quality impacts; • Dust fallout monitoring must be conducted throughout the life of operations around to confirm model predictions; • control and manage the height of material drops (e.g., Transfer chute to RoM Stockpile); and • Increase moisture content of material by using water sprays prior to or													

												during conveying, crushing, and screening material.									
	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	• Ensure that the stockpile is constructed within the proposed planned disturbed areas; • Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and	2	5	5	2	0.6	4.0	3.0	1.8	Low

											maintenance manual.											
		Soil degradation.	3	3	3	1	1.0	3.0	2.0	2.0	Moderate	• Minimise topsoil stockpile heights as far as possible; • Ensure soils are stripped and stockpiled prior to the excavation of infrastructure foundations; • Ensure stockpiles are maintained in a fertile and erosion free state by sampling and analysing for	2	5	5	2	0.6	4.0	3.0	1.8	Low

												macro nutrients and pH on an annual basis; • Traffic and access to the stockpiles will be restricted; • Ensure that the topsoil stockpiles are vegetated to prevent soil erosion and to reinstitute the ecological processes within the soil; and • Implement Stormwater Management designs to prevent erosion.									

	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	• Vegetate open and exposed areas to prevent soil erosion and the establishment of alien invasive vegetation; • Ensure a Storm Water Management Plan is implemented; and Alien invasive vegetation to be identified and removed throughout the LoM.	2	4	4	1	0.6	3.3	2.2	1.3	Low
	Wetlands and Aquatic	Contamination and sedimentation of the downstream wetland	3	3	4	1	1.0	3.3	2.2	2.2	Moderate	• Ensure the statutory buffers are implemented from the wetlands	2	4	4	1	0.6	3.3	2.2	1.3	Low

		systems and aquatic ecosystems.								🟧		systems and watercourses, unless otherwise stated in the IWUL; • Ensure a Storm Water Management Plan is implemented; and • Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.								🟨	

	Surface Water	Siltation of downstream surface water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure that the topsoil stockpiles are vegetated to prevent soil erosion; • Implement Stormwater Management designs to prevent erosion and divert dirty water to the appropriate storage dams (PCDs); and • The design, construction, operation and maintenance of water management facilities must be in accordance with GN R 704	2	5	5	2	0.6	4.0	3.0	1.8	Low

												capacity requirements.									
	Groundwater	Contamination of groundwater resources	3	3	3	3	0.8	3.0	3.0	2.4	Moderate	• 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	2	2	2	2	0.6	2.0	2.0	1.2	Low

										🟧		water level change; • 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; • 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 • 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.									
12.0	Transportation of coal	Soil	Soil contamination and degradation due to potential hydrocarbon spillages.	3	5	4	1	0.8	4.0	2.5	2.0	Moderate	• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the	2	5	5	2	0.6	4.0	3.0	1.8	Low

											🟧		mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of hydrocarbons must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and • Vehicles with leaks must have drip trays in place.								🟨	

		Wetland and aquatic environment	Increased movement of heavy vehicles	2	5	4	1	0.8	3.7	2.3	1.9	Low	• 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; • 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	2	5	4	2	0.6	3.7	2.8	1.7	Low

													respectively; • Limit the footprint area of the operational activities to what is absolutely essential in order to minimise impacts as a result of subsidence; • Ensure that no incision and canalisation of the wetland features present takes place as a result of the proposed operational activities; • All erosion noted within the operational									

													footprint as a result of either subsidence or any potential surface activities should be remedied immediately and included as part of the ongoing rehabilitation plan; • Erosion berms should be installed on roadways and downstream of stockpiles to prevent gully formation and siltation of the freshwater resources. • A suitable AIP control									

													programme must be put in place so as to prevent further encroachment as a result of disturbance to the surrounding terrestrial zones; • All delineated watercourses should be designated as "No-Go" areas and be off limits to all unauthorised vehicles and personnel, with the exception of approved operational areas; • No material may be dumped or									

													stockpiled within any watercourses in the vicinity of the proposed operational footprint; • No vehicles or heavy machinery may be allowed to drive indiscriminately within any delineated watercourses. All vehicles must remain on demarcated roads and within the operational area footprint; • All vehicles must be regularly									

													inspected for leaks; • Re-fueling must take place on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil; • All spills should be immediately cleaned up and treated accordingly; • Appropriate sanitary facilities must be provided for the duration of the operational activities and all waste must be removed to an									

													appropriate waste facility; • Monitor all systems for erosion and incision; • 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.									

		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	• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of hydrocarbons must be	2	4	4	1	0.6	3.3	2.2	1.3	Low

													managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); and • Vehicles with leaks must have drip trays in place.									
13.0	Vehicular activity.	Air Quality	Fugitive dust generation emanating.	4	5	4	3	1.0	4.3	3.7	3.7	High	• Ensure the area of disturbance during the mining activities is restricted to the to the identified mining strips; • Ensure that dust suppressants are applied to gravel or unpaved roads that are in use;	2	5	5	2	0.6	4.0	3.0	1.8	Low

										🟧		• Cover the road going trucks from the tip to KPS with a tarpaulin to prevent coal dust generation; and • Vehicles will obey speed limits. Maintenance equipment and heavy vehicle speeds should be reduced, where possible, to prevent dust emissions.								🟨	

	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	• Ensure that access and haul roads are contoured to limit erosion from surface runoff, preventing further alteration to the topography; • Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; and • Vehicles will obey speed limits.	2	4	4	1	0.6	3.3	2.2	1.3	Low

	Soil	Soil contamination and degradation.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated; • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills; • All vehicles and machinery to be serviced in a hard park area or at an off-site location; • Storage of hydrocarbons and explosives	2	4	4	1	0.6	3.3	2.2	1.3	Low

											must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973); • Hydrocarbons and explosives storage facilities must be in a hard park bunded facility; and • Vehicles with leaks must have drip trays in place.										
	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	• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use; • Cover the	2	5	5	2	0.6	4.0	3.0	1.8	Low

											road going trucks from the tip to KPS with a tarpaulin to prevent coal dust generation; and • Vehicles will obey speed limits.										
	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	• Ensure a Storm Water Management Plan is implemented; • Ensure that dust suppressants are applied to gravel or unpaved roads that are in use and exposed surfaces; • Cover the	2	4	4	1	0.6	3.3	2.2	1.3	Low

										🟧		road going trucks from the tip to KPS with a tarpaulin to prevent coal dust generation; • Vehicles will obey speed limits; and • Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.								🟨	

	Surface Water	Contamination and sedimentation of clean water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure that dust suppressants are applied to gravel or unpaved roads that are in use and exposed surfaces; • Cover the road going trucks from the tip to KPS with a tarpaulin to prevent coal dust generation; • Vehicles will obey speed limits; and • Monitor surface water resources up and downstream of the Project area	2	5	4	1	0.8	3.7	2.3	1.9	Low

											to identify potential contamination.										
	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	• 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 • Ensure equipment and machinery is switched off when not in use. • The gravel roads must be graded and	2	4	4	1	0.8	3.3	2.2	1.7	Low

												compacted on a regular basis and as when required, should the roads remain unpaved; and • Adhere to the set speed limit in accordance to the Traffic Management Plan.									
	Traffic	Degradation of the road structures resulting in potential health and safety risks and soil erosion.	3	4	5	2	0.8	4.0	3.0	2.4	Moderate	• The gravel roads must be graded and compacted on a regular basis and as when required, should the roads remain unpaved; and • Adhere to the set speed limit in accordance to	2	3	3	2	0.8	2.7	2.3	1.9	Low

												the Traffic Management Plan.										
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	• Ensure a Stormwater Management Plan is implemented; • Ensure that no incision and canalisation of the watercourses; • Dirty water from the infrastructure areas must be diverted by channels and berms and separated from clean water. The dirty water must be stored	3	3	4	2	0.6	3.3	2.7	1.6	Low

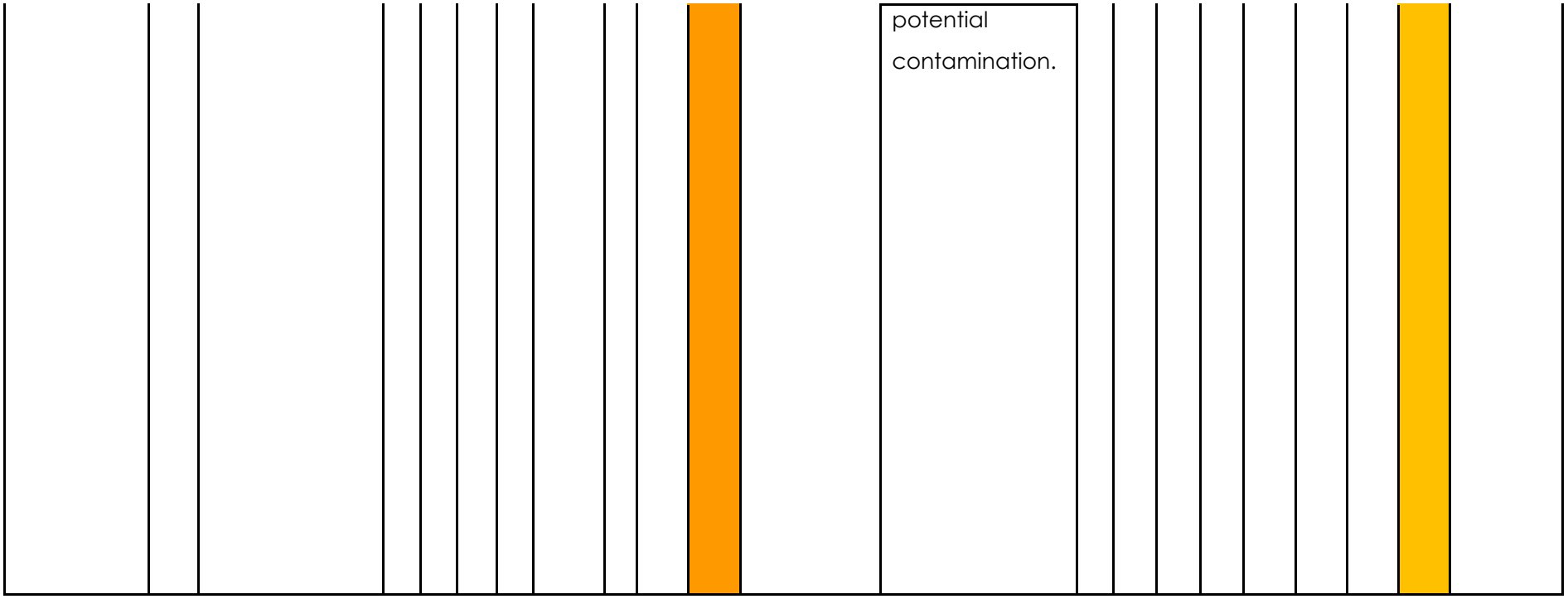
												in the existing PCDs; • No waste and/or contaminated material may be dumped or stockpiled within any watercourses; • The operation and maintenance of the PCD must be in accordance with the NWA Regulations set out in GN R704 and must have a minimum freeboard of 0.8 m and be able to contain a 1:50 year, 24-hour storm									

												event; and • Implement a biannual Aquatic Monitoring Programme to monitor potential impacts and implement corrective actions, should it be required.														

		Contamination of clean water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• 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; • The water levels in the Surface Main PCD and the Main Underground dams must be constantly monitoring and	3	3	4	2	0.6	3.3	2.7	1.6	Low

												recorded for evaluation of additional future capacity and/or treatment requirements; • Pipelines used for dewatering activities need to be sized based on the dewatering rates and volumes; • The operation and maintenance of the existing 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; • Monitor the dirty water management facilities on a monthly basis to identify potential leaks and implement management measures to rectify potential issues; and • Monitor surface water resources up and downstream of the Project area to identify								🟨	


potential
contamination.

	Groundwater	Groundwater contamination.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Ensure that pipelines and diversion channels and berms are monitored for potential leaks and structure failures; • Potential leaks and spills must be contained and cleaned up immediately, as well as the leakage location repaired; • The mine should supply the users with an alternative source of water in case the boreholes are dewatered;	3	3	4	2	0.6	3.3	2.7	1.6	Low

												• Monitor and control the potential decant of dirty water from the workings; • Ongoing monitoring to measure the water level in the proposed 5 Seam Mining area. The water level should be managed to stay well below the decant level of 1594 mamsl; • Monitor the borehole water quality and if the quality deteriorates, it is recommended									

												to start pumping to contain the plume; • Ensure that a stormwater management plan is in place to separate clean and dirty water; and • 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.									

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	• Waste must be stored away from surface water and drainage lines; and • General and hazardous waste must be removed and disposed of frequently at a registered disposal site.	3	3	4	2	0.6	3.3	2.7	1.6	Low
		soil	Degradation and contamination of soil	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• Burying of any waste including rubble, domestic waste, empty containers on the site must be strictly prohibited; • Proper waste storage facilities should be	3	3	4	2	0.6	3.3	2.7	1.6	Low

												available and used for the correct separation and storage of waste prior to collection and disposal; and • Generated waste must be removed to an approved disposal facility.									
	Surface Water	Contamination of clean water resources.	4	4	5	2	0.8	4.3	3.2	2.5	Moderate	• The sewer waster collected from the workings must be disposed of at a licensed sewage treatment facility; • Monitor surface water resources up	3	3	4	2	0.6	3.3	2.7	1.6	Low

											🟧		and downstream of the Project area to identify potential contamination; • Ensure that a stormwater management plan is in place to separate clean and dirty water; and • Waste must be separated at source and stored in appropriately designated areas for disposal at a licensed facility or by a reputable contractor.								🟨	

15. ENVIRONMENTAL IMPACT STATEMENT

Based on the impact assessment conducted by the environmental technician and various studies, the environmental impacts associated with the mining activities are expected to be localised and of low to medium significance, with one impact (impact on geology) remaining permanently high even if mitigation measures are implemented. Mitigation measures have been recommended by the EAP and specialists in order to eliminate and/or reduce environmental impacts. These mitigation measures and monitoring programmes have been included as commitment in the Environmental Management Programme. The Environmental Management Programme aims to present management measures that will eliminate, offset, or reduce adverse environmental impacts, as well as to provide the framework for environmental monitoring. The primary purpose of the Environmental Management.

Programme is to ensure that negative environmental impacts of the proposed project are effectively managed within acceptable limits and that the positive impacts are enhanced.

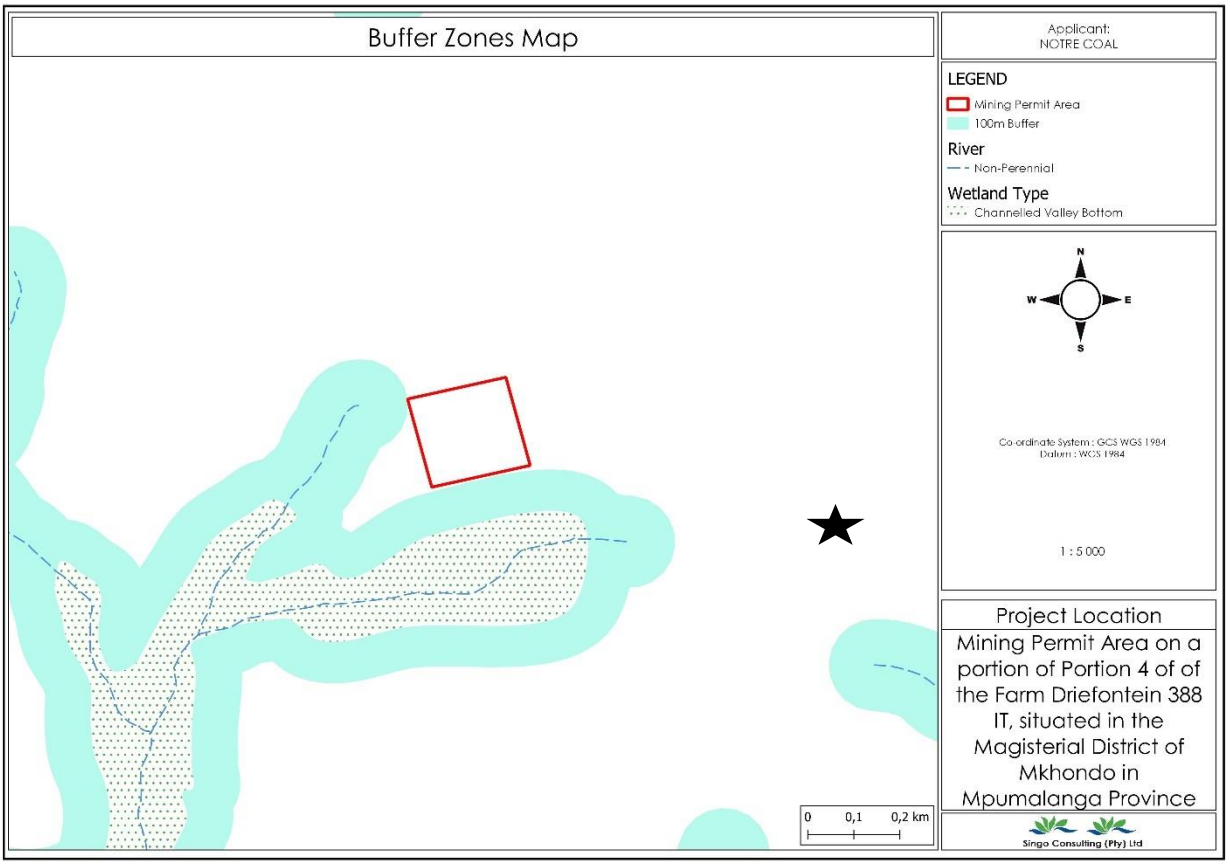
In terms of site sensitivities, the most sensitive features which will require protection on site may be summarised as follows:

- Critical Biodiversity Areas
- Watercourses and wetlands.
- Heritage sites (cemeteries).

In terms of positive impacts, the following key benefits have been identified:

- Coal supply for the market.
- Economic growth.
- Employment opportunities.

16. COMBINED SENSITIVITY



17. SUMMARY OF POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS

The positive implications of the proposed project include (i) economic growth, (ii) employment, (iii) Coal supply, (iv) education, (v) skills development and (vi) training. In terms of risks and negative implications, the mine will have an adverse effect on the environment. These include impacts to the geophysical, hydrological, biological, and social aspects of the local environment. The most severe risks relate to the potential for water pollution and the destruction of heritage resources. These potential impacts also have legal implications and risks should they not be minimised through the application of mitigation measures

This Basic Assessment Report and the associated EMPR has identified appropriate mechanisms for avoidance and mitigation of negative impacts. It is anticipated that the implementation of the measures stipulated in this report will result in effective mitigation of the negative impacts.

Conversely, the implementation of the mitigation measures is designed to maximise the positive aspects of the project and it will result in a significant positive influence as a result of the small-scale mine's operation. There is a notable risk that may results in relation to influx of employee which may give rise to theft on surrounding farms.

18. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES

Based on the assessment and, where applicable, recommendations from specialist reports, documentation of proposed impact management objectives and impact management outcomes for inclusion in the EMPr and as an authorisation condition.

a) Management objectives	b) Role	c) Management outcomes
d) Dust handling	e) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Control dust liberation into the surrounding environment by using water spraying and/or other dust allaying agents. Limit speed on the access roads to 40km/h to prevent the generation of excess dust. Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Assess effectiveness of dust suppression equipment. Ensure the crusher plant has operational water sprayer to alleviate dust generation from the conveyor belts.
f) Noise handling	g) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the	Ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the mining area.

a) Management objectives	b) Role	c) Management outcomes
	Environmental Control Officer.	Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify surrounding land owners in writing prior to blasting.
h) Management of weed/ invader plants	i) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Implement a weed and invader plant control management plan. Control declared invader or exotic species on the rehabilitated areas. Keep the temporary topsoil stockpiles free of weeds.
j) Surface and storm water handling	k) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Divert storm water around topsoil heaps, stockpile areas and access roads to prevent erosion and material loss. Divert runoff water around stockpile areas with trenches and contour structures to prevent erosion of work areas. Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.

a) Management objectives	b) Role	c) Management outcomes
l) Management of health and safety risks	m) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer. Blasting contractor to comply with national blasting requirements.	Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Inform the surrounding landowners and communities of any blasting event. Use noise mufflers and/or soft explosives during blasting, limit fly rock. Give audible warning of a pending blast at least 3 minutes in advance of the blast. Remove all fly rock (of diameter 150 mm and larger) which falls beyond the working area, with the rock spill. Ensure that workers have access to the correct PPE as required by law. Ensure all operations comply with the Occupational Health and Safety Act.
n) Waste management	o) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Ensure no waste pile is established within 100 m of the edge of any river channel or other water bodies. Ensure regular vehicle maintenance take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200L closed container/bin inside the emergency service area. Collect effluents containing oil, grease or other industrial substances in a suitable receptacle and remove from site, for resale or appropriate disposal at a

a) Management objectives	b) Role	c) Management outcomes
		recognised facility. Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage and polluted soil and disposing thereof at a recognised facility. File proof. Ensure availability of suitable covered, conveniently placed receptacles at all times for waste disposal. Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site at Witbank. Prevent refuse from being dumped on or in the vicinity of the mine area. Biodegradable refuse to be handled as indicated above.
p) Management of access roads	q) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Divert storm water around access roads to prevent erosion. Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.
r) Topsoil handling	s) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the	Remove the first 300mm of topsoil in strips and store at stockpile area. Keep the temporary topsoil stockpiles free of weeds. Place topsoil stockpiles on a levelled area

a) Management objectives	b) Role	c) Management outcomes
	Environmental Control Officer.	and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. Seed the stockpiled topsoil heaps if vegetation does not re-establish within 6 months of stockpiling. Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.
t) Fauna and flora	u) Site Manager to ensure compliance with EMP guidelines. Compliance to be monitored by the Environmental Control Officer.	Ensure no fauna is caught, killed, harmed, sold or played with. Instruct workers to report any animals that may be trapped in the working area. Ensure no snares are set or nests raided for eggs or young. Do not remove plants/trees without ECO approval.

19. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

Any aspects which must be made conditions of the Environmental Authorisation.

The management objectives listed in this report should be considered for inclusion in the environmental authorisation.

20. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES, AND GAPS IN KNOWLEDGE

Which relate to the assessment and mitigation measures proposed.

The assumptions made in this document, which relate to the assessment and mitigation measures proposed, stem from site-specific information gathered from the property owner, as well as site inspections and background information gathering.

21. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD BE AUTHORISED

No fatal flaws could be identified that were deemed severe enough to prevent the activity from continuing, should the mitigation measures and monitoring programmes proposed in this document should be implemented on site. The management objectives listed in this report should be considered for inclusion in the Environmental Authorisation.

22. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The applicant requests the Environmental Authorisation to be valid for a two-year period.

23. 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 the Basic Assessment Report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to the Basic Assessment Report and the Environmental Management Programme report.

24. FINANCIAL PROVISION

State the amount required to manage and rehabilitate the environment.

Table 25: Financial provision

CALCULATION OF THE QUANTUM

Applicant: **Notre Coal (Pty) Ltd** REF No: **MP 30/5/1/3/2/13599 MP**
Evaluator: **Zwivhuya Tshabuse** Date: **Nov-22**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	**Dismantling of processing plant and related structures (including overland conveyors and powerlines)**	**m3**	**0**	**17,14**	**1**	**1**	**0**
2 (A)	**Demolition of steel buildings and structures**	**m2**	**0**	**238,71**	**1**	**1**	**0**
2(B)	**Demolition of reinforced concrete buildings and structures**	**m2**	**0**	**351,79**	**1**	**1**	**0**
3	**Rehabilitation of access roads**	**m2**	**0**	**500**	**1**	**1**	**0**
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	414,61	1	1	**0**
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	226,15	1	1	**0**
5	**Demolition of housing and/or administration facilities**	**m2**	**0**	**477,42**	**1**	**1**	**0**
6	**Opencast rehabilitation including final voids and ramps**	**ha**	**4,98**	**242984,15**	**0,4**	**1**	**484024,4268**
7	**Sealing of shafts adits and inclines**	**m3**	**0**	**128,15**	**1**	**1**	**0**
8 (A)	**Rehabilitation of overburden and spoils**	**ha**	**0,3**	**166847,44**	**1**	**1**	**50054,232**
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	207805,47	1	0	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	603565,59	1	1	**0**
9	Rehabilitation of subsided areas	ha	0	139709,6	1	1	**0**
10	**General surface rehabilitation**	**ha**	5	132171,31	0,34	1	**224691,227**
11	River diversions	ha	0	132171,31	1	1	**0**
12	**Fencing**	**m**	**0**	**150,77**	**1**	**1**	**0**
13	**Water management**	**ha**	**0,08**	**50255,25**	**0,6**	**1**	**2412,252**
14	**2 to 3 years of maintenance and aftercare**	**ha**	**0**	**17589,34**	**1**	**1**	**0**
15 (A)	**Specialist study**	**Sum**	**0**	**0**	**1**	**1**	**0**
15 (B)	Specialist study	Sum	0	0	1	1	**0**
					Sub Total 1		**761182,1378**

1	Preliminary and General	91341,85654	**weighting factor 2** 1	**91341,85654**
2	Contingencies	76118,21378		**76118,21378**
			Subtotal 2	**928642,21**
			VAT (15%)	**139296,33**
			Grand Total	**1067939**

SIGN Zwivhuya Tshabuse
DATE 01/11/2022

24.1 Explain how the aforesaid amount was derived

An amount of R1067939 will be made available by Notre Coal (Pty) Ltd for rehabilitation purposes. The financial provision was calculated according to Financial Provision Regulations 6 of 2015, published under Government Notice R1147 in Government Gazette 39425 of November 2015 (the Financial Provisioning Regulations) for National Environmental Management Act Page 148 of 316 1998 (Act No. 107 of 1998) (NEMA), amended, Government Notice 24 in Government Gazette 42956 dated 17 January 2020

1.1 Confirm that this amount can be provided 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 PWP.

The mining operation will be self-funded through income generated by sales of the coal mined. Bridging finance, will be supplied where needed by potential investors.

25. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

Compliance with the provisions of sections 24(4) (a) and (b) read with section 24 (3)(a) and (7) of the NEMA (107 of 1998). The BASIC ASSESSMENT report must include the:

25.1 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.

The proposed coal mine will be established on a heavily modified area covered with plantation and natural vegetation. Upon closure, the land will be rehabilitated to a state fit for agricultural purposes. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document are not implemented and managed on-site. However, due to the distance of the community from the mining area (3.41 km) these impacts are of low-medium significance.

The operation of the mine will have several positive impacts, such as job creation for skilled, semi-skilled and unskilled permanent workers. The proposed coal mine pit will therefore contribute locally by aiding in the development of the area and boosting the local economy through increased municipal revenue. On a national scale, this will aid by boosting the slowly growing SA economy.

25.2 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 the Act, attach the investigation report and confirm that the applicable mitigation is reflected herein.

No archaeological or culturally significant areas could be identified due to the already disturbed nature of the proposed project areas.

26. OTHER MATTERS REQUIRED IN TERMS OF SECTION 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 an Appendix.

The site and project alternatives investigated during the impact assessment process were done at the hand of information obtained during the site investigation, public participation process and desktop studies conducted of the study area. As discussed earlier, the following alternatives were considered:

- Establishment of a coal 1km away from the residential area or any form of development vs. establishment of a coal pit in an un-utilised (preferred alternative)
- Open cast mining (preferred alternative) vs. underground mining
- Temporary Infrastructure (preferred alternative) vs. permanent Infrastructure
- Access onto provincial road (preferred alternative) vs. access onto national road
- No-go alternative on CBA irreplaceable area.

27. INTRODUCTION

27.1 Details of the EAP

The details and expertise of the EAP are detailed in Sections 2 above as required.

27.2 Description of the Aspects of the Activity

A description of the aspects of the activity covered by the EMPR below is included in Section 2 above.

28. ENVIRONMENTAL MANAGEMENT PRINCIPLES

It is extremely important for effective environmental management that the Applicant be aware of the general principles upon which sound environmental management is based and that these principles are considered in all aspects of the mining operation. NEMA has established a general framework for environmental law, in part by prescribing national environmental management principles that must be applied when making decisions that may have a significant impact on the environment. These principles are briefly summarized in the sections that follow.

28.1 Holistic Principle

The Holistic principle, as defined by NEMA (Section 2(4)(b) requires that environmental management must be integrated, acknowledging that all elements of the environment are linked and inter-related and it must take into account the effect of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option (defined below). Holistic evaluation does not mean that a project must be looked at as a whole. It rather means that it must be accepted that there is a whole into which a project introduced. If the indications are that the project could have major adverse effects, the project must be reconsidered and where appropriate re-planned or relocated to avoid an adverse impact or to ensure a beneficial impact.

28.2 Best Practicable Environmental Option

When it is necessary to undertake any action with environmental impacts, the different options that

could be considered for the purpose must be identified and defined. The Best Practicable Environmental Option (BPEO) is defined in NEMA as "the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term." Other guidelines typically used for environmental management in terms of other legislation include BPM which is the Best Practicable Means and BAT which is the Best Available Technology.

28.3 Sustainable Development

The concept of sustainable development was introduced in the 1980's with the aim to ensure that the use of natural resources is such that our present needs are provided without compromising the ability of future generations to meet their own needs. The constitution of South Africa is built around the fact that everyone has the right to have the environment protected through reasonable legislative and other measures that secure ecologically sustainable development. The National Environmental Principles included in the NEMA require development to be socially, environmentally and economically sustainable.

28.4 Preventative Principles

The preventative principle is fundamental to sustainable development and requires that the disturbance to ecosystems and the pollution, degradation of the environment and negative impacts on the environment be avoided, or, where they cannot be altogether avoided, are minimised and remedied.

28.5 The Precautionary Principles

The precautionary principle requires that where there is uncertainty, based on available information, that an impact will be harmful to the environment, it is assumed, as a matter of precaution, that said impact will be harmful to the environment until such time that it can be proven otherwise. The precautionary principle requires that decisions by the private sector, governments, institutions and individuals need to allow for and recognize conditions of uncertainty, particularly with respect to the possible environmental consequences of those decisions. In South Africa, the DWA (then DWAF, now DWS) adopted a BPEO guideline in 1991 for water quality management and in 1994 in the Minimum Requirements document for waste management.

In terms of DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, the precautionary principle is defined as, "Where a risk is unknown; the assumption of the worst-case situation and the making of provision for such a situation." Here the precautionary principle assumes that a waste or an identified contaminant of a waste is "both highly hazardous and toxic until proven otherwise."

In the context of the EIA process in South Africa, the precautionary principle also translates to a requirement to provide sound, scientifically based, information that is sufficient to provide the decision-making authority with reasonable grounds to understand the potential impacts on the environment, the extent thereof and how impacts could be mitigated. If such information is not adequate for this purpose, the relevant authority cannot be satisfied as is required and then the authority should require that further information be collected and provided.

28.6 Duty of Care and Cradle to Grave Principle

In terms of the NEMA Section 28, "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."

By way of example, the principle of "duty of care" in terms of waste management emphasizes the responsibility to make sure that waste is correctly stored and correctly transported, as it passes through the chain of custody to final point of disposal. This means that waste must always be stored safely and securely. The company removing and disposing of waste also holds the responsibility to hold the relevant licenses, and that waste is transported alongside the necessary paperwork.

"Cradle to Grave" refers to the responsibility a company takes for the entire life cycle of a product, service or program, from design to disposal or termination. In terms of the DWAF Minimum Requirements for the Handling and Disposal of Hazardous Waste, 1994, "any person who generates, transports, treats or disposes of waste must ensure that there is no unauthorized transfer or escape of waste from his control. Such a person must retain documentation describing both the waste and any related transactions. In this way, he retains responsibility for the waste generated or handled." This places responsibility for a waste on the Generator and is supported by the "Cradle to Grave" principle, according to which a "manifest" accompanies each load of Hazardous Waste until it is responsibly and legally disposed. This manifest is transferred from one transporter to the next along with the load, should more than one transporter be involved. Once the waste is properly disposed of at a suitable, permitted facility, a copy of the manifest must be returned to the point of origin." Duty of Care offers one strategy to implement sustainable development.

28.7 Polluter Pays Principle

The "polluter pays principle" entails that the person or organization causing pollution is liable for any costs involved in cleaning it up or rehabilitating its effects. It is noted that the polluter will not always necessarily be the generator, as it is possible for responsibility for the safe handling, treatment or disposal of waste to pass from one competent contracting party to another. The polluter may therefore not be the generator but could be a disposal site operator or a transporter. Through the

'duty of care' principle, however, the generator will always be one of the parties held accountable for the pollution caused by the waste. Accordingly, the generator must be able to prove that the transferal of management of the waste was a responsible action. The polluter pays principle acceding to NEMA dictates that "the cost of remedying pollution, environmental degradation and consequent adverse effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment."

28.8 Duty of Care Responsibilities

The principle of duty of care is especially important to understand when it comes to pollution that arises as a result of mining. Notwithstanding any licenses or permits that may exist, the mine still has a responsibility to take suitable measures should pollution arise as a result of the mining activities.

Training and awareness should be fostered in all staff working to ensure that they can perform their duties. Failure to comply with the provisions in the EMPR and NEMA would be a contravention of the Act. The relevant sections of NEMA are provided below, to outline the duty of care and responsibility that the applicant and all employees have towards the environment. The National Environmental Management Act (Act 107 of 1998) (NEMA) Section 28 makes provision for Duty of care and remediation of environmental damage. The binding principals are described below:

- Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.
- Without limiting the generality of the duty in subsection (1), the persons on whom subsection (1) imposes an obligation to take reasonable measures, include an owner of land or premises, a person in control of land or premises or a person who has a right to use the land or premises on which or in which-
- any activity or process is or was performed or undertaken or
    - any other situation exists, which causes, has caused or is likely to cause significant pollution or degradation of the environment.
- The measures required in terms of subsection (1) may include measures to-
    - investigate, assess and evaluate the impact on the environment.
    - inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment.
    - cease, modify or control any act, activity or process causing the pollution or degradation or

prevent the movement of pollutants or the cause of degradation.

- eliminate any source of the pollution or degradation or
- remedy the effects of the pollution or degradation.

- No person may-
  - unlawfully and intentionally or negligently commit any act or omission which causes significant or is likely to cause significant pollution or degradation of the environment.
  - unlawfully and intentionally or negligently commit any act or omission which detrimentally affects or is likely to affect the environment in such manner or
  - refuse to comply with a directive issued under this section.

Any person who contravenes or fails to comply with subsection (14) is guilty of an offence and liable on conviction to a fine not exceeding R1million or to imprisonment for a period not exceeding 1 year or to both such a fine and such imprisonment.

28.9 Failure to Comply with Environmental Considerations

Within the provisions of the relevant environmental legislation, there are a number of penalties for non- compliance or offences. Below a few extracts are presented for information purposes, however these must not be read in isolation and the reader is reminded that there are other acts that may be applicable to the relevant project:

- NEMA Section 24F(2): It is an offence for any person to fail to comply with or to contravene the conditions applicable to any environmental authorization granted for that listed activity. 24F(4) A person convicted for an offence under subsection 2 is liable to a fine not exceeding 5 million rand or to imprisonment not exceeding 10 years or to both such a fine and imprisonment
- NEMA Section 34(6): Whenever any manager, agent or employee does or omits to do an act which it had been his or her task to do, or to refrain from doing on behalf of the employer and which would be an offence under any provision listed in Schedule 3 (relates to all environmental related acts) for the employer to do or omit to do, he or she shall be liable to be convicted and sentenced in respect thereof as if he or she were the employer
- NWA Section 151 (1): "No person may fail to comply with any condition attached to a permitted water use (Water Use License)"
- NWA Section 151 (2): "Any person who contravenes any provision of subsection 1 is guilty of an offence and liable, on the first conviction, to a fine or imprisonment for a period not exceeding 5 years or to both a fine and such imprisonment (10 years for second conviction)"
- In addition, if anyone is convicted of an offence under the act which has resulted in harm, loss or damage to any other person, the court may award damages to be paid by the accused

or convicted

- NWA Section 154: Makes provision that it's not only the applicant that may be liable but also an employee or agent acting on their behalf
- In terms of the MPRDA, Section 98, any person is guilty of an offence if he or she fails to comply with the requirements of the issued mining permit
- MPRDA Section 99 (1a): any person convicted of an offence in terms of the MPRDA is liable to a fine not exceeding R100, 000 or to imprisonment to a period not exceeding 2 years or to both such fine and imprisonment.

It is recommended that a procedure for non-compliances (i.e. incentives or disincentives for conformance and non-conformance with the EMPR requirements) must be employed to ensure that the EMPR is adequately implemented. The system to be used must be determined before mining commences, included in the tender documents and contracts, and made clear to all project workers. The system may include that the independent ECO can be authorised to impose spot fines on the Contractor and/or his subcontractors for any of the transgressions detailed below:

- Littering on site
- Lighting of illegal fires on site
- Persistent or un-repaired oil leaks
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "No - Go" areas
- Any vehicles being driven in excess of designated speed limits
- Removal and/or damage to fauna, flora or heritage objects on site
- Legal contraventions

Such fines should be issued in addition to any remedial costs incurred as a result of non-compliance with the Environmental Specifications and or legal obligations.

29. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

29.1 Determination of Closure Objectives

The vision, and consequent objective and targets for rehabilitation, decommissioning and closure, aim to reflect the local environmental and socio-economic context of the project, and to represent both the corporate requirements and the stakeholder expectations.

The receiving environment within which the mining activities will be undertaken includes the following key land uses:

- Low shrubland.
- Grassland.
- Plantations

Concerns raised by the stakeholders consulted during the public participation process for the basic assessment have been taken into consideration and will be included in the final BAR and EMPR which will be submitted to the DMRE.

In practice the post closure land-use will depend on the pre-mining land use of the study area. Considering that the exact location of the planned mining has been identified and assessed, it can be said that the closure plan will sufficiently address the objectives for the site. This EMPR does, however, aim to address the key closure objectives which are likely to remain consistent for the majority of the mining activities.

The EMPR includes a monitoring and a rehabilitation plan. The plan shall outline the closure objectives which are aimed at reinstating the landform, land use and vegetation units to the same as before mining operations take place unless a specific, reasonable alternative land use is requested by the landowner. As such, the intended end use for the disturbed mining area and the closure objectives will be defined in consultation with the relevant landowner. Proof of such consultation will be submitted together with the Application for Closure Certificate. The overall aim of the rehabilitation plan is to rehabilitate the environment to a condition as close as possible to that which existed prior to mining.

This shall be achieved with a number of specific objectives.

- Making the area safe. i.e. decommission mining activities so as to ensure that the environment is safe for people and animals. This entails refilling excavations, etc.
- Recreating a free draining landform. This entails earthworks infilling, reshaping, levelling, etc. to recreate as close as possible the original topography and to ensure a free draining landscape.
- Re-vegetation. This involves either reseeding or allowing natural succession depending on the area, climate etc.
- Storm water management and erosion control. Management of stormwater and prevention of erosion during rehabilitation. E.g. cut off drains, berms etc. and erosion control where required.
- Verification of rehabilitation success. Entails monitoring of rehabilitation.

29.2 Volumes and Rate of Water Use Required for the Operation

Limited water will be consumed by the surface dust suppression activities (water mist added for

dust suppression when required), approximately 18000 litres per day.

29.3 Has a Water Use License Been Applied For?

No. No mining activities will occur within identified watercourses. No water use license has been applied for as part of this this Mining Permit application. Water required for dust suppression will be trucked in.

30. IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Table 26: Impacts to be mitigated.

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Environmental Management					
General opencast management	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine shall ensure that social and environmental human resources have the knowledge, skills, and experience necessary to perform their work with competence and efficiency.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
General opencast management	Planning and Design Construction	No direct physical disturbance	The small-scale mine shall appoint a suitably qualified and competent	Shall adhere to the ESMS Framework guided by	Throughout

	Operation		Environmental Control Officer (ECO)	Equator Principles, and	
	Decommissioning		who shall preferably be independent	IFC Performance	
	Rehabilitation and		from the Applicant and the Contractor.	Standards	
	Closure		The ECO must preferably have a		
			tertiary qualification in an		
			Environmental Management or		
			appropriate field. The ECO should have		
			appropriate qualification and		
			experience in the implementation of		
			environmental management		
			specifications. The ECO shall be tasked		
			with auditing the mines environmental		
			compliance on a regular basis		

			(annually). The Applicant shall provide		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			the ECO with the necessary support to ensure that the environmental aspects relating to the development is adhered to.		
General opencast management	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	All contractors and sub-contractors must have a copy of this EMPR at the point of use and should be briefed by the Pit Environmental Officer (EO) or ECO with regards to the use and implementation of the EMPR.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

General opencast management	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The EMPR must be binding for all contractors operating on behalf of the Mining Permit Holder.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
General opencast management	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine shall ensure that all sub-contractors working under the main mining contractor abide by the requirements of the EMPR through the inclusion of the EMPR and applicable environmental requirements in contractual agreements for all sub- contractors.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for

					Implementation
Health and Safety					
General opencast	Planning and Design	Health and safety	The small-scale mine shall ensure that	OHS	Throughout
management	Construction	risks are classified	reasonable measures are taken to	MHSA	
	Operation	as high significance	ensure the safety of all site staff,		
	Decommissioning	due to the value of	including induction training for all		
	Rehabilitation and	human life	employees and visitors.		
	Closure				
General opencast	Construction	Health and safety	The small-scale mine shall provide	OHS	Throughout
management	Operation	risks are classified	appropriate Personal Protective	MHSA	
	Decommissioning	as high significance	Equipment (PPE) to employees		
	Rehabilitation and	due to the value of	wherever required and in accordance		

	Closure	human life	with the risks associated with their		
			activities.		
General opencast	Construction	Health and safety	The small-scale mine shall undertake	OHS	Throughout
management	Operation	risks are classified	safety audits to ensure compliance with	MHSA	
	Decommissioning	as high significance	the (i) Occupational Health and Safety		
	Rehabilitation and	due to the value of	Act (Act No. 85 of 1993) and associated		
	Closure	human life	regulations and (ii) Mine Health and		
			Safety Act (Act 29 of 1996) as		
			amended and associated regulations.		
General opencast	Construction	Health and safety	The small-scale mine shall implement a	OHS	Throughout
management	Operation	risks are classified	safety reporting procedure to ensure	MHSA	
	Decommissioning	as high significance	that all accidents and incidents (safety		

	Rehabilitation and	due to the value of	and environmental) are recorded and		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Closure	human life	reported to the pit manager and EO.		
General opencast management	Construction Operation Decommissioning Rehabilitation and Closure	Health and safety risks are classified as high significance due to the value of human life	Any containers in which hazardous substances (e.g. fuel, paints, solvents) are stored shall be clearly marked as to the contents therein (in accordance with OHSA regulations).	OHS MHSA	Throughout
Site Access and Security					

General opencast management	Construction Operation Decommissioning Rehabilitation and Closure	Security risks can have a highly significant impact although minimise	On-site vehicles must be limited to approved access routes and areas (including turning circles and parking) on the site so as to minimise excessive environmental disturbance to the soil and vegetation off site, and to minimise disruption of traffic.	OHS MHSA	Throughout
General opencast management	Construction Operation	The creation of roads can have a significant and relatively widespread impact, especially as roads create corridors	Any new access (if required) shall first be approved by the pit manager and ECO (method statement may be required) and should be provided with erosion and silt pollution prevention measures where required.	OHS MHSA	Throughout

General opencast management	Construction Operation Decommissioning	Security risks can have a highly significant impact	No person will be allowed to keep or use alcohol, recreational drugs, traditional or modern weapons, snares	OHS MHSA	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Rehabilitation and Closure	although localised	or otherwise dangerous objects on-site, or to enter the site while under the influence of alcohol or drugs.		
Environmental Awareness					

General opencast management	Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	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/Pit EO wherever possible.	NEMA	Throughout
Social and Socio-Economic					
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine shall develop and implement a recruitment policy that allows equal opportunity to all people (woman, disabled) and give preference to local labour from the local Municipality.	Adherence to corporate policies and compliance with legislation including Labour Act and Employment Act	Throughout

General opencast management	Planning Construction Operation Decommissioning	No direct physical disturbance	The procurement policy for the mine should focus on utilising service providers from the local area so as to encourage the growth of businesses.	Adherence to corporate policies and compliance with legislation including Labour Act and	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Rehabilitation and Closure			Employment Act	
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine shall attempt, where possible, to recruit local service providers and contractors to undertake construction activities.	Adherence to corporate policies and compliance with legislation including Labour Act and Employment Act	Throughout

General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine and contractor(s) shall comply with all relevant legislation pertaining to labour recruitment and employment.	Compliance with legislation including Labour Act and Employment Act	Throughout
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	The small-scale mine shall appoint a community liaison officer that deals specifically with the surrounding communities. The mine shall communicate frequently with the affected stakeholders to ensure that they understand the processes and do not develop more unrealistic expectations.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Appointment as early as possible and implemented throughout
General opencast management	Planning Construction Operation	No direct physical disturbance	The small-scale mine shall establish a detailed grievance mechanism for	Shall adhere to the ESMS Framework guided by	Developed as early as possible and

			communities to lodge concerns,		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation

	Decommissioning Rehabilitation and Closure		suggestions and grievances which can be dealt with by the Project in a timely manner. The grievance mechanism shall aim to accomplish the following objectives: • Receive and register external communications from the public. • Screen and assess the issues raised and determine how to address them. • Identify roles and responsibilities relating to the reporting, recording and addressing of grievances. • Maintenance of a grievance register to record and track, and	Equator Principles, and IFC Performance Standards	implemented throughout

			document responses and actions taken to address grievances. • Reporting of grievances to DMRE. • Adjust the management program, as appropriate.		
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and	No direct physical disturbance	A grievance register must be maintained by the mine to log grievances from landowners, communities, occupants and other	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance	Developed as early as possible and implemented throughout

			Interested and Affected Parties, and		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Closure		response to such grievances. The grievance register should be provided to authorities at any point in time if so requested. The grievance register shall contain, at a minimum, the following information: • Date of the grievance being lodged. • Location relating to the grievance. • Contact details of the complainant. • Grievance description (detailed as possible). • Person receiving grievance.	Standards	

			• Agreed corrective action. • Responsible party for corrective action. • Summary of actions taken (and date action was taken).		
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	Employees should be sourced from the local area where possible.	Adherence to corporate policies and compliance with legislation including Labour Act and Employment Act	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
General opencast management	Operation	No direct physical disturbance	The workforce should undergo up- skilling during the operation of the mine so that they may be productively absorbed into the local economy after mine closure.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	During operation
General opencast management	Planning Construction Operation Decommissioning Rehabilitation and Closure	No direct physical disturbance	Stakeholder engagement will continue throughout to ensure local communities are kept informed and allowed to raise issues. These issues will then be addressed through the grievance mechanism.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
General opencast	Operation	No direct physical disturbance	Where retrenchments are unavoidable, they should be managed humanely	Legislative requirements	When retrench

management			according to legislative requirements.		ments are required
General opencast management	Operation	No direct physical disturbance	Upon closure, the contracting company for the mining operations should attempt to redeploy employees to its other operations.		As required when scaling down operations and prior to closure
Site Establishment					
Construction camp sewage management Dust suppression	Construction	Construction impacts are temporary in nature and have a limited	The physical footprint of any construction or site camp shall be minimised and vegetation clearance should be kept to the minimum required	Shall adhere to the ESMS Framework guided by Equator Principles and IFC Performance	Through out construction

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation

Earthworks Fencing Fuel storage and refueling		extent but may include significant impacts	area. Topsoil shall be handled in accordance with the soil management principles presented in this EMPR and the soil management guide developed for the Mine.	Standards OHSA MHSA NEMA MPRDA	
Hazardous substances management			All construction and/or site camps shall be enclosed with a fence. The mesh size should be small enough for the fence to act as a catch net for blown debris and as a demarcation of the site. The fence shall be maintained as required to ensure access control remains effective. All temporary fences erected by the contractor shall be removed and the site restored on completion of construction, unless otherwise agreed in writing with the Applicant.		
Site security					
Soil management					
Truck and heavy machinery operation					
Utilisation of portable toilets and generation of sewage					

Vegetation clearance			Site and construction camps must be kept in a clean, neat and tidy condition at all times. The contractor shall maintain good housekeeping practises and shall comply with the relevant HSE regulations in terms of materials storage. Stockpiles of construction materials may only be placed within		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			demarcated areas within the construction camp. Laydown areas must be kept neat and tidy and free of litter or waste at all times.		

			A waste storage area must be established within the site camp/construction camp that provides for appropriate and adequate waste storage and waste separation for recycling. All waste must be adequately contained so as to prevent ground and/or water pollution. The total volume of general waste stored shall not exceed 100 m3. In the case that a storage capacity exceeding this amount is required or planned for, the necessary waste permits must be obtained in accordance with the NEMWA beforehand (GN 718).		
			The site camp/construction camp shall have adequate provision for the storage of hazardous waste (e.g. old oil filters, soil from spills etc.) and		

			the waste shall be contained within closed containers to prevent the possibility of spillages.		
			All fuel storage areas shall be bunded.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			Fuel storage areas may not be located within 100 m of the watercourse and the total volume of fuel stored on site may not exceed 30 m3 (30 000 liters) without the necessary authorisation in terms of the NEMA. Fuel storage areas must be provided with an impervious surface with the provision to contain any potential fuel spillages during re- fueling (e.g. a bunded, sealed concrete slab which drains to a sump/oil separator). No person smoke or take part in any activity that may results in sparks in the vicinity of fuels and other		

			flammable substances to prevent ignition.		
			All hazardous substances shall be stored within designated areas that comply with the relevant HSE standards (e.g. access control, HSE signage, fire-fighting equipment etc.) and that provide for spill prevention and containment. It is recommended that a dedicated, bunded and		

			fenced Hazardous Storage Area is provided within the construction camp for this		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			purpose.		
			Site camps/construction camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and this equipment must be readily accessible.		
			No open fires shall be permitted within the site camp/construction camp, except where approved by the responsible safety officer and ECO and within a designated structure designed for that purpose. In such cases fire fighting equipment must be readily available in the		

			vicinity of the fire place and an appropriate safety representative should be present at all times during burning of the fire. All fires shall be fully extinguished after use.		
Flora					
General surface rehabilitation Infrastructure removal Maintenance and operation of site	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high	The small-scale mine, in consultation with the ECO, shall develop an appropriate weed management plan, to be implemented throughout the lifespan of the project. The weed management plan shall aim to eradicate and control	NEMA NEM BA CAR A Shall adhere to the ESMS Framework guided by	Development of plan as soon as possible and implementation throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
infrastructure and facilities		significance	alien vegetation in accordance with NEMBA. Control involves killing the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion. Specialist input shall be sought in developing the plan to ensure the potential for	Equator Principles IFC Performance Standards	
Mining Permit area site preparation					
Filling opencast voids					
Post closure monitoring and maintenance					

Site establishment			residual or latent impacts resulting from alien vegetation removal are minimised and mitigated. The weed management plan shall include appropriate measures for removal/control of alien vegetation across the entire site. The weed management plan shall include the following measures as a minimum: • Weeds and invader plants will be controlled in the manner prescribed for that category by the Conservation of Agricultural Resources Act or in terms of Working for Water guidelines.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			• Institute an eradication/control programme for early intervention if invasive species are detected, so that their spread to surrounding natural ecosystems can be prevented. • Institute a monitoring programme to detect alien invasive species early, before they become established and, in the case of weeds, before the release of seeds (including closure and post closure monitoring).		

			• The Plan must clearly define the areas from which alien vegetation must be removed as well as the plant, equipment, materials and methodology to be used		
	Planning and Design Construction Operation	Impacts on red data species has a very high significance	All Red Data Plants within the Mining Permit area, roads and all other infrastructure areas should be transplanted and relocated within either	NEMBA Threatened or Protected	Prior to commencement of activities or disturbance

				Species (TOPS) regulations	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			a nursery or any neighbouring piece of land where it can be conserved until rehabilitation can take place. These species can either be replanted during the rehabilitation process of the Opencast pit mining areas as rehabilitation of mined out areas progresses, or left in their new location if this is not to be disturbed in future.	National Forests Act DAFF permitting requirements	

	Planning and Design Construction Operation	Impacts on red data species has a very high significance	The small-scale mine shall ensure that the relevant permits are obtained to remove and relocate protected species. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetate impacted areas as soon as possible.	NEMBA TOPS regulations National Forests Act DAFF permitting requirements	Prior to commencement of activities or disturbance
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to	No unnecessary clearing of vegetation will take place, to enable seeds from undisturbed areas to move into disturbed area through natural processes of succession.	NEMA	Throughout

		be a relatively high significance			

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high significance	The small-scale mine shall plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetate impacted areas as soon as possible. Allow pioneer species to establish in disturbed areas. Erosion prevention	NE MA CA RA	Throughout

			measures will be implemented along infrastructure areas.		
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high significance	The harvesting of plants by construction and mine workers is prohibited on site. This includes the harvesting of plants for firewood, construction material, the making of crafts and medicinal purposes.	NEMA	Throughout

	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high significance	Damage or harm to threatened plant species is illegal in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004). Threatened species are defined in terms of the most recent Red Data list of Southern African Plants. Employees	NEMBA TOPS regulations National Forests Act DAFF permitting requirements	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			and workers shall be educated with regards to any potential threatened species that may be encountered on site, and shall take the necessary actions to prevent of harm to any such species found on site.		

	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high significance	All alien vegetation occurring on the site must be controlled in accordance with NEMBA. The area should be assessed and the alien invasive species controlled prior to the commencement of the construction activities. The area should be monitored for the establishment and spread of alien invasive species throughout. The weed management plan and principles for weed management presented in this EMPR must be implemented throughout the lifespan of the project.	NEMA NEMBA CARA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
	Construction Operation	Impacts on flora may occur over a large area (active mine areas) and	All soil stockpiles shall be kept free of any weeds or alien invader plant species.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

		has the potential to be a relatively high significance			

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and has the potential to be a relatively high significance	Alien species removal must take place in an appropriate manner, which includes: • Avoid disturbance to the soil. • Use an appropriate control for each species. Some species may require manual and herbicide control. • Where appropriate, use biological control. • Where herbicide control is used, ensure that the correct herbicide as registered for the species is used.	NEMA NEMBA CARA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

			• Use only herbicides that are registered for use near water close to the wetland areas. • In most cases herbicide control is only successful in the growing season. All herbicides must be applied appropriately.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on flora may occur over a large area (active mine areas) and	Where large clumps of invasive trees are to be controlled, do not clear all invasive species at once, since this will lead to large areas bare of vegetation and	NEMA NEMBA CARA	Throughout

		has the potential to be a relatively high	may lead to erosion and a large sediment load in the adjacent water	Shall adhere to the ESMS Framework guided by Equator Principles, and	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		significance	resources. Aliens must be removed	IFC Performance	
			gradually over a long period and the	Standards	
			trees replaced with grassland.		
	Rehabilitation and	Impacts on flora	The small-scale mine should consider	Shall adhere to the ESMS	During
	Closure	may occur over a	the use of excess vegetation (tree	Framework guided by	Rehabilitation
		large area (active	stumps etc.) to create 'safe sites' for	Equator Principles, and	

		mine areas) and	seedling recruitment as well as animal	IFC Performance	
		has the potential to	habitats in rehabilitated areas.	Standards	
		be a relatively high			
		significance			
	Rehabilitation and	Impacts on flora	Disturbed surfaces will be re-vegetated	Adherence to	During
	Closure	may occur over a	as soon as they become available, by	Rehabilitation and	rehabilitati on
		large area (active	seeding with an appropriate seed mix	Closure Plan	
		mine areas) and	as per direction by a vegetation		
		has the potential to	specialist.		

		be a relatively high			
		significance			
Fauna					
	Planning and Design	Impacts on fauna	Visitors and workers will be informed	Induction training shall	Throughout
General surface	Construction	has the potential to	that the killing of fauna is prohibited	comply with ESMS	
rehabilitation	Operation	be a relatively high	within the boundaries of the mining	Framework guided by	
	Decommissioning	significance	area, as well as neighbouring areas.	Equator Principles, and	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Filling opencast voids	Rehabilitation and Closure	especially where threatened or protected species are impacted upon		IFC Performance Standards	
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or	The small-scale mine shall educate and inform all workers, contractors and visitors about any rare and endangered species through an environmental awareness plan and the distribution of posters, containing pictures of any potential rare and endangered species.	NEMA NEMBA CARA Shall adhere to the ESMS Framework guided by Equator	Throughout

Post closure monitoring and maintenance Site establishment		protected species are impacted upon		Principles, and IFC Performance Standards	
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	The sighting of any rare or endangered species needs to be reported to management which will keep record of all such species. Should there be a risk of an impact to such a species, the mine shall notify a specialist who shall advise on the best course of action. Should relocation or destruction of any species be required, the necessary permits shall be obtained.	NEM BA TOP S Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

	Construction Operation	Impacts on sensitive landscapes have the potential to be	The destruction of sensitive landscape features shall be avoided where possible and otherwise minimised through effective planning. In areas	In accordance with Rehabilitation and closure plan	During construction and operation

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		a relatively high significance with widespread effects	where the destruction cannot be avoided, these features should be re-introduced in the post mining landscape.		
	Construction Operation	Impacts on sensitive landscapes have the potential to be a relatively high significance with widespread effects	Infrastructure should be designed to rather follow the edge of natural areas than crossing it. If crossing it is the only option, then the area should be transected so that one large area remains rather than two equally sized areas. Infrastructure should be condensed to prevent unnecessary sprawl into sensitive areas.	In accordance with Rehabilitation and closure plan	During construction and operation

	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	No construction workers or mine employees may disturb, hunt, set traps/snares, utilise dead or alive fauna/livestock/wildlife/fish. This includes the killing of any animal caught in construction works. No construction workers or mine employees may collect or remove firewood or medicinal plants or other plants/crops/fruits from the site or areas adjacent to the site. Disciplinary action must be taken in the event that any flora or fauna is willfully disturbed or killed.	NEM A NEM BA CAR A Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	Any animals found within excavations should be carefully returned without harm to an adjacent area away from potential harm, but preferably not further than 200 m away from where it was found unless otherwise agreed to by the ECO.	NEMA NEMBA CARA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
	Planning and Design Construction Operation	Impacts on fauna has the potential to be a	The contractor shall ensure that any snakes discovered in excavated areas, on or near the construction site are not	NEMA NEMBA	Throughout

	Decommissioning Rehabilitation and Closure	relatively high significance especially where threatened or protected species are impacted upon	killed or otherwise harassed. The Pit EO must be notified should a snake be found on or near the site. The Pit EO will be responsible to ensure that an appropriately skilled person is summoned to remove the snake from the site for relocation to a suitable nearby location.	CAR A Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	
	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species	The small-scale mine shall take the necessary measures to limit the speed of trucks and vehicles on the roads on site and enforce these speed limits.	Internal speed limits for haul roads and declared legal speed limits for public roads	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		are impacted upon			
	Planning and Design Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	Any Red Data species recorded within the areas that will be cleared for the newly Opencast pit mining areas should be relocated within re-vegetated areas where a good vegetation cover has been established. The mine must ensure relevant permits are in place if any threatened or protected species are relocated.	NEMA NEMBA CARA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout

	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	No person should willfully disturb the movement of any mammals, birds, amphibians, insects or reptiles on the mine site.	NEM A NEM BA CAR A Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
Soils					
Filling opencast voids General decommissioning activities	Construction Operation Decommissioning	Impacts on soils can have significant impact both in terms of severity and scale.	Topsoil shall be removed from all areas where physical disturbance of the surface will occur (up to a maximum of 30 cm depth). Topsoil must be stockpiled for re-use in subsequent	CA RA NE MA GN 704	As required

		Impacts on soil can	rehabilitation activities outside of areas	In accordance with Rehabilitation and closure plan	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation		in turn affect land use and land capability	prone to erosion and 1:100 year floodplain demarcation.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	Soils must be stripped from the area of activity. Topsoils and subsoils should be stripped separately. The stripped soils should be utilised to create a berm up-slope of the proposed development area to divert runoff water around the site. Re-vegetate any bare soil immediately. Activity should be limited to area of disturbance. Where required the compacted soils should be	CA RA NE MA In accordance with Rehabilitation and closure plan	As required

Opencast mining Post closure monitoring and maintenance Re-vegetation Site establishment			ripped to an adequate depth and re- vegetated with indigenous plants.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	To the greatest extent possible topsoil shall only be handled twice, only-once during the initial stripping of topsoil and a second time to replace it.	CA RA NE MA In accordance with Rehabilitation and closure plan	Throughout

	Construction Operation	Impacts on soils can have	It must be ensured that the topsoil is separated from the subsoil and that the	CARA NEMA	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	topsoil is stockpiled separately from the subsoil and construction materials.	In accordance with Rehabilitation and closure plan	

	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	Topsoil and sub-soil stockpiles must be located such that the potential for erosion is minimised. Areas with existing erosion and stability issues must be avoided. Topsoil stockpiles will not be placed within the 1:100 year floodline of a water course, and will not be placed within the path of a stormwater channel, and if necessary, will be provided with a silt fence around the perimeter of the foot of the stockpile. Stockpiles are to be stabilised if signs of erosion are visible. Any evidence of erosion, scouring, sedimentation, and/or undercutting must be rectified and rehabilitated immediately.	CA RA NE MA GN 704 In accordance with Rehabilitation and closure plan	Throughout
	Construction Operation	Impacts on soils	There must be no contamination of	MPRDA CARA	Throughout

		can have	topsoil. The biological, chemical and		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning Rehabilitation and Closure	significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	physical properties of the topsoil must not be changed by introducing detrimental foreign material, gravel, rock, rubble or mine residue to such soil (MPRDA Regulation 70(7)). This also includes littering, waste disposal, fuel or chemical contamination, plant matter dumping or other activity occurs that may introduce pollutants or foreign plant species into stockpiled soils. Material laydown areas and stockpiles of construction materials must be clearly		

			separated from topsoil stockpiles in order to limit any contamination of the topsoil.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land	Care must be taken to protect topsoil resources on site and thereby avoid the need to obtain additional topsoil from outside the site for rehabilitation. However, in the event that additional topsoil needs to be sourced from outside the site, this shall be done with	NEM BA NEM A	Throughout

		capability.	extreme caution not to introduce any alien or invasive species to the site.		
	Construction Operation	Impacts on soils can have	Compacting of soil must be avoided as far as possible. The contractor should	MPRDA CARA	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning Rehabilitation and Closure	significant impact both in terms of severity and scale. Impacts on soil can in turn	restrict the use of heavy machinery, particularly in areas outside of the physical mining footprint area to reduce the compaction of soils. No vehicles or machines will be allowed to drive over or		

		affect land use and land capability.	be parked on the topsoil stockpiles.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability.	Stockpiles and berms should be vegetated with a suitable seed-mix.	MPR DA CARA	As required

	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability.	A monitoring system shall be implemented which will include inspecting soil stockpiles and berms for any degradation or erosion, and ensure immediate action if these are noted.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Ongoing throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability.	The regular inspections shall aim to identify negative effects such as acidification and erosion of cover-soil, poor quality leachate seeping from the residue deposits and deterioration of vegetation cover. The mine shall take measures to re-vegetate any bare soil immediately.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Ongoing throughout

	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	Trucks, machinery and equipment will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using spill kits or as per the emergency response plan. For large spills a hazardous materials specialist shall be utilised.	NEMA NWA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Ongoing throughout
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land	Accidental hydrocarbon spillages should be reported immediately, and then the affected soil should be removed, and rehabilitated or if this is not possible, disposed of at a waste sites designated to accept such waste.	NEMWA DWAF minimum requirement for waste disposal	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		capability			
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	Activity should be limited to area of disturbance. This can be encouraged by pegging out the area of activity. Where required the compacted soils should be disked/ripped to an adequate depth and re- vegetated with indigenous plants.	In accordance with Rehabilitation and closure plan	Throughout

	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land use and land capability	All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using spill kits or as per the emergency response plan.	NEMWA Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
	Rehabilitation and Closure	Impacts on soils can have significant impact both in terms of severity and scale. Impacts on soil can in turn affect land	The small-scale mine shall reinstate the soil over the open cast mining areas to the following standards at least 1.5 m deep, preferably the same as before construction in the correct soil profile order add mulching.	In accordance with Rehabilitation and closure plan	During rehabilitation

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		use and land capability	and soil stabilisation measures ensure that the vegetation cover is as evenly spaced as possible with an initial basal cover of at least 15% with pioneer species.		
Land use					
General surface Rehabilitation Infrastructure removal	Construction Operation	Impacts on alternative land uses are considered highly significant and can occur over a large area	Soil stockpiles shall be designed to have free drainage of water with minimal soil erosion potential.	MPRDA	Throughout

Mining Permit area site preparation Opencast mining Filling opencast voids Storm water manage ment construction	Operation	Impacts on alternative land uses are considered highly significant and can occur over a large area	The ongoing rehabilitation should occur soon after the area has been mined out so that alternative land use can commence.	In accordance with Rehabilitation and closure plan	During rehabilitati on
	Rehabilitatio n and Closure	Impacts on alternative land uses are considered highly significant and can	Rehabilitation should follow procedures with regard to seed bed preparation and fertilising, and advice on seed mixtures to seed with.	In accordance with Rehabilitation and closure plan	During rehabilitati on

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		occur over a large area.			
	Operation Decommissioning Rehabilitation and Closure	Impacts on alternative land uses are considered highly significant and can occur over a large area.	Rehabilitated areas should be mowed or grazed (where appropriate) as soon as they become available.	In accordance with Rehabilitation and closure plan	During rehabilitation

	Operation Decommissioning Rehabilitation and Closure	Impacts on alternative land uses are considered highly significant and can occur over a large area.	Areas that have been rehabilitated and are suitable for grazing must be fenced off from the adjacent mining areas and made available to landowners.	In accordance with Rehabilitation and closure plan	During rehabilitation
	Operation Decommissioning Rehabilitation and Closure	Impacts on alternative land uses are considered highly significant and can occur over a large area.	The post mining land use must be predetermined in order to ensure it is rehabilitated to suit the use of the land.	In accordance with Rehabilitation and closure plan	Established early during operations and implemented during rehabilitation
Pollution Prevention					
General	Construction	Small scale and	Vehicles/machinery will be regularly	NEMA Polluter Pays	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
decommissioning activities General surface Rehabilitation Infrastructure removal	Operation Decommissioning Rehabilitation and Closure	localised	serviced to reduce risk of leaks. Drip trays will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. For large spills a hazardous materials company (specialist spill cleanup company) will be appointed.	Principle NEMA Duty of Care NWA OHSA	operations

Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Filling opencast voids Post closure monitoring and maintenance Re-vegetation	Construction Operation Decommissioning Rehabilitation and Closure		Any equipment that may leak, and does not have to be transported regularly, shall be placed on watertight drip trays to catch any potential spillages of pollutants. The drip trays shall be of a size that the equipment can be placed inside it. Daily inspections shall be carried out to ensure such spill prevention measures are in place and remain effective. Drip trays shall 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.	MHS A Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	
	Construction Operation Decommissioning		Appropriate measures must be implemented to ensure that rainwater does not run into areas containing		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			cement, oil, diesel etc. as this could result in a pollution threat. Storage areas for these substances should be placed on high-lying ground, and surrounded by erosion control measures e.g. rows of filled hessian bags, silt fences etc.		
	Construction Operation		Servicing and maintenance of vehicles may only take place in the workshop		

	Decommissioning Rehabilitation and Closure		area (subject to suitable spill prevention and containment measures). If emergency repairs are required elsewhere on site, this shall be undertaken with the necessary spill prevention measures in place.		
	Construction Operation		Cement and liquid concrete are hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein. As a result, the contractor shall ensure that: Concrete shall only be mixed on mortar		

			boards, and not directly on the ground The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			disposed of as waste, (Washing of visible signs into the ground is not acceptable). All excess aggregate shall also be removed.		
	Construction Operation Decommissioning Rehabilitation and Closure	Small scale and localised	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.		
	Construction Operation Decommissioning Rehabilitation and Closure	High significance and potentially a moderate scale disturbance	Hazardous substances shall be confined to specific and secured areas, and in such a way that does not pose any danger of pollution even during times of high rainfall. Hazardous storage areas shall be bunded (impermeable) with adequate containment (at least 110% the largest volume stored) for potential spills or leaks. Bunded storage areas shall be either be provided with an oil separator	NEMA Polluter Pays Principle NEMA Duty of Care NEMA NWA OHSA MHSA	Throughout operations

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			or sump. Waste from spillages will then be removed and recycled or disposed of responsibly.	Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	
	Construction Operation Decommissioning Rehabilitation and Closure	High significance and potentially a moderate scale disturbance	All fuel storage areas shall be bunded to contain at least 110 % of the volume stored and will comply with the relevant environmental and safety regulations. Fuel storage areas must be provided		

			with an impervious surface with the provision to contain any potential fuel spillages during refueling (e.g. a sealed concrete slab which drains to a sump/oil separator). The applicant and Contractor(s) must ensure that employees and labourers do not smoke or take part in any activity that may results in sparks in the vicinity of fuels and other flammable substances to prevent ignition.		
	Construction	High	Refueling may only take place		

	Operation Decommissioning Rehabilitation and Closure	significance and potentially a moderate scale disturbance	within a dedicated area inside the mine 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		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			minimise the potential for leakage and to prevent spillage onto the soil. Drip trays should be utilised in relevant locations (inlets, outlets, points of leakage, etc.) during transfer so as to prevent such spillage or leakage. Any accidental spillages shall be contained and cleaned up promptly.		
	Construction Operation Decommissioning	High significance and potentially a moderate scale	Any excess or waste material or chemicals should be removed from the site and should preferably be recycled (e.g. oil and other hydrocarbon waste products). Any waste materials	NEMWA DWAF minimum requirement for waste disposal	Throughout operations

		disturbance	or chemicals that cannot be recycled shall be disposed of at a suitably licensed waste facility.		
	Construction Operation Decommissioning Rehabilitation and Closure	High significance and potentially a moderate scale disturbance	Hazardous waste may only be disposed of at a licensed hazardous waste disposal facility. A specialist waste contractor shall dispose of such waste and shall be required to provide waste manifests and safe disposal certificates. The 'cradle-to-grave' principle must be complied with.	NEMA Polluter Pays Principle NEMA Duty of Care NEMWA DWAF minimum requirement for waste disposal	Throughout operations
	Construction Operation	Potential health risks are	All relevant personnel on site must be properly trained concerning the proper	MSDS specifications OHSA	Throughout operations

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning Rehabilitation and Closure	considered high significance	use, handling and disposal of hazardous substances applicable to their line of work. If required, advice shall be obtained from the manufacturer with regard to the safe handling and storage of hazardous materials.	MHSA	
	Construction Operation Decommissioning	Small scale and localised	The contractor shall supply the Pit EO with a list of all hazardous materials that would be present on site during the construction period. The same applies to any sub-contractor that should provide the contractor with this information. The Pit EO shall	OHSA MHSA	Throughout operations

			develop and maintain a hazardous substance register for all hazardous materials that shall be kept on site during all phases of the project. The register shall be provided to the ECO upon request. Material Safety Data Sheets (MSDS) must be available on site at the point of use and readily accessible for all. hazardous substances stored.		
Waste Management					
Maintenance and operation of site	Construction Operation	Waste has the potential to pollute	The small-scale mine shall develop and implement a waste management plan	NEMWA NEMA Cradle to Grave	Throughout operations

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
infrastructure and facilities Infrastructure construction General construction Mining Permit area site preparation	Decommissioning Rehabilitation and Closure	the environment and can vary from localised to large scale impacts	which complies with the principles of the NEMWA and provides a mechanism for the effective management of waste throughout. This plan shall ensure the appropriate management of all solid waste, including construction debris (cement bags, wrapping material, timber, cans, wire, nails, etc.), waste and surplus food, food packaging, organic waste etc.	DWAF minimum requirement for waste disposal Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	
	Construction Operation Decommissioni	Waste has the potential to pollute the	The waste management system shall provide for adequate waste storage (in the form of	NEMWA NEMA Cradle to Grave DWAF	Throughout operatio

General opencast management Opencast mining General decommissioning activities	ng Rehabilitation and Closure	environment and can vary from localised to large scale impacts	waste skips and bins with lids), waste separation for recycling, and frequent removal of non-recyclable waste for permanent disposal at an appropriately licensed waste disposal facility. No waste material is to be disposed of on site. Under no circumstances may there be any burial of waste underground or on the site.	minimum requirement for waste disposal	ns
Infrastructure removal	Construction Operation Decommissioning Rehabilitation and	Waste has the potential to pollute the environment and can vary from	Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored	NEMWA NEMA Cradle to Grave DWAF minimum requirement for waste	Throughout operations

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Closure	localised to large scale impacts	on site for excessive periods to reduce risk of environmental contamination.	disposal	
	Construction Operation Decommissioning Rehabilitation and Closure	Waste has the potential to pollute the environment and can vary from localised to large scale impacts	The small-scale mine shall implement a waste removal regime that ensures waste skips do not exceed their capacity before being removed from site for disposal.	NEMWA NEMA cradle to grave	Throughout operations

	Construction Operation Decommissioning Rehabilitation and Closure	Waste has the potential to pollute the environment and can vary from localised to large scale impacts	Littering shall be strictly prohibited. The site shall remain in a neat and tidy condition at all times. If required, the mine shall make use of regular litter patrols to remove litter and ensure the site remains clean, neat and tidy.	NEMWA NEMA Cradle to Grave	Throughout operations
	Construction Operation Decommissioning Rehabilitation and Closure	Waste has the potential to pollute the environment and can vary from localised to large scale impacts	The small-scale mine shall maintain a waste register which shall be used to track all waste removed from site. Proof of appropriate waste disposal shall be kept on file at the site for auditing purposes.	NEMA Cradle to Grave	Throughout operations
	Construction Operation Decommissioning Rehabilitation and Closure	Waste has the potential to pollute the environment and can vary from localised	The small-scale mine will adopt a cradle-to-grave approach to ensure that the waste is removed and disposed of in the prescribed and correct manner.	NEMA Cradle to Grave	Throughout operations

		to large scale impacts			

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Sewage and Sanitation					
General Construction Mining Permit area site preparation General opencast management	Construction Operation Decommissioning Rehabilitation and Closure	Sewage has the potential to result in localised impacts of low to medium significance	There must be adequate provision for safe and effective sanitation (i.e. ablution facilities) at the mine and work sites and these shall conform to all relevant health and safety standards and codes. The Mine shall ensure compliance with the OHSA and MHSA in terms of sewage and sanitation. Under no circumstances will pit latrines, french drain systems or soak away systems be allowed.	NEMWA NWA NEMA Cradle to Grave	Throughout operations

Opencast mining Maintenance and operation of site infrastructure and facilities General decommissioning activities Infrastructure removal			Portable toilets will be managed by reputable contractors and inspected daily for any potential leaks. The Contractor (or reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. Chemical toilets shall be emptied/serviced frequently to avoid offensive odours (at least weekly). Toilets must be kept in a clean, neat and hygienic condition. Chemical toilets shall be cleaned and emptied before the contractor's long weekends or		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			public holidays.		
			Toilets must be easily accessible. Toilets shall be placed outside areas susceptible to potential flooding and shall not be placed within 100 m of any wetland or watercourse. Ablution facilities shall be located a sufficient distance from any offices or eating areas to prevent nuisance from offensive odours.		
			Disposal of sewage from chemical toilets shall be in a safe and responsible manner and at an approved facility specifically for that purpose. Proof of sewage		

			removal and disposal shall be kept on file for auditing purposes.		
Noise					
General decommissioning activities General surface rehabilitation	Construction Operation Decommissioning Rehabilitation and Closure	Noise has the potential to result in significant impacts to sensitive receptors at a small to medium scale	The small-scale mine shall take reasonable measures to limit exceedingly noisy activities. Where noise is generated which may impact on sensitive receptors, the mine shall apply measures to control the noise cannot be avoided, mitigation measures	SANS10103 ECA Noise Regulations World Bank EHS Guidelines OHS A MHS A	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Mineral Processing Opencast mining Filling opencast			to be applied shall include but is not limited to: • Using the smallest/quietest equipment for the particular purpose. • Ensuring that equipment is well- maintained and fitted with the correct and appropriate noise abatement measures. • Where possible, stationary noisy equipment (for example compressors, pumps, pneumatic breakers,) should be		

voids Re-vegetation Site establishment – contractors camp			encapsulated in acoustic covers, screens or sheds. Proper sound insulation can reduce noise by up to 20 dBA. All construction vehicles and equipment are to be kept in good repair. • Machines in intermittent use should be shut down in the intervening periods between work or throttled down to a minimum. • The contractor must attempt to restrict noisy activities as far as is possible to times and locations		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			whereby the potential for noise nuisance is reduced. • When working near (within 800 meters) to a potential sensitive receptor(s), the Contractor shall limit the number of simultaneous activities to the minimum. • All machines should be equipped with appropriate noise reduction equipment. • All machines should be roadworthy (including meeting maximum noise specifications).		

			• The vehicles exhaust and baffle systems must be maintained regularly to ensure that the noise from these vehicles is within the required noise specification. • All plant and equipment must be operated in accordance with the specifications provided by the manufacturer. • Safety measures that generate noise, including reverse gear alarms, should be adjusted to		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			minimise noise where possible.		
			A maintenance programme will be investigated for the ventilation machinery and shall be implemented should feasible options exist.		
			Community involvement needs to continue throughout the project. Good public relations are essential. At all stages surrounding receptors should be educated with respect to the potential increase of noise from the mine. The information presented to stakeholders should be factual and should not set unrealistic expectations.		

			Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Quieter equipment will be sought where possible when purchasing new equipment. Silencers will be utilised where possible. Point sources will be enclosed where possible. Acoustic screens will be considered if I&AP complaints are received.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			Local residents should be notified of any potentially noisy activities or work and these activities should be undertaken at reasonable times of the day. These works should not take place at night or on weekends. A channel of communication should be established and promoted between the mine and surrounding stakeholders. All noise complaints must be recorded and investigated. If required, the complaints should be investigated by an acoustical consultant.	SANS10103 ECA Noise Regulations World Bank EHS Guidelines OHSA MHSA	Throughout

			As a general rule, construction operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993). The Applicant and Contractor(s) shall obtain a copy of the relevant noise regulations and take all reasonable measures to abide by these regulations. Sound pressure levels should not exceed the specified threshold level for the relevant area in accordance with SANS10103, as experienced by the nearest noise		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			sensitive receivers (i.e. local residents). In the event that noise levels exceed the specified thresholds in terms of the noise regulations, the Applicant shall appoint a suitably qualified acoustic engineer to identify sources of the elevated noise levels and to suggest suitable and reasonable mitigation measures.		
Air Quality					
General decommissioning activities General	Construction Operation Decommissioning Rehabilitation	Localised and low significance	Areas of high risk for spontaneous combustion will be inspected regularly for signs of possible combustion. An emergency procedure will be	NEMAQA Dust Regulations	Throughout

surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	and Closure		set up in the case of spontaneous combustion.		
	Construction Operation Decommissioning Rehabilitation and Closure	Wide scale of disturbance and low to medium significance. Some localised high significant impacts	It is important to note that dust could be a major disturbance, especially during the dry winter periods to people residing around the site. All reasonable measures must be utilised to minimise the generation of dust as a result of activities on site. Such measures shall include, but shall not be limited to: • Traffic control measures aimed at reducing the entrainment of	NEMAQA Dust Regulations	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Opencast mining Post closure monitoring and maintenance Re-vegetation			material by restricting traffic volumes and reducing vehicle speeds. • Regular and effective measures aimed at binding the surface material or enhancing moisture retention, such as wet suppression and chemical stabilization. • Application of chemical dust palliatives and the optimal selection of wearing course materials (where possible environmentally friendly products should be utilised).		

			• Appropriate scheduling of dust- generating activities (e.g. the clearing of parking areas should be postponed until the construction programme requires the clearing of that specific area). • Avoid excavation and stockpiling activities during periods of strong winds. • Increase dust suppression efforts during conditions conducive to excessive dust creation (e.g. dry and windy conditions).		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			• Limit the height of soil stockpiles where possible, and wetting down of soil stockpiles when excessive dust is generated from these stockpiles. • Areas where excessive or difficult to manage fallout dust and erosion occur remain may be treated with chemical dust suppressant or paved as opposed to using water.		
	Construction Operation Decommissioning	Wide scale of disturbance and low to medium	The small-scale mine shall comply with the National Dust Control Regulations, Promulgated under the National Environmental	NEMAQA Dust Regulations	Throughout

	Rehabilitation and Closure	significance. Some localised high significant impacts	Management: Air Quality Act (Act 39 of 2008). In the event that dust levels exceed the specified thresholds in terms of the dust control regulations, the Mining Permit holder shall appoint a suitably qualified specialist to identify sources of the excessive dust levels and to suggest suitable and reasonable mitigation measures.		
	Construction Operation	Localised and low significance	The small-scale mine must ensure that no transported materials escape from	NEMAQA Dust Regulations	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning		the construction and mine vehicles (no spillage on roads or dust clouds). If necessary, the load bin of the vehicle shall be covered with a tarpaulin to prevent dust.		
	Construction Operation Decommissioning Rehabilitation and Closure	No direct Impacts	The small-scale mine shall maintain open and transparent communication with the community and surrounding landowners regarding air quality and shall supply monitoring records to the public upon request.	NEMAQA Dust Regulations	Throughout

	Constructi on Operation	Localised and low significance	A skirt (dust barrier) shall be placed around the base of dry drills to minimise the generation of airborne dust.	NEMAQA Dust Regulations	Throughout
	Construction Operation Decommissioni ng Rehabilitation and Closure	Health impacts have a localised but high significance	Employees will receive training on the use of personal dust respirators, whenever high dust levels are experienced.	NEMAQA Dust Regulations	Throughout
	Construction Operation Decommissioni ng Rehabilitation and Closure	Wide scale of disturbance and low to medium significance. Some localised high significant impacts	Speed limits will be established and enforced on the mine to minimise dust generation.	NEMAQA Dust Regulations	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Construction Operation Decommissioning Rehabilitation and Closure	Localised and low significance	Machinery and equipment will be regularly serviced to ensure they are in proper working condition and to reduce risk of excessive emissions.	NEMAQA Dust Regulations	Throughout
Heritage					
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on heritage affect a limit extent but have a very high significance due to the value of heritage	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	NHRA	Throughout

		resources which are protected by law			
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on heritage affect a limit extent but have a very high significance due to the value of heritage resources which are protected by law	Should graves be observed on site during activity progress then all activity should cease and the area demarcated as a no-go zone. A specialist will need to be consulted and responsible action considered, whether grave relocation or ceasing activity completely within the area and a 100 m buffer zone.	NHRA	Throughout
	Construction Operation	Impacts on heritage affect a	The small-scale mine must develop a heritage management plan. This should	NHRA	As soon as possible and

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning Rehabilitation and Closure	limit extent but have a very high significance due to the value of heritage resources which are protected by law	include the relevant measures to protect and monitor all known heritage resources on site. Furthermore, the plan should include a chance finds procedure.		implemented throughout
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on heritage affect a limit extent but have a very high significance due to the value	All identified gravesites will be fenced off, or relocated. Access to gravesites will be arranged for family members/friends of the deceased if requested. Grave sites that remain in- situ shall be inspected on a regular	NHRA	As soon as possible and implemented throughout

		of heritage resources which are protected by law.	basis as per the heritage management plan to ensure no damage has occurred.		
	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on heritage affect a limit extent but have a very high significance due to the value of heritage resources which are protected by law.	In the event that graves or cemeteries must be relocated, a full grave relocation process must be undertaken that includes comprehensive social consultation. The grave relocation process must include: • A detailed social consultation process, that will trace the next-of- kin and obtain their consent for the	NHRA Human Tissue Act	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			relocation of the graves, which will be at least 60 days in length. • Site notices indicating the intent of the relocation. • Newspaper notice indicating the intent of the relocation. • A permit from the local authority. • A permit from the Provincial Department of Health. • A permit from the South African Heritage Resources Agency, if the graves are		

			older than 60 years, or unidentified and thus presumed older than 60 years. • An exhumation process that keeps the dignity of the remains and family intact. The whole process must be done by a reputable company that is well versed in relocations. • The exhumation process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the development company.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Land Capability					
General surface rehabilitation Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	Construction Operation Decommissioning	Impacts on land capability have long term effects and can be of a high significance	The small-scale mine will ensure that overburden stockpiles are located in accordance with the rehabilitation plan to allow for minimal handling when returning soils during rehabilitation.	In accordance with Rehabilitation and Closure Plan	Throughout
	Construction Operation Decommissioning Rehabilitation and Closure		The small-scale mine shall preserve soil potential as far as possible, thus conserving land capability.	In accordance with Rehabilitation and Closure Plan	Throughout

Opencast mining Filling opencast voids	Construction Operation Decommissioning Rehabilitation		Soil stockpiles should be vegetated with prescribed seed mixtures to prevent soil erosion.	In accordance with Rehabilitation and Closure Plan	Throughout
	Rehabilitation		During rehabilitation care must be taken to return the correct soil types and depths to specific sections of rehabilitated land to ensure land capability potential is restored to that area.	In accordance with Rehabilitation and Closure Plan	During Rehabilitation
	Construction Operation Decommissioning Rehabilitation and Closure		Re-vegetate rehabilitated areas as soon as possible to prevent soil erosion.	In accordance with Rehabilitation and Closure Plan	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Surface Water					
Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	Construction Operation Decommissioning	Impacts on surface water can have a high significance and extent	Where clean water is diverted away from construction and/or mining areas, its point of re-entry into the natural watercourse should be well protected against erosion. In addition, sediments should be effectively trapped before re- entry.	NWA GN 704 DWAF best Practise Guidelines Shall adhere to the ESMS Framework	As soon as possible and implemented throughout

Opencast mining Post closure monitoring and maintenance Re-vegetation Site establishment	Construction Operation Decommissioning		No wastewater may run freely into any of the surrounding environment or neighbouring properties. The contractor shall implement the storm water design in accordance with the approved Storm Water Management Plan. The Applicant and Contractor(s) shall ensure compliance with the requirements of the National Water Act and GN 704	guided by Equator Principles, and IFC Performance Standards	
	Construction Operation Decommissioning Rehabilitation and Closure		All areas susceptible to erosion shall be protected by ensuring that there is no undue soil erosion resultant from construction and/or mining activities. Berms shall be constructed where necessary to direct all runoff into the stormwater system. Care must be taken		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			to avoid scouring and erosion and suitable measures should be placed in areas where runoff concentrates, in order to detain the sediment load and slow down the runoff. All erosion damage shall be repaired as soon as possible as directed by the ECO.		
	Construction Operation Decommissioning		All storm water and erosion control mechanisms must be inspected frequently and shall be		

	Rehabilitation and Closure		maintained on a regular basis to ensure they remain effective. Appropriate remedial action, including the rehabilitation of eroded areas, shall be undertaken under direction from the ECO.		
	Construction		Materials capable of resulting in poor quality leachate will not be used for the construction of haul roads. This will entail testing for acid generation potential.		
	Construction		Where possible, the disturbance of land		

			during the construction phase will be confined to areas which are disturbed for the operation of the mine.		
	Construction Operation		Soil stockpiles must be stabilised with vegetation to reduce erosion and		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			siltation into streams and dams.		
	Construction Operation Decommissioning Rehabilitation and Closure		Hydrocarbon spills will require immediate attention and should be disposed of at a reputable facility. All used hydrocarbons will be collected and recycled.		
	Construction Operation Decommissioning		All licenses and permits required as per the National Water Act will be applied for as per the relevant water uses and		

	Rehabilitation and Closure		mining will adhere to regulations stipulated in the water license.		
	Construction Operation Decommissioning Rehabilitation and Closure		The small-scale mine shall ensure soil erosion control measures are established in all high risk areas to reduce silt-loading in storm water runoff. Construct a down-stream drain and silt traps at the outlet of water diversion areas. Clean out silt build up in trenches and silt traps over dry season or more frequently if needed. Conduct construction activities in the dry winter months as far as		

			possible.		
	Construction Operation		Storm water runoff will be diverted around the opencast pit on the upslope side but the area enclosed within these		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			boundaries will be kept as small as possible.		
	Construction Operation		The small-scale mine shall ensure that water management facilities are operating adequately and will remain operational during a 50 year 24 hr. storm event until such time that all disturbed areas are stabilized.		

	Rehabilitation and Closure		On gentle slopes, water will be encouraged to flow off the rehabilitated surface, as surface flow, as quickly as possible without causing erosion. This will ensure that water does not infiltrate too deeply and come into contact with carbonaceous material. On steeper slopes, water will be encouraged to infiltrate slightly to help prevent soil erosion.		
Wetlands					
Maintenance and operation of site infrastructure and facilities Opencast mining	Construction	Impacts on wetlands are considered to be highly significant due to the sensitivity of these	The small-scale mine shall limit the extent of the development footprint to exclude aquatic resources as far as possible.	NWA GN 704 Shall adhere to the ESMS Framework guided by Equator Principles, and	Throughout
	Construction Operation		The small-scale mine shall take the necessary precautions to avoid any		Throughout

				IFC Performance	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Site establishment	Decommissioning Rehabilitation and Closure	areas. Impacts can range from localised to impacts which are large in extent	impacts to wetlands outside of the required construction and/or mining footprint. These areas should be considered as no-go areas, and the restriction should be enforced.	Standards	
	Construction Operation Decommissioning Rehabilitation and Closure		The small-scale mine shall set up a 100 m buffer zone around sensitive areas, including pans, wetlands and streams. These areas should be considered as no-go areas, and the restriction should be enforced.		Throughout

	Construction Operation Decommissioning Rehabilitation and Closure		Any wetlands impacted during the construction or mining process on site should be rehabilitated in accordance with the principles and guidelines presented in this EMPR.		Throughout
	Construction Operation Decommissioning Rehabilitation and Closure		Re-vegetate all bare wetland areas not directly within the footprint of the developments as soon as possible. The extent of the disturbance should be limited to a minimum.		Throughout
	Rehabilitation and Closure		Regular monitoring of the success of wetland rehabilitation measures must be undertaken. Where required, the necessary adjustments should be made to ensure the complete re-		Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			establishment of the natural vegetation.		
	Construction Operation		Construction of a low berm, approximately 1m high by 2-3m wide between the stockpiles and the wetlands. These berms would serve to intercept flows containing suspended sediments and create a depositional environment. They should be located outside the wetland boundaries and should be created prior to construction and vegetation clearing on the stockpile footprint commencing.		Throughout

	Construction Operation Decommissioning Rehabilitation and Closure		Inform all construction contractors and other personnel to not disturb the fauna and flora in wetland areas and not to wash or bath in local streams.		Throughout
	Construction Operation Decommissioning Rehabilitation and Closure		Control dust emissions to prevent dust from settling in the wetland areas.		Throughout
	Construction Operation Decommissioning Rehabilitation and		The small-scale mine shall implement an aquatic bio-monitoring and water quality programme. Where target endpoints are not met,		Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Closure		recommendations should translate directly into follow-up action that is recorded and auditable.		
	Construction Operation Decommissioning Rehabilitation and Closure		No dirty water may be discharged into any wetland or water resource on site unless treated to the required standards.		Throughout

	Construction Operation Decommissioning Rehabilitation and Closure Construction Operation		No stockpiling of material may take place within the wetland areas and temporary construction camps and infrastructure should also be located away from these areas, with a minimum buffer of 100 m maintained from delineated wetland boundaries. In cases where historical mining activities have encroached within 100 m of wetlands, exemption must be obtained for the provisions of GN 704 and the necessary protection measures shall be implemented to minimise the impact on wetlands as far as is possible. No abstraction of water from the wetlands or dams should be allowed		Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning Rehabilitation and Closure		unless expressly authorised in the Water Use License.		
	Construction Operation Decommissioning Rehabilitation and Closure		Where storm water and/or diverted clean water is discharged into wetlands, appropriate measures such as gabions should be constructed to contain erosion.		Throughout
Topography and Landform					
General surface	Construction Operation	Impacts on topography	Levelling out of the mine site area will be supervised by a qualified	In accordance with	Throughout

rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance	Decommissioning Rehabilitation and Closure	tend to be large in extent and can have a significant effect on the environment	engineer in conjunction with an environmental consultant. Where possible, natural drainage lines will be followed to reduce loss of water in the natural catchments. A post mining topographical plan should be developed during the start of the project in order to ensure compliance during and after mining. This plan must be adhered to at all stages of the project. Overburden will be temporarily stockpiled and will be placed back into the pit once the Coal has been	Rehabilitation and Closure Plan Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Site establishment			mined out, therefore attempting to maintain the natural topography.		
			The overburden should be replaced in a manner that replicates the previous topography, and ensures that the final topography has a surface that is free-draining.		
			There will be checks to ensure that the planned post mining topography is being followed.		

			All heavy machinery operators and truck drivers should be instructed to stay in designated areas, such as operation sites and roads.		
			Soils should be stockpiled separately according to their forms and their potentials.		
			During ongoing rehabilitation, soil horizons should be replaced in the same order as they occur in nature to prevent mixing of soil horizons.		
			Topsoil depth should be related to the proposed post-mining land capability plans.		
			Rehabilitated areas should		

			not be compacted more than is necessary,		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			and activity, particularly that of heavy machinery and vehicles, on these areas should be limited.		
			Rehabilitated areas should be landscaped to prevent water logging and vegetated to prevent soil erosion.		
			Erosion control measures such as contour banks and cut off berms should be constructed and soil vegetated in rehabilitated areas.		

			Accidental hydrocarbon spillages should have sawdust applied immediately, and rehabilitated or if this is not possible then the affected soil should be removed and the area rehabilitated.		
			Final profiling of the last cut will take place to ensure the area is rehabilitated as close to its natural state as possible.		
			Additional debris and soil will be brought in if required.		
			The area where pans once were will require additional attention to help restore its functions and form.		

			Regular surveyance to ensure the rehabilitation conforms to the final		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			topographical plan and that no final void will be left.		
Transportation, Infrastructure and Traffic					
Mining Permit area site preparation Opencast mining Site establishment – Contractors Camp Site establishment	Construction Operation Decommissioning Rehabilitation and Closure	Impacts on transportation infrastructure and traffic can have a significant extent although typically low in significance	The small-scale mine shall ensure that the internal haul roads are adequately maintained, including monthly scraping where required. Together with road maintenance, the storm water system to direct storm water that falls within the roads shall be kept maintained and settlement ponds shall be cleared of silt on a regular basis.	Road Traffic Act OHSA MHSA	Throughout

Water management Infrastructure construction			On-site vehicles must be limited to approved access routes and areas (including turning circles and parking) on the site so as to minimise excessive environmental disturbance to the soil and vegetation on site, and to minimise disruption of traffic.		
			In the case of dual or multiple use of access roads by other users, arrangements for multiple responsibility must be made with the other users. If not, the maintenance of access roads will be the responsibility of the Applicant		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			and/or Contractor(s). Road condition must be assessed regularly for signs of damage.		
			Damage caused to public roads as a result of the construction and/or mining activities shall be repaired in consultation with the relevant municipal authorities.		
			Materials for the haul road will be sourced locally from a legal source and the Department of Roads and Transport will be consulted with regard to the		

			construction of haul roads.		
			All intersections with main tarred roads will be clearly signposted.		
			Road signs and safety features such as rumble strips will be maintained to ensure the writing is legible and the haul road crossings are visible to motorists.		
			All construction and mining vehicles using public roads shall 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		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			road safety and transport.		
Visual					
General surface rehabilitation Mining Permit area site preparation Opencast mining Site establishment	Rehabilitation and Closure	Visual impacts have an impact on the perception and sense of place in the area and although hard to quantify can have a significant impact over a large extent of the area	Final shaping will be implemented, such that, the final profile of the rehabilitated mining areas are formed to emulate natural contours of the area.	In accordance with Rehabilitation and Closure Plan Closure and final land use objectives	Throughout
	Construction Operation Decommissioning		Directional lighting and soft lighting will be utilised to ensure that only areas required to be lit are lit. Screens will be considered if I&AP complaints are received.		

	Construction Operation Decommissioning		Where possible, and in consideration of the rehabilitation plan and objectives, the mine shall create screening using soil stockpiles, berms and natural vegetation to reduce the visual impact of the mining operations and infrastructure.		
	Construction Operation Decommissioning Rehabilitation and Closure		Dust suppression methods must be applied when necessary to restrict the visual impact of dust emissions.		
Blasting and Vibration					
Opencast mining	Operation	Blasting and	Prior to mining commencing, local	MHSA	Throughout

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		Vibration can have a significant impact which increases in significance with proximity to the blast	infrastructure should be inspected to determine and document the extent of existing damage. These properties will be periodically evaluated to determine any damage. Records of blasting times and distance to properties will also be used to determine likelihood of damage.	Explosives Act No. 26 of 1956 and amended No. 15 of 2003 United States Bureau of Mines (USBM) criteria for safe blasting for ground vibration	Operation
			The reduction of ground vibration is fundamental in different ways and shall include the following measures: • Detailed blast design for		

			each blast with consideration the effects from blasting i.e. ground vibration and air blast. • Calculate expected ground vibration levels for blast to be done and if necessary re-design to reduce charge mass per delay, use of electronic initiation of blast, drilling smaller diameter blastholes that will reduce charge per blasthole and per delay.		
			The reduction of air blast is fundamental in different ways and shall		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			include the following measures: • Detailed blast design for each blast with consideration the effects from blasting i.e. ground vibration and air blast. • Use of proper stemming lengths of between 25 and 30 blasthole diameters. • Use of crushed aggregate of 10% the blasthole diameter as stemming material • Record stemming lengths for each blast and correct if necessary prior to every blast blasted. • Monitor each blast done.		

			The small-scale mine should liaise with local residents on how best to minimise the impact of blasting. Information that should be provided to the potential sensitive receptor(s) includes: • Proposed blasting schedules. • How long the activity is anticipated to take place. • What is being done, or why the		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			activity is taking place. • Contact details of a responsible person where any complaints can be lodged should there be an issue of concern.		
Groundwater					

General decommissioning activities General surface rehabilitation Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	Construction Operation Decommissioning Rehabilitation and Closure	The mining impact on groundwater potentially affected a very large area and has a potentially high significance impact	The small-scale mine must take all reasonable measures to avoid and limit pollution of ground water resources as a result of site activities. Pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, waste water containing organic waste, detergents, solid waste and litter etc. The Mining Permit holder and Contractor(s) shall comply with the requirements relating to hazardous materials and spill management presented in this EMPR.	NEMA Duty of care NWA GN 704 DWAF best practice guidelines Shall adhere to the ESMS Framework guided by Equator Principles, and IFC Performance Standards	Throughout
	Construction Operation Decommissioning Rehabilitation		In the event of pollution caused as a result of construction or mining activities, the responsible party, according to Section 20		

	n and Closure		of the National Water Act (Act No. 36 of 1998) shall be responsible for all costs incurred by		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Re-vegetation Site establishment			organisations called to assist in pollution control and/or to clean up polluted areas.		
	Construction Operation		Materials capable of resulting in poor quality leachate will not be used for the construction of haul roads.		
	Operation		Water accumulating within the opencast workings will be pumped and it will be re-used in the operation.		

	Construction Operation Decommissioning Rehabilitation and Closure		The small-scale mine shall ensure that the ground water monitoring programme is implemented.		
	Operation Decommissioning Rehabilitation and Closure		The rehabilitation of mined cuts need to be done to minimise infiltration and then need to mine water. To achieve this, the area must be free draining in its entirety, the soil cover needs to be replaced and sufficient vegetation cover needs to be established.		
	Operation Decommissioning Rehabilitatio		Water decanting from the opencast workings where the floor cannot be flooded will be collected and treated prior to release,		

	n and Closure		unless monitoring indicates that the water quality meets the water management objectives.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Decommissioning					
General decommissioning activities General opencast management	Decommissioning	Decommissioning of infrastructure can result in negative impacts. The extent is localised to the extent of the	All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA). Infrastructure should be removed down to foundations to prevent loss of soil productivity.	MPRDA In accordance with Rehabilitation and Closure Plan Shall adhere to the ESMS Framework	During decommissioning activities

Filling opencast voids		infrastructure and mining footprint.	All vehicles, equipment and other assets belonging to the Mining Permit holder/Contractor(s) must be removed from the property upon completion of the mining operation, including any excess aggregate, gravel, stone, concrete, temporary fencing and the like.	guided by Equator Principles, and IFC Performance Standards	
			No discard materials of whatsoever nature shall be buried on the site, or on any vacant or open land in the area. Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the Mining Permit area		

			and disposed of at a recognised landfill facility. It will not be		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			permitted to be buried or burned on the site.		
Rehabilitation					
General surface rehabilitation Re-vegetation	Rehabilitation and Closure	Rehabilitation has limited negative impacts. The scale of the impact is limited to the disturbance footprint.	An Integrated Rehabilitation and Closure Plan shall be developed by the small-scale mine early in the life of the operations (preferably prior to operation). The Plan must be viewed as a dynamic document and shall be subjected to independent review on an annual basis (together with the quantum for financial provision).	MPRDA In accordance with Rehabilitation and Closure Plan Shall adhere to the ESMS Framework guided by Equator	As soon as possible in operational phase and implemented throughout

				Principles, and IFC Performance Standards	Annually updated
			As a minimum the Integrated Rehabilitation and Closure Plan shall include the following;		
			• Desired end land use objectives. • Methodology and proposed schedule for progressive rehabilitation to be undertaken concurrently with mining operations. • Details of soil preparation		

			procedures including proposed measures to improve soil fertility (if		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			so required) and the sustainability thereof. • A list of the plant species that will be used in the rehabilitation process. Only indigenous species may be utilised and these species should be representative of the relevant vegetation unit/landscape type of the area. • Procedures for ensuring vegetation growth and survival (watering, fertilisation etc.).		

			• Details of proposed storm water and erosion control measures to ensure re-vegetation is successful and not hampered by scouring and erosion. • Monitoring procedures that will be implemented to assess re- vegetation efforts (duration and frequency of monitoring, criteria for determining success of rehabilitation). • Procedures for preventing the establishment of alien invasive		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			vegetation in rehabilitated areas.		
			Upon completion of the mining operation and closure of the facility, the Mining Permit holder shall ensure that all cleared and/or disturbed areas (as a result of the activity) within and outside the boundaries of the site shall be rehabilitated in accordance with the Rehabilitation and Closure Plan.		

			Rehabilitation will include returning the slope to the minimum possible gradient (preferably less than 1:3), the topsoil will be replaced for vegetation re- establishment and contour drains will be built to prevent erosion if necessary.		
			The area must be rehabilitated using indigenous vegetation from the area in such a way that it will return as close as possible to the original production potential. Rehabilitation shall be overseen by a suitably qualified specialist who shall approve the indigenous seed mix to be used. The rehabilitated area must be returned to a self-sustaining		

			ecosystem that is consistent with the original vegetation type.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			Any access road or portions thereof, constructed by the mine which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the ECO and Regional Manager (DMRE).		
			Erosion control measures shall be implemented where necessary (such as berms, brush packing, silt fences etc.). Erosion control and silt prevention measures shall be		

			inspected regularly and shall be maintained whenever required to ensure they remain effective.		
			No alien or invader plant species should be introduced on site during rehabilitation. The weed management plan shall be implemented throughout the rehabilitation and closure phase. Regular monitoring of the rehabilitated area shall be undertaken and all alien vegetation shall be eradicated and/or controlled prior to it setting seed. Weed		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			management shall be to satisfaction of the ECO and Regional Manager (DMRE). Where required, the necessary adjustments should be made to ensure the complete re-establishment of the natural vegetation.		
Closure					

Post closure monitoring and maintenance	Rehabilitation and Closure	Very limited potential for impacts during closure. The Mine remains responsible for the mining right area until such time as a closure certificate is obtained.	Following the expiration of the Mining Permit, the Mining Permit holder shall undertake the required closure process in accordance with Section 43 of the MPRDA.	MPRDA and Regulations	In accordance with legislated timeframes in force at the time of closure.
Post-Closure Monitoring					
Post closure monitoring and maintenance	Rehabilitation and Closure	Very limited potential for impacts during closure. The Mine remains	The post-closure monitoring and management period following cessation of mining activities will be implemented by a suitable qualified independent party for a minimum of one (1) year	MPRDA and Regulations	Minimum of one (1) year post closure or as agreed

		responsible for the	unless otherwise specified by the		upon with DMRE

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
		mining permit area until such time as a closure certificate is obtained.	competent authority. The monitoring activities during this period will include but not be limited to: • Biodiversity monitoring. • Ground and surface water. • Air quality monitoring. • Re-vegetation of disturbed areas where required.		

			Provision must be made to monitor any unforeseen impact that may arise as a result of the proposed Mining Permit activities and incorporated into post closure monitoring & management.		

31. FINANCIAL PROVISION

The requirement for final rehabilitation, decommissioning and closure stems primarily from the legislative requirements of the MPRDA and NEMA. On 20th November 2015 the Minister promulgated the Financial Provisioning Regulations under the NEMA. The Regulations aim to regulate the determination of financial provision as contemplated in the NEMA for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. These regulations provide for, inter alia:

- Determination of financial provision: An Applicant or holder of a right or permit must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, mining or production operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.
- Scope of the financial provision: Rehabilitation and remediation; decommissioning and closure activities at the end of operations; and remediation and management of latent or residual impacts.
- Regulation 6: Method for determining financial provision – An applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:
    - Annual rehabilitation – annual rehabilitation plan.
    - Final rehabilitation, decommission and closure at end of life of operations – rehabilitation, decommissioning and closure plan.
    - Remediation of latent defects.
- Regulation 10: An applicant must-
    - ensure that a determination is made of the financial provision and the plans contemplated in regulation 6 are submitted as part of the information submitted for consideration by the Minister responsible for mineral resources of an application for environmental authorisation, the associated environmental management programme and the associated right or permit in terms of the Mineral and Petroleum Resources Development Act, 2002.
    - Provide proof of payment or arrangements to provide the financial provision prior to commencing with any prospecting, mining or production operations.
- Regulation 11: Requires annual review, assessment and adjustment of the financial

provision. The review of the adequacy of the financial provision including the proof of payment must be independently audited (annually) and included in the audit of the EMPR as required by the EIA Regulations.

Appendix 4 of the Financial Provisioning Regulations provides the minimum content of a final rehabilitation, decommissioning and closure plan (FRDCP).

Table 27: Financial Provision

:

CALCULATION OF THE QUANTUM

Applicant: **Notre Coal (Pty) Ltd** REF No: **MP 30/5/1/3/2/13599 MP**

Evaluator: **Zwivhuya Tshabuse** Date: **Nov-22**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	**Dismantling of processing plant and related structures (including overland conveyors and powerlines)**	**m3**	**0**	**17,14**	**1**	**1**	**0**
2 (A)	**Demolition of steel buildings and structures**	**m2**	**0**	**238,71**	**1**	**1**	**0**
2(B)	**Demolition of reinforced concrete buildings and structures**	**m2**	**0**	**351,79**	**1**	**1**	**0**
3	**Rehabilitation of access roads**	**m2**	**0**	**500**	**1**	**1**	**0**
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	414,61	1	1	**0**
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	226,15	1	1	**0**
5	**Demolition of housing and/or administration facilities**	**m2**	**0**	**477,42**	**1**	**1**	**0**
6	**Opencast rehabilitation including final voids and ramps**	**ha**	**4,98**	**242984,15**	**0,4**	**1**	**484024,4268**
7	**Sealing of shafts adits and inclines**	**m3**	**0**	**128,15**	**1**	**1**	**0**
8 (A)	**Rehabilitation of overburden and spoils**	**ha**	**0,3**	**166847,44**	**1**	**1**	**50054,232**
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	207805,47	1	0	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	603565,59	1	1	**0**
9	Rehabilitation of subsided areas	ha	0	139709,6	1	1	**0**
10	**General surface rehabilitation**	**ha**	5	132171,31	0,34	1	**224691,227**
11	River diversions	ha	0	132171,31	1	1	**0**
12	**Fencing**	**m**	**0**	**150,77**	**1**	**1**	**0**
13	**Water management**	**ha**	**0,08**	**50255,25**	**0,6**	**1**	**2412,252**
14	**2 to 3 years of maintenance and aftercare**	**ha**	**0**	**17589,34**	**1**	**1**	**0**
15 (A)	**Specialist study**	**Sum**	**0**	**0**	**1**	**1**	**0**
15 (B)	Specialist study	Sum	0	0	1	1	**0**
					Sub Total 1		**761182,1378**

1	Preliminary and General	91341,85654	**weighting factor 2** 1	**91341,85654**
2	Contingencies	76118,21378		**76118,21378**
			Subtotal 2	**928642,21**
			VAT (15%)	**139296,33**
			Grand Total	**1067939**

SIGN Zwivhuya Tshabuse

DATE 01/11/2022

31.1 Other Guidelines

The following additional guidelines which relate to financial provisioning and closure have been published in the South African context:

Best Practice Guideline G5: Water Management Aspects for Mine Closure: This guideline was prepared by the DWS and aims to provide a logical and clear process that can be applied by mines and the competent authorities to enable proper mine closure planning that meets the requirements of the relevant authorities. This guideline is aimed mining activities, however certain principles related to closure and water management are relevant. The following technical factors which should be considered during closure, and which are likely to relate to mining activities, have been considered:

- Land use plan: directly interlinked with water management issues insofar as water is required to support the intended land use- in this regard the surrounding communities and the land uses implemented rely on available ground and surface water to be sustained. Management of water quality and quantity has been identified as an aspect to be covered in the FRDCP.
- Public participation and consultation: consultation is fundamental to closure and there is a need for full involvement of stakeholders in the development of the final closure plans, and in the agreement of closure objectives- in this regard this FRDCP has been made available through the Basic Assessment public participation process for comment by relevant stakeholders.
- Guideline for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine: The objectives of the guideline include the need to improve the understanding of the financial and legal aspects pertaining to the costing of remediation measures as a result of mining activities. Whilst this guideline predates the recent NEMA Financial Provisioning Regulations, it does contain certain principles and concepts that remain valid and have been considered in the FRDCP.

32. DESCRIBE THE CLOSURE OBJECTIVES AND THE EXTENT TO WHICH THEY HAVE BEEN ALIGNED TO THE BASELINE ENVIRONMENT DESCRIBED UNDER THE REGULATION

The closure objectives are aimed at re-instating the landform, land use and vegetation units to the same as before mining operations take place unless a specific, reasonable alternative land use is requested by the landowner. As such, the intended end use for the disturbed Mining Permit area and the closure objectives will be defined in consultation with the relevant landowner. Proof of such consultation will be submitted together with the Application for Closure Certificate. The overall aim of the rehabilitation plan is to rehabilitate the environment to a condition as close as possible to that which existed prior to mining. This shall be achieved with a number of specific objectives

(a) Making the area safe, i.e. decommission mining activities to ensure that the environment is

safe for people and animals. This entails refilling the excavations.

(b) Recreating a free draining landform. This entails earthworks infilling, reshaping, levelling, etc. to recreate as close as possible the original topography and to ensure a free draining landscape.

(c) Re-vegetation. This involves either reseeding or allowing natural succession depending on the area, climate etc.

(d) Storm water management and erosion control. Management of stormwater and prevention of erosion during rehabilitation (e.g. cut off drains, berms etc. and erosion control where required).

(e) Verification of rehabilitation success (entails monitoring of rehabilitation).

(f) Successful closure (obtain closure certificate).

33. CONFIRM SPECIFICALLY THAT THE ENVIRONMENTAL OBJECTIVES IN RELATION TO CLOSURE HAVE BEEN CONSULTED WITH LANDOWNER AND INTERESTED AND AFFECTED PARTIES

The Public Participation Process (PPP) is a requirement of several pieces of the South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their opinions are taken into account and a record included in the reports submitted to Authorities. The process ensures that all stakeholders are provided this opportunity as part of a transparent process which allows for a robust and comprehensive environmental study.

The PPP which forms part of the Mining Permit application needs to be managed sensitively and according to best practises in order to ensure and promote:

33.1 Compliance with national legislation.

33.2 Establish and manage relationships with key stakeholder groups.

33.3 Encourage involvement and participation in the environmental study and authorisation/approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

33.4 Introduce the proposed project.

33.5 Explain the environmental authorisations required.

33.6 Explain the environmental studies already completed and yet to be undertaken (where applicable).

33.7 Determine and record issues, concerns, suggestions and objections to the project.

33.8 Provide opportunity for input and gathering of local knowledge.

33.9 Establish and formalise lines of communication between the I&APs and the project team.

33.10 Identify all significant issues for the project.

33.11 Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximise and/or promote positive environmental impacts associated with the project.

Landowners and I&APs were consulted and provided an opportunity to comment on the draft Basic Assessment Report, EMPR including all decommissioning, closure and rehabilitation plans. Their comments have be included in this final BAR and EMPR for consideration by the DMRE as part of their decision-making.

34. REHABILITATION PLAN

34.1 Integrated Rehabilitation and Closure Plan

The main aim in developing this rehabilitation plan is to mitigate the impacts caused by the mining activities and to restore land back to a satisfactory standard. It is best practice to develop the rehabilitation plan as early as possible so as to ensure the optimal management of rehabilitation issues that may arise. It is important that the project's closure plan is defined and understood before starting the process and is complementary to the rehabilitation goals. Rehabilitation and closure objectives need to be tailored to the project and be aligned with the EMPR.

The overall rehabilitation objectives for this project are as follows:

Maintain and minimise impacts to the ecosystem within the study area.

- Re-establishment of the pre-developed land capability to allow for a suitable post-mining land use.
- Prevent soil, surface water and groundwater contamination.
- Comply with the relevant local and national regulatory requirements.
- Maintain and monitor the rehabilitated areas.

Successful rehabilitation must be sustainable, requires an understanding of the basic baseline environment and project management to ensure that the rehabilitation program is a success.

It is noted that an application for environmental authorisation must be submitted for closure in accordance with Listing Notice 1 Activity 22:

The decommissioning of any activity requiring –

(a) A closure certificate in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) or

(b) A prospecting right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does

not constitute closure.

34.2 Phase 1: Making Safe

The Mining activity will result in an open pit. The purpose of rehabilitation will be to ensure the site becomes safe for humans and animals. The open pit will be filled with overburden. The overburden will be loaded, trucked and placed into the pit, and the topography in the area adjacent to the pit shaped to ensure that a free draining topography results.

Once the pit has been backfilled, 300mm thick topsoil or soft overburden in place of soil will be spread on rehabilitated areas. Once placed, the "growth medium" should then be fertilised, ripped and revegetated. A small topsoil stockpile should be left for remedial work.

The following actions are required to meet the objectives of this phase:

- Remove all the facilities and equipment from the site.
- Inert waste with a salvage value to individuals such as scrap metal, building materials, etc. will be removed and disposed of at a proper facility.
- The company contracted to supply fuel will be requested to remove all fuel storage and reticulation facilities.
- Those sections of haul road where a lot of Coal spillage has occurred, will be picked up and the waste material taken back to the discard dump.
- Remove or control residual hazardous materials. Identify any potential toxic overburden or exposed strata and manage them so as to prevent environmental damage.
- Access roads around the site should be ripped for all areas except those needed to access the facilities for inspection after closure. Roads that can and will be used by other users post closure should, however, be left provided this is agreed upon by all parties concerned. For the rehabilitation of roads, a cost has been allocated to rip the area, add 300 mm topsoil and vegetate.
- Negotiations will take place with land owners to establish which sections of haul road they will require. The extra portions not required will be left and the remainder ripped. This would normally mean that the edges or verges are ripped and the centre portion remains. They will be responsible for maintaining the roads after closure.

34.3 Phase 2: Landform Design, Erosion Control and Revegetation

Landform, erosion control and re-vegetation are important parts of the rehabilitation process. Landform and land use are closely interrelated, and the landform should be returned as closely as possible to the original landform. Community expectations, compatibility with local land use practices and regional infrastructure, or the need to replace natural ecosystems and faunal habitats all support returning the land as closely as possible to its original appearance and

productive capacity.

This requires the following:

- Deep rip compacted surfaces to encourage infiltration, allow plant root growth and key the topsoil to the subsoil, unless subsurface conditions dictate otherwise.
- Reinstate natural drainage patterns disrupted by mining wherever possible.
- Characterise the topsoil and retain it for use in rehabilitation. It is preferable to reuse the topsoil immediately rather than storing it in stockpiles. Only discard if it is physically or chemically undesirable, or if it contains high levels of weed seeds or plant pathogens.
- If topsoil is unsuitable or absent, identify and test alternatives substrates, e.g. overburden that may a suitable substitute after addition of soil improving substances.
- Lime and superphosphate are applied to the surface.
- These ameliorants are then incorporated by deep ripping, which penetrated 100 mm through the soil into the underlying overburden material.
- Fertilizer is applied as part of seedbed preparation.
- Consider spreading the cleared vegetation on disturbed areas.
- Re-vegetate the area with plant species consistent with the post mining land use.
- The site is then mulched together with an indigenous grass seed mix. This is to stimulate the long term establishment of indigenous vegetation and to reduce erosion during early plant growth.

34.4 Phase 3: Monitoring and Maintenance

The post-operational monitoring and management period following decommissioning of mining activities must be implemented by a suitable qualified independent party for a minimum of one (1) year unless otherwise specified by the Competent Authority.

Maintenance will specifically focus on annual fertilising the rehabilitated area (where required), control of all other alien plants and general maintenance, including rehabilitation of cracks, subsidence and erosion gullies. Continuous erosion monitoring of rehabilitated areas and slopes should be undertaken and zones with excessive erosion should be identified. The cause of the erosion should be identified, and rectified. Zones with erosion will need to be repaired with topsoil.

The monitoring activities during this period will include but not be limited to:

- Biodiversity monitoring.
- Re-vegetation of disturbed areas where required.

Provision must be made to monitor any unforeseen impact that may arise as a result of the proposed mining activities and incorporated into post closure monitoring and management. The small-scale

mine shall continue to monitor and manage rehabilitation areas until the vegetation is self-sustaining and meets the requirements of the landowner or land manager, until their management can be integrated into the management of the surrounding area.

34.5 Post-Closure Monitoring and Maintenance

Prior to decommissioning and rehabilitation activities, a monitoring programme shall be developed and submitted to the relevant authority for approval, as a part of the Final Rehabilitation Plan. The programme is to include proposed monitoring during and after the closure of the trench site and related activities.

It is recommended that the post-closure monitoring include the following:

- Confirmation that any waste, wastewater or other pollutants that is generated as a result of decommissioning will be managed appropriately, as per the detailed requirements set out in the Final Rehabilitation Plan.
- Confirmation that all de-contaminated sites are free of residual pollution after decommissioning.
- Confirmation that acceptable cover has been achieved in areas where natural vegetation is being re- established. 'Acceptable cover' means re-establishment of pioneer grass communities over the disturbed areas at a density similar to surrounding undisturbed areas, non-eroding and free of invasive alien plants.
- Confirmation that the Mining Permit site is safe and is not resulting in a pollution hazard.

Annual environmental reports will be submitted to the Designated Authority and other relevant Departments for at least one-year post-decommissioning. The frequency and duration of this reporting period may be increased to include longer term monitoring, at intervals to be agreed with the Designated Authority.

The monitoring reports shall include a list of any remedial action necessary to ensure that infrastructure that has not been removed remains safe and pollution free and that rehabilitation of project sites are in a stable, weed and free condition.

35. EXPLAIN WHY IT CAN BE CONFIRMED THAT THE REHABILITATION PLAN IS COMPATIBLE WITH THE CLOSURE OBJECTIVES

The rehabilitation plan is compatible with the closure objectives in that is seeks to ensure that negative impacts on the receiving environment that could not be prevented or mitigated during mining are rehabilitated. The use of indigenous species during re-vegetation will ensure that

ecosystem restoration is initiated and prevent invasion by alien species. The appropriate disposal of waste will ensure that land is usable, in alignment with surrounding land uses and that no hazardous materials are left on-site post-mining.

36. CALCULATE AND STATE THE QUANTUM OF THE FINANCIAL PROVISION REQUIRED TO MANAGE AND REHABILITATE THE ENVIRONMENT IN ACCORDANCE WITH THE APPLICABLE GUIDELINE

Table 28 below shows the details of the quantum for financial provision of the Final Rehabilitation, Decommissioning and Closure Plan.

37. CONFIRM THAT THE FINANCIAL PROVISION WILL BE PROVIDED AS DETERMINED

The amount of **R1 067 739.00** for financial provision was calculated for the mining application. Financial provision will be made in the form of a bank guarantee upon the successful granting of the mining permit

Table 28:Quantum for financial provision

CALCULATION OF THE QUANTUM

Applicant: **Notre Coal (Pty) Ltd**
Evaluator: **Zwivhuya Tshabuse**

REF No: **MP 30/5/1/3/2/13599 MP**
Date: **Nov-22**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	**Dismantling of processing plant and related structures (including overland conveyors and powerlines)**	**m3**	**0**	**17,14**	**1**	**1**	**0**
2 (A)	**Demolition of steel buildings and structures**	**m2**	**0**	**238,71**	**1**	**1**	**0**
2(B)	**Demolition of reinforced concrete buildings and structures**	**m2**	**0**	**351,79**	**1**	**1**	**0**
3	**Rehabilitation of access roads**	**m2**	**0**	**500**	**1**	**1**	**0**
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	414,61	1	1	**0**
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	226,15	1	1	**0**
5	**Demolition of housing and/or administration facilities**	**m2**	**0**	**477,42**	**1**	**1**	**0**
6	**Opencast rehabilitation including final voids and ramps**	**ha**	**4,98**	**242984,15**	**0,4**	**1**	**484024,4268**
7	**Sealing of shafts adits and inclines**	**m3**	**0**	**128,15**	**1**	**1**	**0**
8 (A)	**Rehabilitation of overburden and spoils**	**ha**	**0,3**	**166847,44**	**1**	**1**	**50054,232**
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	207805,47	1	0	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	603565,59	1	1	**0**
9	Rehabilitation of subsided areas	ha	0	139709,6	1	1	**0**
10	**General surface rehabilitation**	**ha**	5	132171,31	0,34	1	**224691,227**
11	River diversions	ha	0	132171,31	1	1	**0**
12	**Fencing**	**m**	**0**	**150,77**	**1**	**1**	**0**
13	**Water management**	**ha**	**0,08**	**50255,25**	**0,6**	**1**	**2412,252**
14	**2 to 3 years of maintenance and aftercare**	**ha**	**0**	**17589,34**	**1**	**1**	**0**
15 (A)	**Specialist study**	**Sum**	**0**	**0**	**1**	**1**	**0**
15 (B)	Specialist study	Sum	0	0	1	1	**0**
					Sub Total 1		**761182,1378**

1	Preliminary and General	91341,85654	**weighting factor 2** 1	**91341,85654**
2	Contingencies	76118,21378		**76118,21378**
			Subtotal 2	**928642,21**
			VAT (15%)	**139296,33**
			Grand Total	**1067939**

SIGN Zwivhuya Tshabuse
DATE 01/11/2022

38. MECHANISMS FOR MONITORING COMPLIANCE

Table 29: Mechanisms for monitoring compliance.

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
General surface rehabilitation Mining Permit area site preparation Opencast mining Site establishment Infrastructure	Alteration of topography	Topography and Landform	Construction Operation Decommissioning Rehabilitation and Closure	Control through site planning and design	Original topography and landform serve as a reference for rehabilitation
General surface rehabilitation Infrastructure removal Maintenance and	Altered drainage patterns	Topography and Landform	Construction Operation Decommissioning Rehabilitation and Closure	Control through proper soil management procedures	Rehabilitation and closure plan DWAF best practice Guidelines

operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Site establishment					

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Post closure monitoring and maintenance			Operation Decommissioning Rehabilitation and Closure	design and planning (depth of mining, safety factors, overburden and rock qualities)	in consultation with DWA/DMRE
Opencast mining	Impact on geology	Geology	Operation	Modify through mine planning, design and rehabilitation	MPRDA Rehabilitation and Closure Plan
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Erosion and sedimentation	Soils	Construction Operation Decommissioning Rehabilitation and Closure	Avoid and control through preventative measures (Soil placement, storm water infrastructure, erosion control structures)	CARA

Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment	Soil compaction	Soils	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Avoid through implementation of EMPR mitigation measures	Principles of CARA Rehabilitation and Closure Plan

Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Soil pollution/contamination	Soils	Construction Operation Decommissioning Rehabilitation and Closure	Avoid through preventative measures (e.g. bunding and spill kits) Remedy through cleanup and waste disposal Modify through soil treatment if	Hazardous Substances Act NWA NEMA Duty of Care NEMWA Incident reporting

Mining Permit area site preparation				required	procedures

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					DWAF minimum standards for waste disposal
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Loss of soil fertility (denitrification, loss of soil nutrient store and organic carbon stores) and loss of land capability	Land Capability	Construction Operation Decommissioning Rehabilitation and Closure	Avoid through preventative measures (e.g. limit area of disturbance) Remedy through soil remediation if required (e.g. fertilizer and organic matter applications)	CARA Rehabilitation and Closure Plan

Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal	Loss of soil resource and its utilisation potential	Land Capability	Construction Operation	Avoid through preventative measures (e.g. limit area of disturbance)	CARA Rehabilitation and Closure Plan

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure			Decommissioning Rehabilitation and Closure	Remedy through soil remediation if required (e.g. fertilizer and organic matter applications)	
General surface rehabilitation	Damage/disruption of services	Land use	Construction Operation	Avoid through implementation of EMPR mitigation	Stakeholder Engagement Plan

Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance			Decommissioning Rehabilitation and Closure	measures (e.g. service detection and communication with landowners) Remedy through repair or reinstatement of services if required	Rehabilitation and Closure Plan

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance	Interference with existing land uses	Land use	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Avoid through implementation of EMPR mitigation measures (e.g. communication with landowners)	Stakeholder Engagement Plan Rehabilitation and Closure Plan

Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site	Direct and indirect mortality of flora and fauna	Fauna and Flora	Planning and Design Construction Operation Decommissioning	Control through implementation of EMPR mitigation measures (e.g. limit area of disturbance, training) Avoid/Stop through	NEMBA TOPS

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure			Rehabilitation and Closure	relocation of threatened or protected species	
General surface rehabilitation Infrastructure removal Maintenance and operation of site	Habitat fragmentation and blockage of seasonal and dispersal movements	Fauna and Flora	Construction Operation Decommissioning Rehabilitation and Closure	Avoid and control through implementation of EMPR mitigation measures (e.g. shape of disturbed areas, maintaining corridors)	NEMBA

infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment					

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance	Introduction/invasion of alien (non-native) species	Fauna and Flora	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Control through implementation of EMPR mitigation measures (e.g. alien vegetation management plan) Avoid/Stop through preventative measures (e.g. limit extent of disturbance)	NEMBA TOPS Alien Vegetation Management Plan Hazardous Substances Act SANS 10206

Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Pollution of surface water resources/decreased water quality	Surface Water	Construction Operation Decommissioning Rehabilitation and Closure	Avoid through implementation of preventative measures (e.g. Bunding, Hazardous materials management, Pollution prevention measures, storm water management)	NWA GN 704 WUL Conditions NEMA Duty of Care NEMA Polluter Pays Principle

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure				Control through implementation of mitigation measures	DWF Best Practice Guidelines
Maintenance and operation of site infrastructure and facilities Water management Infrastructure construction	Decrease in surface water availability	Surface Water	Constructi on Operation	Avoid and control through implementation of preventative measures (e.g. limitation of water usage, water conservation	NWA GN 704 WULA Conditions NEMA Duty of Care NEMA Polluter Pays Principle

				strategies, optimisation of water usage and recycling)	DWF Best Practice Guidelines
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site	Dewatering of groundwater aquifers	Groundwater	Operation Decommissioning Rehabilitation and Closure	Avoid and control through implementation of preventative measures (e.g. limitation of water usage, water conservation strategies, optimization of water usage and recycling)	NWA GN 704 WULA Conditions NEMA Duty of Care NEMA Polluter Pays Principle DWF Best Practice Guidelines

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Pollution of groundwater/decreased water quality	Groundwater	Construction Operation Decommissioning Rehabilitation and Closure	Avoid and control through implementation of preventative measures (e.g. Bunding, Hazardous materials management, Pollution prevention	NWA GN 704 IWULA Conditions NEMA Duty of Care NEMA Polluter Pays

Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure				measures) Control through implementation of mitigation measures (progressive rehabilitation)	Principle DWF Best Practice Guidelines Rehabilitation and Closure Plan
Post closure monitoring	General Environmental	Environmental Pollution	Rehabilitation and Closure	Avoid through	MPRDA

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
and maintenance	Pollution			implementation of suitable progressive rehabilitation and soil management Control/Remedy through interception of decant and treatment of polluted water where required	NWA NEMA Duty of Care NEMA Polluter Pays Principle NEMW A GN 704 DWF Best Practice Guidelines Rehabilitation and Closure Plan
General decommissioning activities	General Environmental Pollution	Environmental Pollution	Planning and Design Construction	Avoid through preventative measures (e.g.	Hazardous Substances Act

Infrastructure removal			Operation Decommissioning Rehabilitation and Closure	bunding, spill kits) Remedy through cleanup and waste disposal Modify through soil treatment if required	NWA MSDS OHS A MHS A NEMA Duty of Care NEMWA Incident Reporting Procedures DWAF Minimum Standards for Waste Disposal
General surface rehabilitation	Hydrocarbon spills/contamination	Environmental Pollution	Planning and Design	Avoid through preventative measures (e.g. bunding,	Hazardous Substances Act

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure			Construction Operation Decommissioning Rehabilitation and Closure	spill kits) Remedy through cleanup and waste disposal Modify through soil treatment if required	NWA OHS A MHS A NEMA Duty of Care NEMWA Incident Reporting Procedures DWAF Minimum Standards for Waste Disposal

Opencast mining	Discovery and preservation of fossils	Heritage	Operation	Avoid and control through implementation of preventative measures Modify through removal and curation of fossils	
General surface rehabilitation Infrastructure removal Maintenance and operation of site	Destruction/damage of palaeontological resources	Heritage	Constructi on Operation Rehabilitation and Closure	Avoid and control through implementation of preventative measure Modify through removal and curation of fossils	NEMA MPRD A NHRA SAHRA permitting requirements Human Tissue Act

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					IFC Performance Standard 8: Cultural Heritage
General surface rehabilitation Infrastructure removal Maintenance and operation	Destruction/damage of heritage resources	Heritage	Construction Operation Decommissioning Rehabilitation and Closure	Avoid and control through implementation of preventative measures (e.g. fencing of graveyards,	NEMA MPRDA NHRA SAHRA permitting requirements

of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment				watching brief, chance finds procedure) Stop through relocation of graves if required	Human Tissue Act IFC Performance Standard 8: Cultural Heritage

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Infrastructure					
General construction management General opencast management	Crime and violence	Social	Constructi on Operation Decommissioning Rehabilitation and Closure	Avoidance and control through preventative measures (e.g. site security, code of conduct)	ESMS MHS A OHS A Code of Conduct
General construction management General opencast management Mining Permit area site	Influx of migrant workers	Social	Construction Operation Decommissioning Rehabilitation and Closure	Avoidance and control through mitigation measures (e.g. recruitment procedure, grievance mechanism)	Labour Act Basic Conditions of Employment Act IFC Performance Standard 5 Land Acquisition and Involuntary

preparation Opencast pit mining					Resettlement
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	Sense of place	Social	Construction Operation Decommissioning Rehabilitation and Closure	Modify through reduction of visual impact	Rehabilitation and Closure Plan

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
General construction management General opencast pit management Maintenance and operation of site infrastructure and	Social vices	Social	Construction Operation Decommissioning Rehabilitation and Closure	Avoidance and control through mitigation measures (e.g. recruitment procedure, grievance mechanism, code of conduct) Stakeholder engagement plan	Labour Act Basic Conditions of Employment Act IFC Performance Standard 5 Land Acquisition and

facilities Opencast mining					Involuntary Resettlement Grievance Mechanism Code of Conduct
General Construction Management General opencast management Opencast mining	Employment opportunities	Socio-Economic	Construction Operation Decommissioning Rehabilitation and Closure	Minimise impacts of job loss through skills development and livelihood restoration	IFC Performance Standard 5 Land Acquisition Involuntary Resettlement
Opencast mining	Coal supply to the market	Socio-Economic	Operation	Maximise security of Coal supply through	ESMS

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
				sound and responsible mine management	
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining	Health and safety	Health and Safety	Construction Operation Decommissioning Rehabilitation and Closure	Avoidance and control through preventative measures (e.g. HIV/AIDS awareness) Remedy through application of mitigation measures in EMPR	OHSA MHSA IFC Performance Standard 4: Community Health, Safety, and Security Grievance Mechanism

Post closure monitoring and maintenance Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Fire and explosion hazard	Health and Safety	Construction Operation	Avoid and control through implementation of preventative measures (e.g. Fire breaks, Blasting procedures, hazardous substances management	Explosives Act MHSA OHSA MPRD A United States Bureau of Mines (USBM) criteria for safe blasting for ground

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					vibration and recommendations on blasting
Opencast mining	Fly rock	Health and Safety	Operation	Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring,	Explosives Act MHSA OHSA MPRDA United States Bureau of

				communication with landowners, emergency response procedures)	Mines (USBM) criteria for safe blasting for ground vibration and recommendations on air blast Blast Procedures Emergency response procedure IFC Performance Standard 4: Community Health, Safety, and Security

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment	Damage to road infrastructure	Transportation, Infrastructure and Traffic	Construction Operation Decommissioning	Avoid and control through implementation of EMPR mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	National Road Traffic Act OHSA MHSA

Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Increased traffic	Transportation, Infrastructure and Traffic	Constructi on Operation	Avoid and control through implementation of EMPR mitigation measures (e.g. speed limit enforcement, vehicle maintenance)	National Road Traffic Act OHSA MHSA

Mining Permit area site preparation					

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities	Visual impact of mine infrastructure, stockpiles and dust	Visual	Construction Operation Decommissioning Rehabilitation and Closure	Avoid and control through implementation of EMPR mitigation measures (e.g. vehicle maintenance, progressive rehabilitation)	Rehabilitation and Closure Plan Final Land-use Objectives

Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
General surface rehabilitation	Greenhouse gas emissions	Air Quality	Construction Operation	Avoid and control through implementation of EMPR	NEMAQA Equator Principles

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure			Decommissioning Rehabilitation and Closure	mitigation measures (e.g. vehicle maintenance, progressive rehabilitation)	IFC Performance Standard 3: Resource Efficiency and Pollution Prevention

General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation Opencast mining Post closure monitoring	Fugitive emissions (Dust)	Air Quality	Constructi on Operation Decommissioning Rehabilitation and Closure	Avoid through preventative measures (e.g. speed limit enforcement) Control through implementation of EMPR mitigation measures (e.g. dust suppression)	Road Traffic Act NEMAQA Dust Regulations

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
and maintenance Site establishment Infrastructure					
General surface rehabilitation Infrastructure removal Maintenance and operation of site infrastructure and facilities Mining Permit area site preparation	Disturbing and/or nuisance noise		Construction Operation Decommissioning Rehabilitation and Closure	Avoid through preventative measures (e.g. communication with landowners, timing of activities) Control through implementation of EMPR mitigation measures (e.g. Noise abatement measures)	ECA Noise Regulations SANS 10103 OHSA MHSA

Opencast mining Post closure monitoring and maintenance Site establishment Infrastructure					
Opencast mining	Blasting	Blasting and Vibration	Operation	Avoid and control through implementation of preventative measures (e.g. blast procedures, monitoring,	Explosives Act MHSA OHSA MPRDA United States Bureau of

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
				communication with landowners, emergency response procedures)	Mines (USBM) Criteria for Safe Blasting for Ground Vibration Blast Procedures Emergency Response Procedure IFC Performance Standard 4: Community Health, Safety, and Security

Opencast mining	Ground vibration and human perception	Blasting and Vibration	Operation	Avoid and control through implementation of preventative measures (e.g. blast procedures and monitoring, communication with landowners and emergency response procedures)	Explosives Act MHSA OHSA MPRD A United States Bureau of Mines (USBM) Criteria for Safe Blasting for Ground Vibration Blast Procedures Emergency Response Procedure IFC Performance Standard 4: Community Health, Safety, and Security

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
Opencast mining	Impacts on Infrastructure (roads, communications infrastructure, services, houses, boreholes)	Blasting and Vibration	Operation	Avoid and control through implementation of preventative measures (e.g. structural surveys, blast procedures, monitoring and communication with landowners)	Explosives Act MHSA OHSA MPRD A United States Bureau of Mines (USBM) Criteria for Safe Blasting for Ground Vibration Blast Procedures Emergency Response Procedure IFC Performance Standard 4: Community Health, Safety, and

					Security
Opencast mining	Noxious fumes	Blasting and Vibration	Operation	Avoid and control through implementation of preventative measures (e.g. structural surveys, blast procedures, monitoring, and communication with landowners)	Explosives Act MHSA OHSA MPRD A United States Bureau of Mines (USBM) Criteria for Safe Blasting for Ground

					Vibration Blast Procedures Emergency Response

Activity	Potential impact	Aspects Affected	Phase	Mitigation Type	Standard to be Achieved
					Procedure IFC Performance Standard 4: Community Health, Safety, and Security

39. FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT/ENVIRONMENTAL AUDIT REPORT

The result of environmental monitoring and compliance to the approved EMPR will be undertaken every second year and submitted to the DMRE in the form of an environmental performance assessment. Included in the report will be the following relevant information:

39.1 The period when the performance assessment was conducted.

39.2 The scope of the assessment.

39.3 The procedures used for conducting the assessment.

39.4 Interpreted information gained from monitoring the EMPR.

39.5 Evaluation criteria used during the assessment.

39.6 Results of the assessment are to be discussed and mention must be made of any gaps in the EMPR and how it can be rectified.

39.7 Yearly updated layout plans.

Any emergency or unforeseen impacts will be reported immediately to the DMRE and other relevant government departments.

40. ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

Management of operational risk is a key consideration for mines/pits operating within the social and economic context of South Africa. Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. Operational risks and impacts are usually managed through the implementation of the Environmental and Social Management System (ESMS) and Safety, Health and Environmental (SHE) system. A formal, effective ESMS is an important requirement for establishing and maintaining effective environmental management and should be undertaken during the planning phase of the Project. As such the Applicant shall be required to appoint a suitably qualified specialist to develop the ESMS to be implemented on the mine. Adequate resources (people, financial and technical) need to be made available to ensure effective establishment, implementation, maintenance and continual improvements of the ESMS. The roles and responsibilities for these key environmental personnel should be clearly defined and communicated throughout the organisation. The ESMS should include the requirement to constantly monitor environmental performance and assess the adequacy of environmental resources provided for the Mine. If required, the Mine would need to procure further environmental resources to ensure the successful implementation of the ESMS and EMPR. The development and implementation of an ESMS is a requirement in terms of compliance

with international standards of best practise such as the IFC Performance Standards and Equator principles

40.1 ESMS Framework

The ESMS will be based on:

- South African legal requirements.
- Mining best practice.

The ESMS to be developed for the Mine should incorporate and provide for:

- A project specific environmental policy.
- Organizational capacity and competency
- The ESMS shall identify roles and responsibilities of key role players.
- The ESMS shall incorporate a mechanism for ongoing identification of risks and impacts (e.g. Impacts and aspects register of an ISO system).
- Integration of the ESMS with the SHE management system may be undertaken to form a holistic SHE risk management system.
- The ESMS shall comprise appropriate management plans and procedures to ensure effective operational control.
- The ESMS shall provide for emergency response and also make provision for emergency protocols.
- Effective communication (both internal and external) is a key requirement for successful implementation of the ESMS and an appropriate communication procedure to this effect shall be developed.
- The ESMS shall involve engagement between the client, its workers, local communities directly affected by the project (the affected communities) and where appropriate, other stakeholders. It is therefore imperative that there is integration between Stakeholder Engagement procedures and the ESMS.
- The ESMS shall make provision for ongoing compliance monitoring and environmental audits.
- The ESMS shall make provision for internal auditing and continual improvement which should be incorporated into internal management review processes. The ESMS should provide for setting and reviewing objectives and targets to demonstrate continual SHE improvements associated with the project.

Ultimately an effective ESMS should provide for effective management of social and environmental risks and impacts whilst maintaining legal compliance and meeting international standards of best practise where these are feasible and appropriate.

40.2 Stakeholder Engagement

Social impacts occur immediately in the planning phase of a project and as such it is imperative to start with stakeholder engagement as early in the process as possible. Stakeholder engagement is required on an ongoing basis throughout the operation of the mine. As such, the mine will need to develop and implement a detailed Stakeholder Engagement Plan, designed to work as a living document for implementation over the entire duration of the project.

The following stakeholder engagement framework outlines the principles and objectives for stakeholder engagement during all phases of the mining operation.

- To identify and assess the processes and/or mechanisms that will improve the communication between local communities, the wider community and the small-scale mine.
- To improve relations between mine staff and the people living in the local communities.
- To provide a guideline for the dissemination of information crucial to the local communities in a timely, respectful and efficient manner.
- To provide a format for the timely recollection of information from the local communities in such a way that the communities are included in the decision making process.

This stakeholder engagement plan will assist the mine to outline their approach towards communicating in the most efficient way possible with stakeholders throughout the life of the project. Such a plan cannot be considered a once off activity and should be updated on a yearly basis to ensure that it stays relevant and to capture new information. The Stakeholder Engagement Plan should be compiled in line with IFC Guidelines (IFC) and should consist of the following components:

- Stakeholder Identification and Analysis – time should be invested in identifying and prioritising stakeholders and assessing their interests and concerns. Information Disclosure – information must be communicated to stakeholders early in the decision- making process in ways that are meaningful and accessible, and this communication should be continued throughout the life of the project.
- Stakeholder Consultation – each consultation process should be planned out, consultation should be inclusive, the process should be documented and follow-up should be communicated.
- Negotiation and Partnerships – add value to mitigation or project benefits by forming strategic partnerships and for controversial and complex issues, enter into good faith negotiations that satisfy the interest of all parties.
- Grievance Management – accessible and responsive means for stakeholders to raise concerns and grievances about the project must be established throughout the life of the

project.

- Stakeholder Involvement in Project Monitoring – directly affected stakeholders must be involved in monitoring project impacts, mitigation and benefits. External monitors must be involved where they can enhance transparency and credibility.
- Reporting to Stakeholders – report back to stakeholders on environmental, social and economic performance, both those consulted and those with more general interests in the project and parent company.
- Management Functions – sufficient capacity within the company must be built and maintained to manage processes of stakeholder engagement, track commitments and report on progress.

It is of critical importance that stakeholder engagement takes place in each phase of the project cycle and it must be noted that the approach will differ according to each phase

40.3 Grievance Mechanism

In accordance with international good practice the mine shall establish a specific mechanism for dealing with grievances. A grievance is a complaint or concern raised by an individual or organisation that judges that they have been adversely affected by the project during any stage of its development. Grievances may take the form of specific complaints for actual damages or injury, general concerns about project activities, incidents and impacts, or perceived impacts. The IFC standards require Grievance Mechanisms to provide a structured way of receiving and resolving grievances. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, and is at no cost and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders. The mechanism must not impede access to other judicial or administrative remedies.

The proposed grievance mechanism shall be based on the following principles:

- Transparency and fairness.
- Accessibility and cultural appropriateness.
- Openness and communication regularity.
- Written records.
- Dialogue and site visits.
- Timely resolution.

Based on the principles described above, the grievance mechanism process involves four stages:

- Receiving and recording the grievance.

- Acknowledgement and registration.
- Site inspection and investigation.
- Response.

40.4 Internal Grievance Procedure

The mine shall develop a detailed internal grievance mechanism designed to receive and facilitate resolution of workplace concerns and grievances raised by employees (and their organizations, where they exist). Employees must be informed of the grievance mechanism at the time of recruitment and it must be made easily accessible to them. The mechanism should involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned, without any retribution. The mechanism should also allow for anonymous complaints to be raised and addressed. The mechanism should not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

Document Control

A formal document control system should be established during the development of the ESMS. The document control system must provide for the following requirements:

- Documents are approved for adequacy prior to use.
- Review and update documents as necessary and re-approve documents.
- Ensure that changes and the current version status of documents are identified.
- Ensure that relevant versions of applicable documents are available at points of use.
- Ensure that documents remain legible and readily identifiable.
- Ensure that documents of external origin necessary for the ESMS are identified and their distribution controlled.
- Prevent unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.

40.5 Record Keeping

It is essential that an official procedure for control of records be developed to ensure records required to demonstrate conformity to environmental and social standards are maintained. This project is therefore required to develop and maintain a procedure for the identification, storage, protection, retrieval, retention and disposal of records as part of the ESMS. Records must be legible, identifiable and traceable.

40.6 Auditing and Reporting Procedures

The Mining Permit holder shall develop and auditing and reporting procedure, for conveying information from the compliance monitoring activities and to ensure that management is able to take rapid corrective action should certain thresholds be exceeded. The sections below present a framework for the development of the necessary procedures. Different reporting mechanisms may include:

- Inspections
- Accidents and emergencies
- Measuring performance indicators and interpreting and acting on the indicators
- Records of monitoring activities to test the effectiveness of mitigation measures and impact controls, as well as for compliance auditing purposes
- Training programmes and evidence of appropriate levels/amount of skills/capacities created
- All monitoring and auditing must be accompanied by applicable records and evidence (e.g., delivery slips, photographic records, etc.). All reports must be retained and made available for inspection by the ECO, the Applicant and /or the Relevant Competent Authorities. All reports shall be signed by the relevant parties to ensure accountability. The Mining Permit holder must use the audit report findings to continually ensure that environmental protection measures are working effectively on site through a system of self-checking. The EMPR should be viewed as a dynamic document aimed at continual environmental performance improvement.

The following auditing and reporting shall be required throughout the operation phase:

- Weekly Compliance Reports: These reports must be prepared by the designated Pit EO and must aim to monitor and report on-site environmental performance
- Quarterly Compliance Audit Reports: The ECO must compile quarterly compliance audit reports which are to be submitted to the Mining Permit holder for his review and correction of non-compliance issues. It is the responsibility of the ECO to report any non-compliance, which is not correctly rectified.

40.7 Responding to Non-Compliances

Non-compliance will be identified and managed through the following four key activities including:

- Inspections of the site and activities across the site
- Monitoring of selected environmental quality variables
- Audits of the site and relevant documentation as well as specific activities
- Reporting on a monthly basis

An environmental non-conformance and incident register must be prepared and maintained by the ECO throughout the lifespan of the small-scale mine in order to monitor environmental concerns, incidents, and non- conformances. The register must include details of date, location, description of the NC or Incident, applicable environmental commitment/standard, corrective action taken, adequacy of corrective action, date rectified, etc.

Non-compliance with the EMPR or any other environmental legislation, specifications or standards shall be recorded by the ECO in the non-conformance register. This register shall be maintained by the ECO and will be sent to the Mining Permit holder and Contractor on a regular basis (quarterly), and the Mining Permit holder shall ensure that the responsible party takes the necessary corrective actions. Non-conformances may only be closed out in the register by the ECO upon confirmation that adequate corrective action has been taken. The register should be utilised to measure overall environmental performance.

40.8 Environmental Incidents

For the purposes of this project, an environmental incident can be divided into three levels, i.e. major, medium and minor. All major and medium environmental incidents shall be recorded in the incident register. Minor incidents do not need to be reported but require immediate rectification on site. Definitions and examples of environmental incidents are provided in Table 30.

Table 30: Description of incidents and non-conformances for the purpose of the project.

Non-Conformance	Any deviation from work standards, practices, procedures, regulations, management system performance etc. that could either directly or indirectly lead to injury or illness, property damage, damage to the workplace environment, or a combination of these.
Major Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread, long-term, irreversible significant negative impact on the environment and/or has a high risk of legal liability.

	A major environmental incident usually results in a significant pollution and may entail risk of public danger. Major environmental incidents usually remain an irreversible impact even with the involvement of long-term external intervention i.e. expertise, best available technology, remedial actions, excessive financial cost etc. Major environmental incidents may be required to be reported to the authorities. The ECO shall make the final decision as to whether a particular incident should be classified as a Major incident. An example of a Major environmental incident would be a significant spillage (e.g. 500 litres) of fuel into a watercourse.
Medium Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread or localised, short term, reversible significant negative impact on the environment and/or has a risk of legal liability. A medium environmental incident may be reported to the authorities, can result in significant pollution or may entail risk of public danger. The impact of medium environmental incidents should be reversible within a short to medium term with or without intervention. The ECO shall make the final decision as to whether a particular incident should be classified as a Medium incident. An example of a Medium environmental incident would be a large spill of fuel (e.g. 20 – 50 litres) onto land.
Minor Environmental Incident	An incident or sequel of incidents, whether immediate or delayed, where the environmental impact is negligible immediately after occurrence and/or once-off intervention on the day of occurrence. An incident where there is unnecessary wastage of a natural resource is also classified as a minor environmental incident. An example would be leaking water pipes that result in the wastage of water. A minor environmental incident is not reportable to authorities. An example of a minor incident is day to day spills of fuel or oil onto the ground where the spill is less than one or two litres.

The following incident reporting procedures shall apply to this project:

- All environmental incidents shall be reported to Contractor's EO and Pit EO who shall ensure that the appropriate rectification is undertaken.
- The Pit EO shall record all medium and major incidents in the incident register and advise on the appropriate measures and timeframes for corrective action.
- An incident report shall be completed by party responsible for the incident for all medium and major incidents and the report shall be submitted to the Pit Manager and Pit EO within 5 calendar days of the incident.
- The Pit EO shall investigate all medium and minor incidents and identify any required actions to prevent a recurrence of such incidents.

In the event of an emergency incident (unexpected sudden occurrence), including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the Applicant shall notify the relevant authorities in accordance with legal requirements (e.g. Section 30 of NEMA and Section 20 of the NWA). In the event of a dispute in terms of the classification of a such an incident, the Applicant shall engage the ECO to advise on the potential reporting requirements in terms of the above.

41. ENVIRONMENTAL AWARENESS PLAN AND TRAINING

The following basic environmental education material will be posted on a monthly basis on accessible notice boards on mine premises, one topic will be selected each month:

WHAT IS THE ENVIRONMENT?

- Soil
- Water
- Plants
- People
- Animals
- Air we breathe
- Buildings, cars and houses

WHY MUST WE LOOK AFTER THE ENVIRONMENT?

- It affects us all as well as future generations
- We have a right to a healthy environment
- A contract has been signed
- Disciplinary action (e.g. construction could stop or fines issued)

ANIMALS

- Do not injure or kill any animals on the site
- Ask your supervisor or Contract's Manager to remove animals found on site

TREES AND FLOWERS

- Do not damage or cut down any trees or plants without permission
- Do not pick flowers

SMOKING AND FIRE

- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Do not light any fires without permission
- Know the positions of fire fighting equipment
- Report all fires
- Do not burn rubbish or vegetation without permission

PETROL, OIL AND DIESEL

- Work with petrol, oil & diesel in marked areas
- Report any petrol, oil & diesel leaks or spills to your supervisor
- Use a drip tray under vehicles & machinery
- Empty drip trays after rain & throw away where instructed

DUST

Try to avoid producing dust – Use water to make ground & soil wet

NOISE

- Do not make loud noises around the site, especially near schools and homes
- Report or repair noisy vehicles

TRUCKS AND DRIVING

- Always keep to the speed limit
- Drivers – check & report leaks and vehicles that belch smoke
- Ensure loads are secure & do not spill

RUBBISH

- Do not litter – put all rubbish (especially cement bags) into the bins provided
- Report full bins to your supervisor
- The responsible person should empty bins regularly

EATING

- Only eat in demarcated eating areas
- Never eat near a river or stream
- Put packaging & leftover food into rubbish bins

TOILETS

- Use the toilets provided
- Report full or leaking toilets

The operations manager must ensure that they understand the EMPr document, its requirements and commitments before any mining takes place. An Environmental Control Officer must ensure compliance of mining activities to the management programmes described in the EMPr.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

Site Management:

- Stay inside boundaries of site and do not enter adjacent properties
- Keep tools and material correctly stored
- Smoke only in designated site
- Use toilets provided and report full or leaking toilets

Water Management and Erosion:

- Check that rainwater flows around work site and are not contaminated
- Report any erosion
- Check that dirty water is kept from clean water

Waste Management:

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins
- Place waste in containers and always close lid
- Don't burn waste
- Pick-up every litter laying around

Hazardous Waste Management (Petrol, Oil, Diesel, Grease)

- Don't mix general waste with hazardous waste
- Use only sealed and non-leaking containers
- Keep all containers closed and store only in approved areas
- Always put drip trays under vehicles and machinery
- Empty drip trays after rainfall
- Stop leaks and spills, if safe to do so
- Immediately report the spill to the site manager/supervision of the site
- Locate spill kit/supplies and use to clean-up, if safe
- Place spill clean-up wastes in proper containers
- Label containers and move to approved storage site

Discoveries:

- Stop work immediately
- Notify site manager/supervisor
- Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures

Air Quality:

Wear protection when working in very dusty areas Implement dust control measures:

- Sweep paved roads
- Spraying all roads and work areas
- Minimize handling of material
- Obey speed limit and cover trucks

Driving and Noise:

- Use only approved access roads
- Respect speed limits
- Only use turn-around areas – no crisscrossing through undisturbed areas
- Avoid unnecessary loud noises
- Report or repair noisy vehicles

Vegetation and Animal life:

- Don't remove any plants or trees without approval of the site manager

- Don't collect fire wood
- Don't catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site
- Report any animal trapped in the work area
- Don't set snares or raid nests for eggs or young

Fire Management:

- Don't light any fires on site, unless contained in a drum at demarcated area
- Put cigarette butts in a rubbish bin only
- Don't smoke near gas, paints or petrol
- Know the position of firefighting equipment
- Report all fires to the supervisors
- Don't burn waste or vegetation on site

41.1 Manner in which Risks will be Dealt with to Avoid Pollution or Degradation

The broad measures to control or remedy any causes of pollution or environmental degradation as a result of the proposed mining activities taking place are provided below:

- Contain potential pollutants and contaminants (where possible) at source.
- Handling of potential pollutants and contaminants (where possible) must be conducted in bunded areas and on impermeable substrates.
- Ensure the timeous clean-up of any spills.
- Implement a waste management system for all waste present on site.
- Investigate any I&AP claims of pollution or contamination as a result of mining activities.
- Implement the impact management objectives, outcomes and actions, as described in Section 12 above.

It is of critical importance that the broad measures to control or remedy any causes of pollution or environmental degradation are applied during onsite mining activities.

42. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No additional information was requested or is deemed necessary.

43. ENVIRONMENTAL MONITORING

43.1 Functional Requirements of Monitoring Programmes

The purpose of monitoring is not merely to collect data, but to provide information necessary to make informed decisions on managing and mitigating potential impacts. Monitoring therefore serves the following functions:

- Serve as early warning system to detect any potential negative impacts.
- To provide information to feedback into management controls to avoid, prevent or minimise potential negative impacts.
- Provide quantitative data that can serve as evidence for the presence of negative impacts or the lack thereof.
- Allows for trending, modelling and prediction of future conditions or potential impacts.

Based on the above, the small-scale mine must ensure that monitoring programmes comprise of the following (at a minimum) in order to obtain valuable environmental data:

- Environmental aspect monitoring must be a formalised procedure.
- All equipment used in monitoring must be correctly calibrated and serviced regularly.
- Samples required for analysis will be sent to an independent and accredited laboratory.
- Monitoring data must be stored.
- Data must be checked and interpreted and tending undertaken on a quarterly basis.
- Both the date and reports on environmental monitoring must be kept on record for the life of mine and where relevant provided to I&APs.
- The general and site-specific parameters to be monitored must be identified by an independent specialist, the authorities and where relevant I&APs.

43.2 List of Aspects that Require Monitoring Plans

The list of aspects that require on-going environmental monitoring includes the following:

- Air quality.
- Blasting and vibration.
- Surface water.
- Groundwater.
- Noise.
- Traffic.
- Rehabilitation.

As mines/pits and the environment are both dynamic it is likely that future scenarios may require the monitoring of additional or unforeseen impacts. As such, the list provided is by no means conclusive and must instead be used as a guideline for the impacts that require monitoring.

43.3 Monitoring Plans for Environmental Aspects

The monitoring of various environmental aspects and the impact on them as a result of the proposed project shall take place by means of both quantitative and qualitative techniques in order to determine whether or not the requirements of the Environmental Management Programme are being complied with. The importance and value of detailed environmental monitoring networks cannot be overstated.

Environmental monitoring serves as a tool to track compliance, assist with potential liability identification, and mitigation throughout the life of the proposed project. This is achieved through the provision of actual evidence-based monitoring and reporting thereof. In essence, monitoring is a continuous data-gathering, data interpreting, and control procedure that ranges from visual inspection to in-depth investigative monitoring and reporting. These monitoring plans need to be drawn into standalone plans that can be updated and amended as per authority requirements and additional data requirements identified during the mining activities. These plans need to include the site-specific roles and responsibilities for actions.

44. 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.

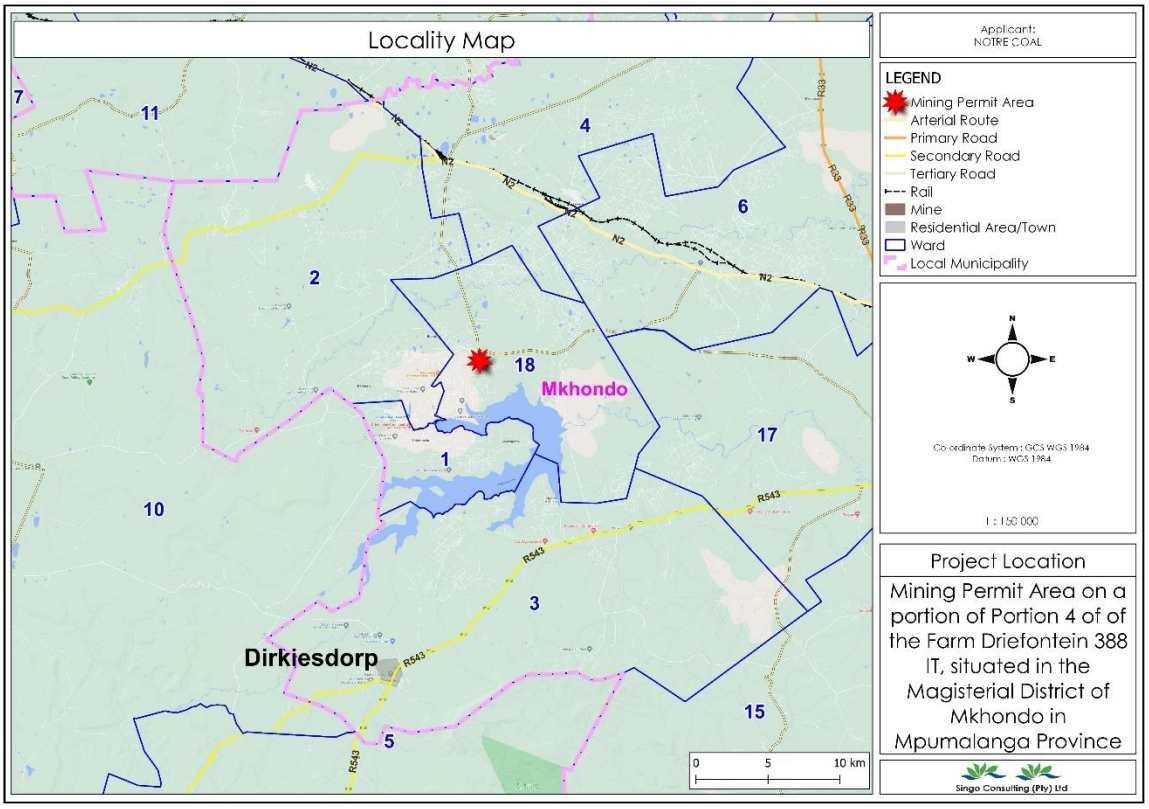
  (d) That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.

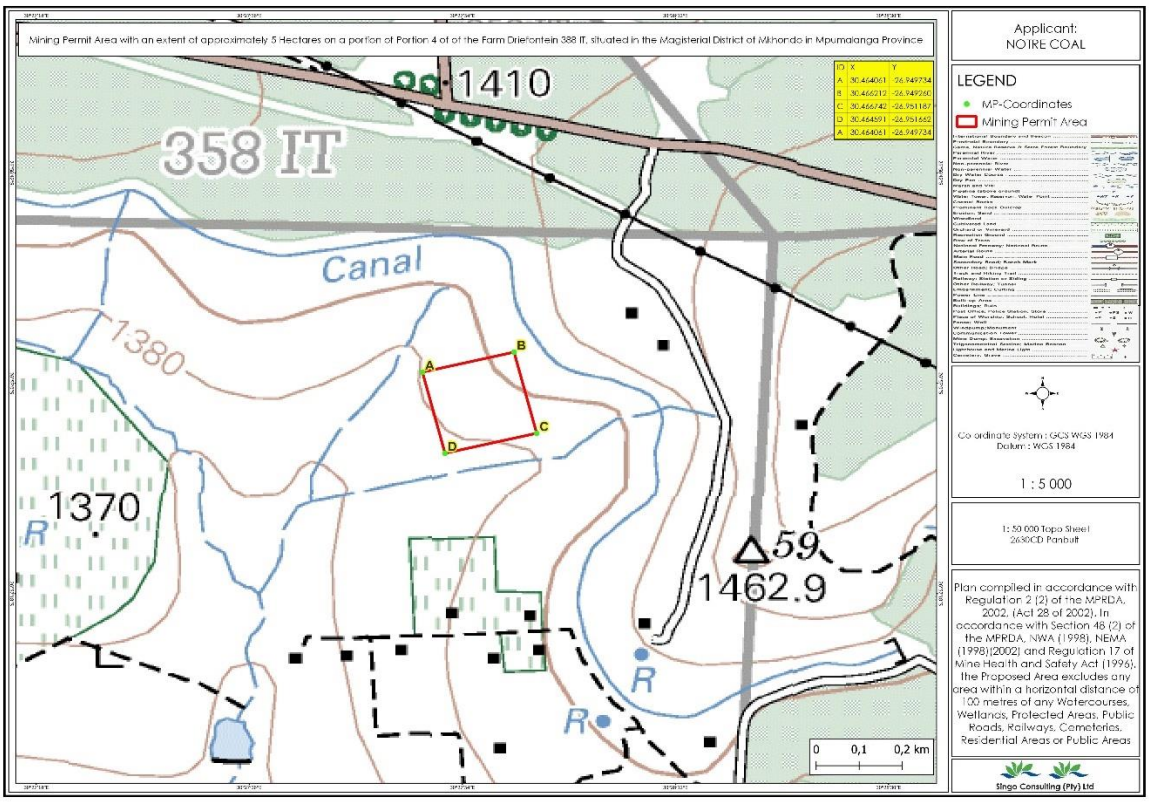
Signature of the environmental assessment practitioner

Name of company (if applicable):

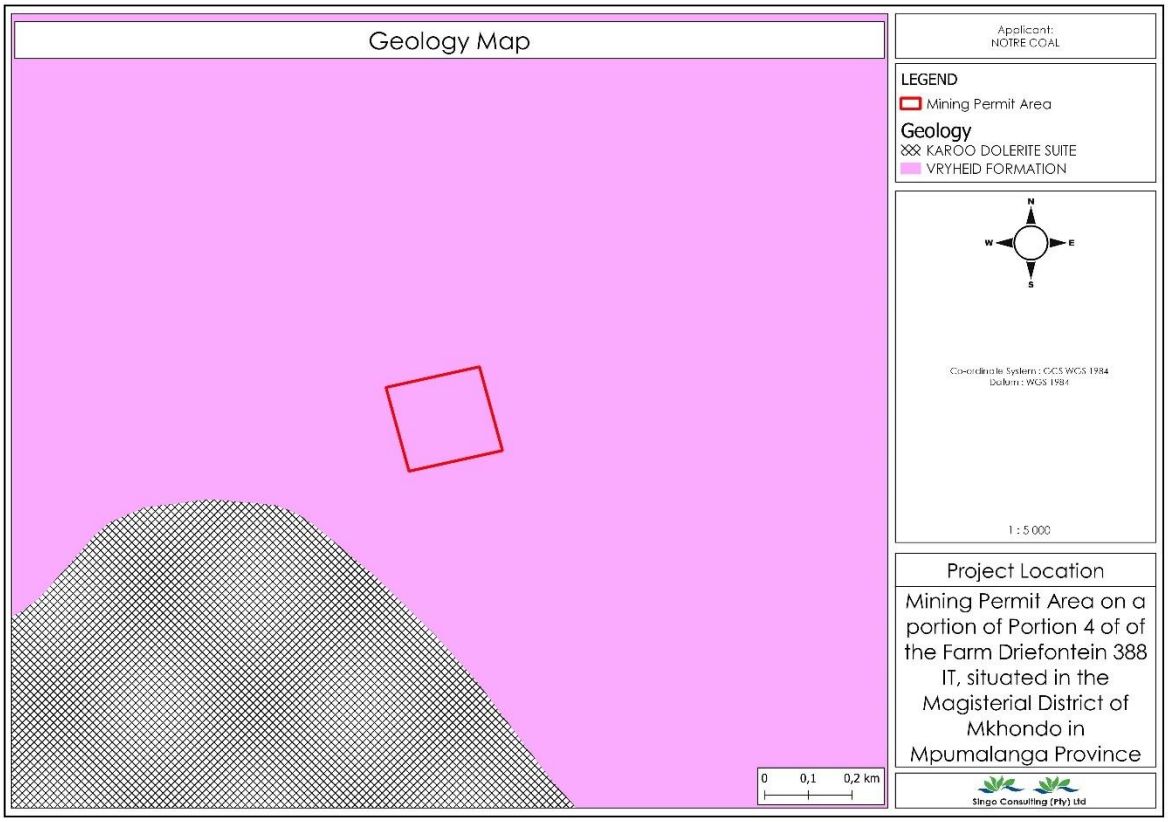
Date:

Appendix 1: Project Maps

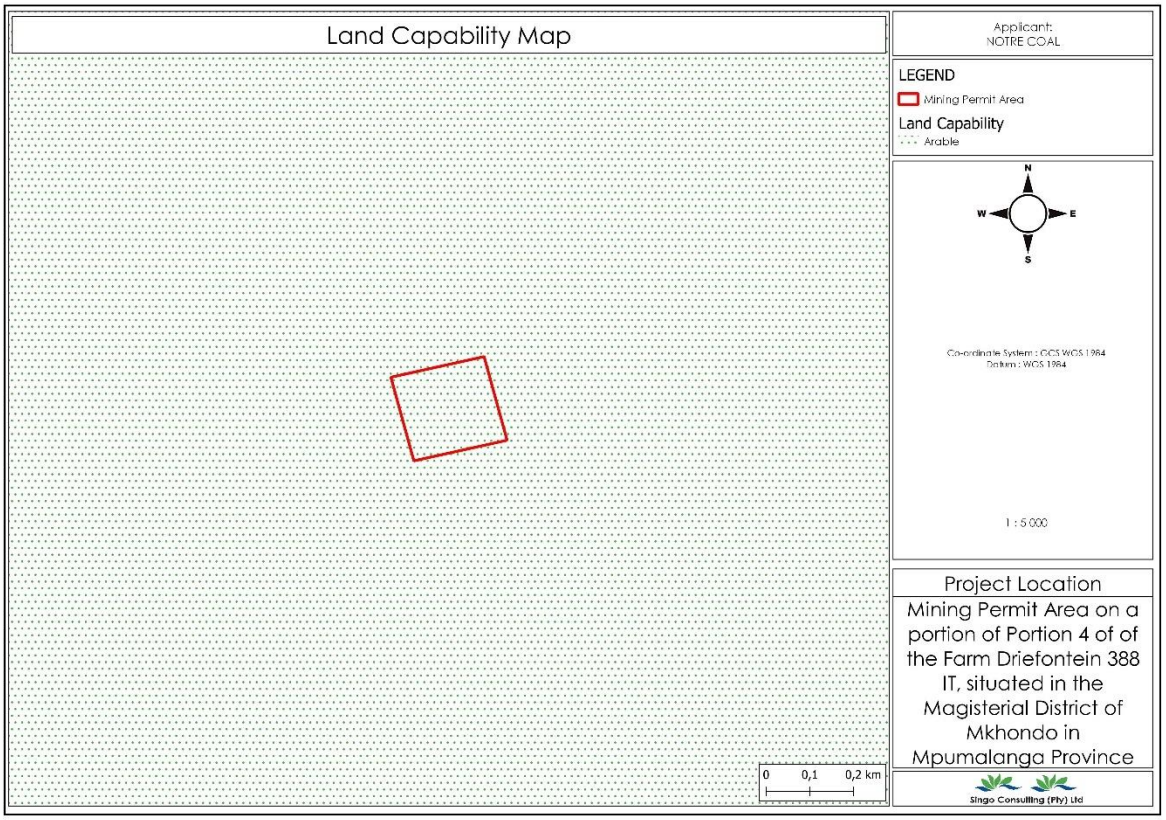


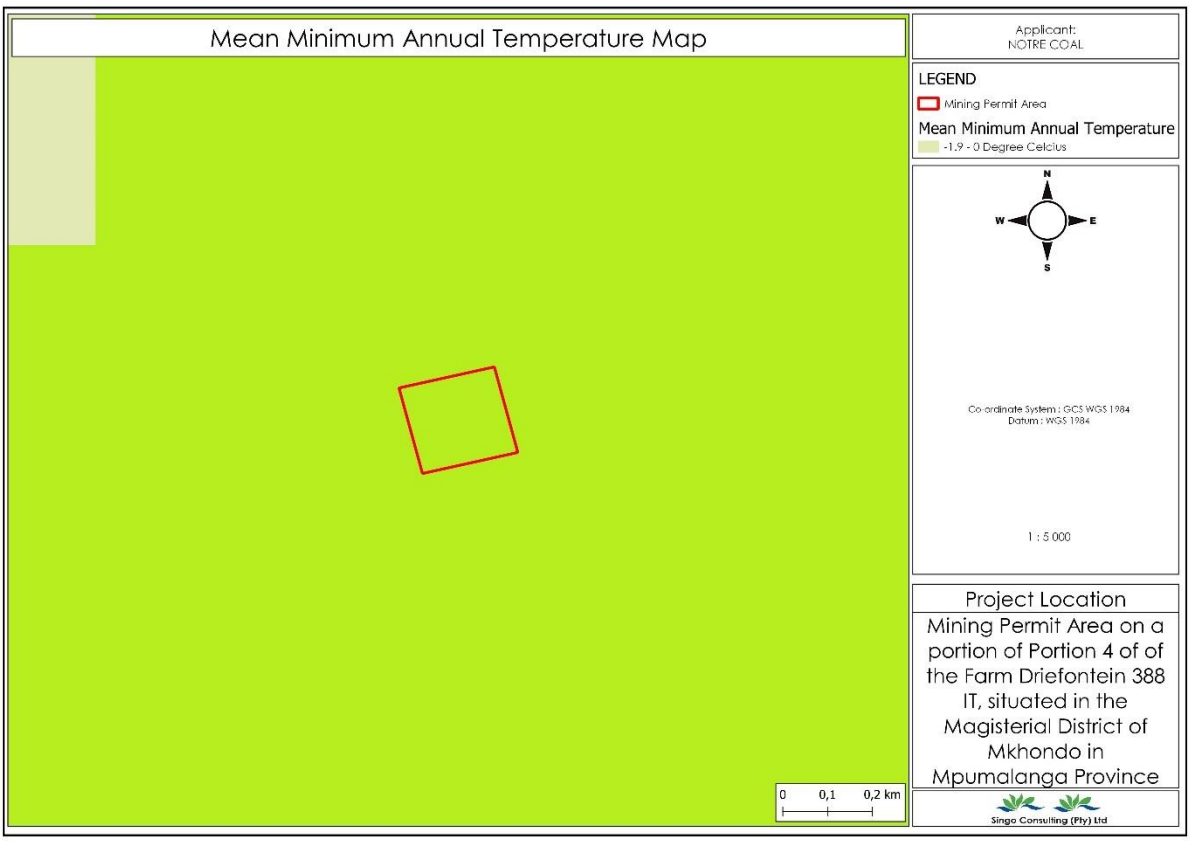


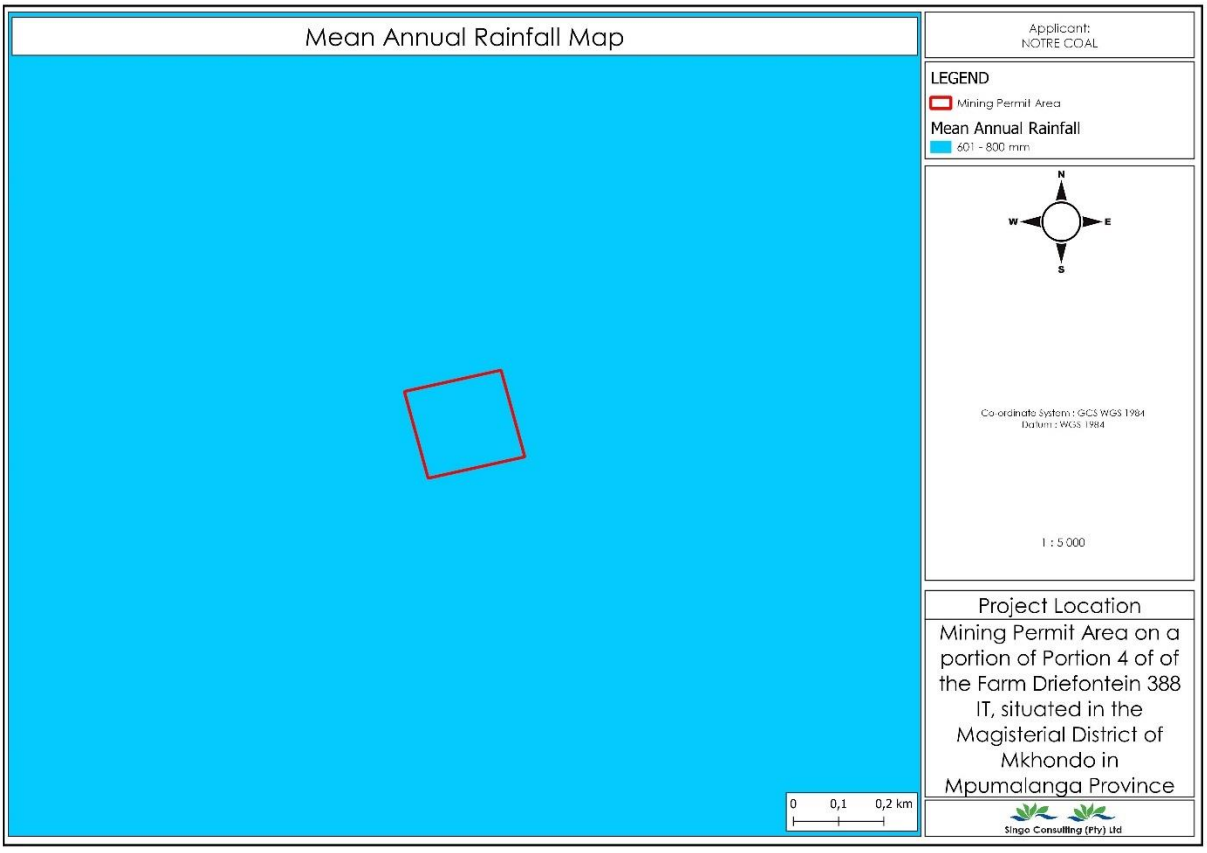

Mine Layout Plan
Applicant:
NOTRE COAL
LEGEND
1) Dirty Water Trench (0.03 Ha)
2) Proposed Access Road (0.05 Ha)
3) Mobile Sanitation Area(0.01 Ha)
4) Mobile Office Area (0.02 Ha)
5) Bowout (1.48 Ha)
6) Strip 1 (1.5 Ha)
7) Strip 2 (1.49 Ha)
8) Mobile Crushing and Screening Plant Area (0.05 Ha)
9) ROM Stockpile Area (0.06 Ha)
10) Overburden Stockpile Area (0.09 Ha)
11) Product Stockpile Area (0.06 Ha)
12) Topsoil Stockpile Area (0.09 Ha)
13) Pollution Control Dam (0.05 Ha)
Mining Permit Area
Google Satellite Hybrid
1 : 1 200
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
Singo Consulting (Pty) Ltd
0 25 50 m

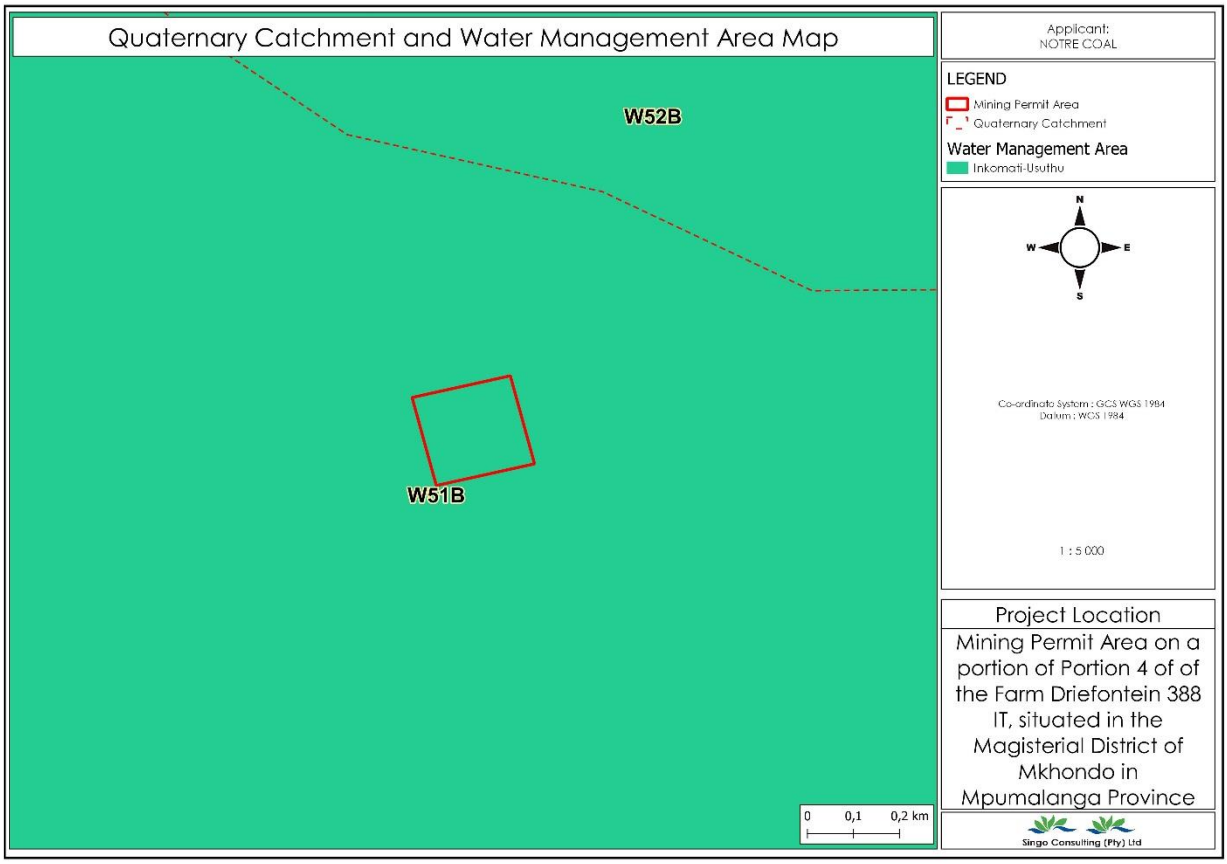

Geology Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Geology
KAROO DOLERITE SUITE
VRYHEID FORMATION
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
Singo Consulting (Pty) Ltd
0 0,1 0,2 km

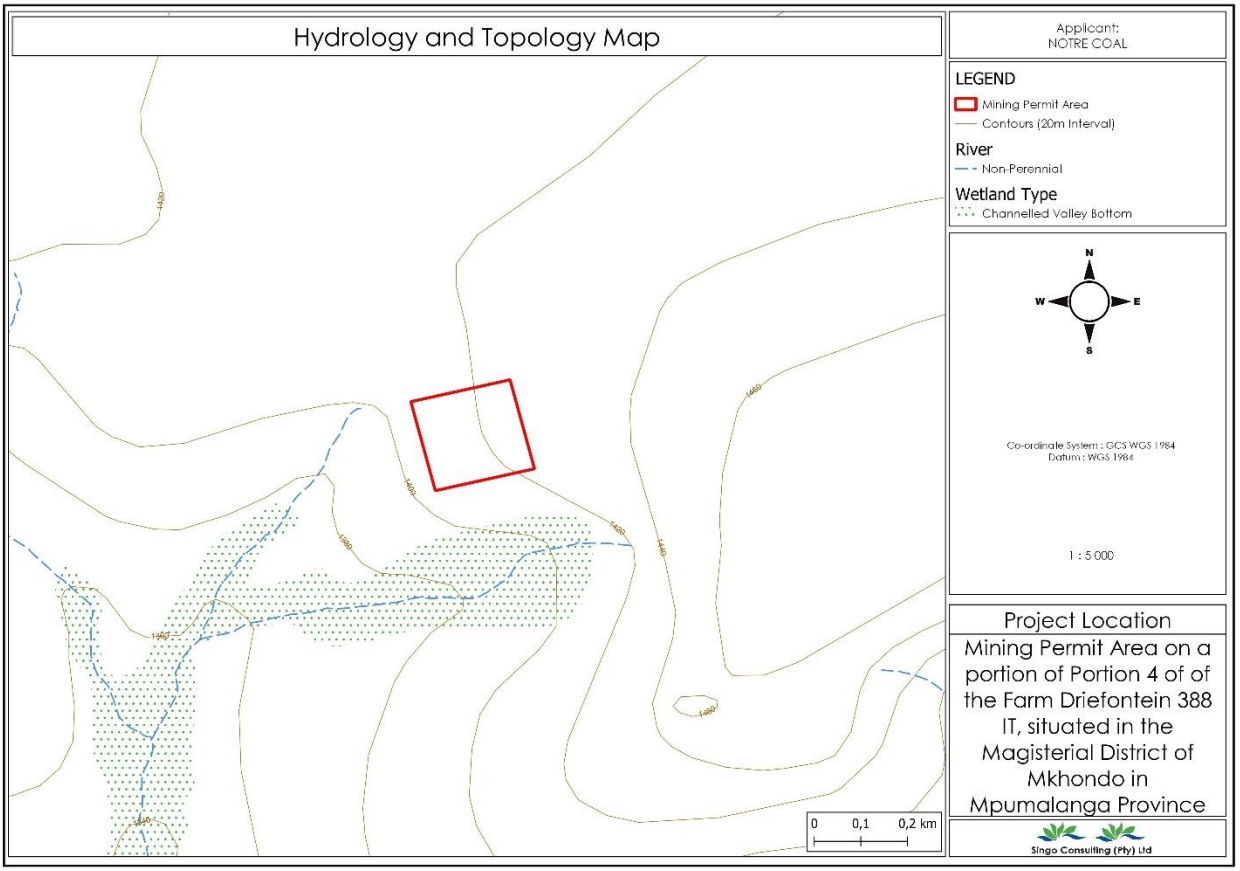

Soil Classes Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Soil Classes
Association of Classes 1 to 4:
Undifferentiated structureless soils
N
W
E
S
Co-ordinate System : CCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd

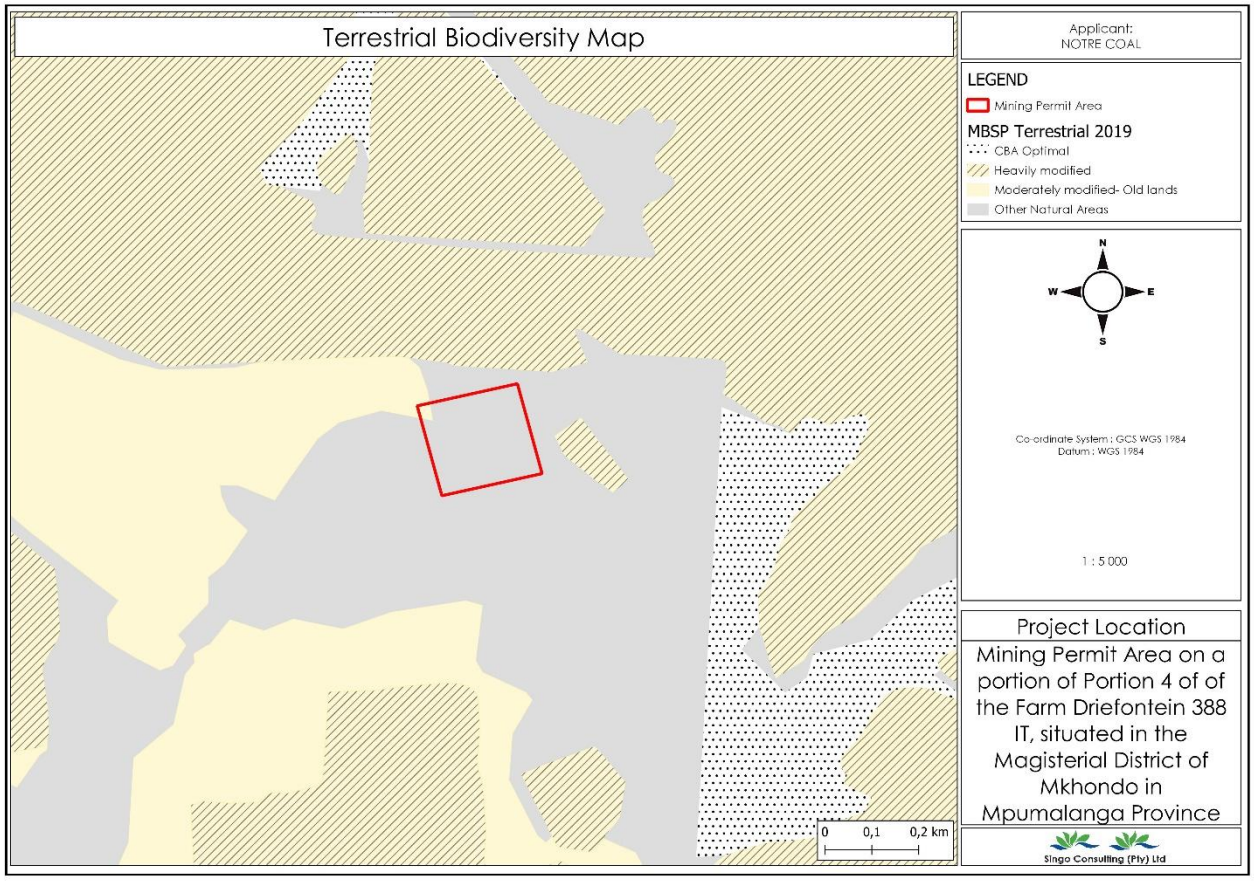

Land Capability Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Land Capability
Arable
N
W
E
S
Co-ordinate System : CCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd

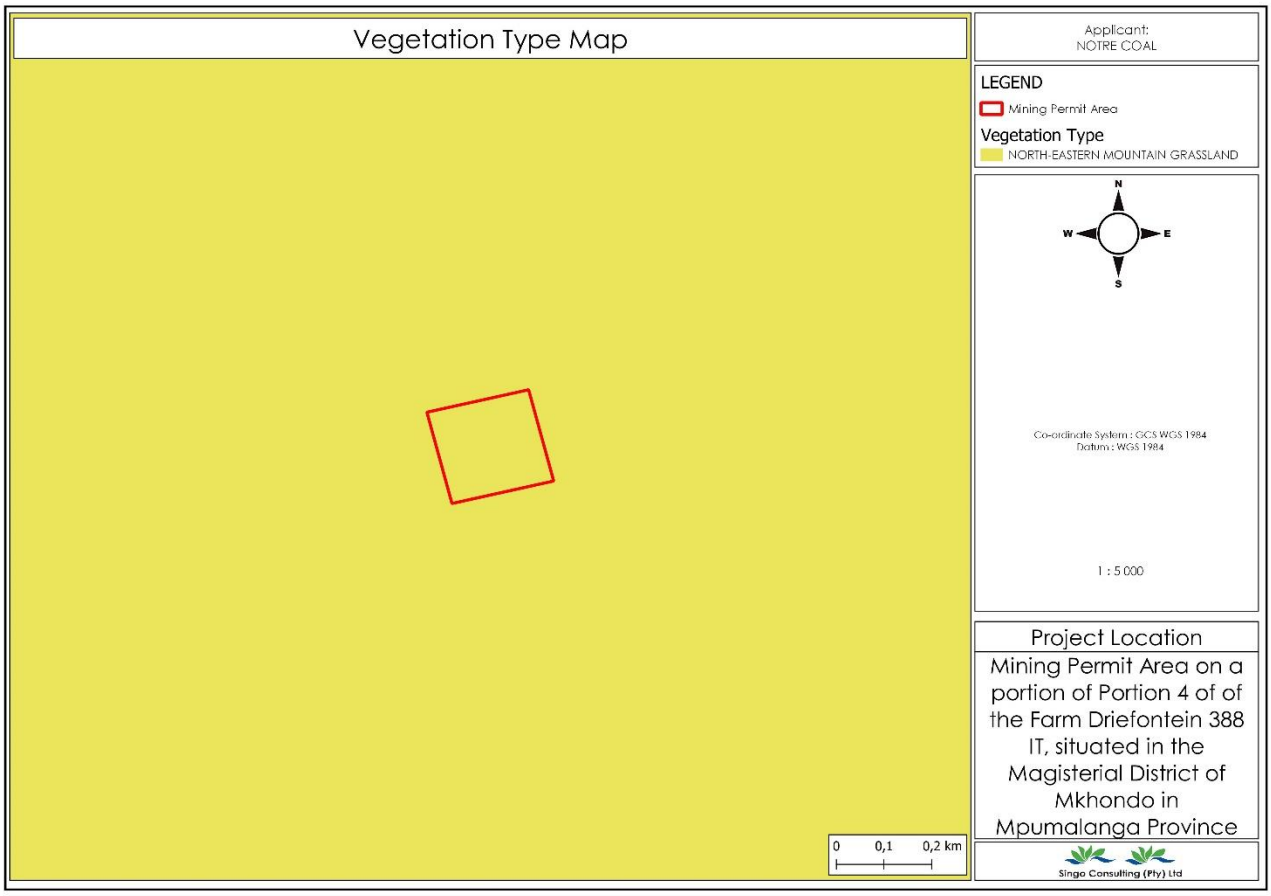

Mean Minimum Annual Temperature Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Mean Minimum Annual Temperature
-1,9 - 0 Degree Celcius
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd

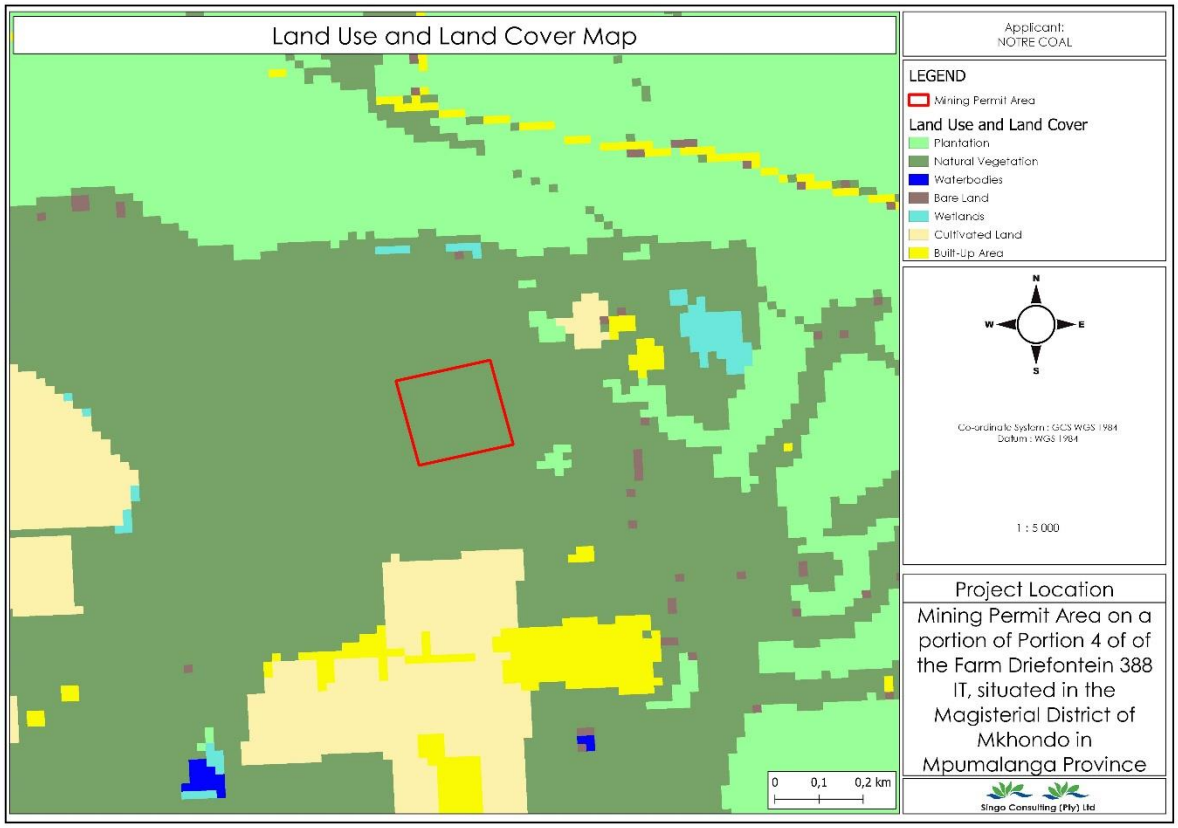

Mean Annual Rainfall Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Mean Annual Rainfall
601 - 800 mm
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd

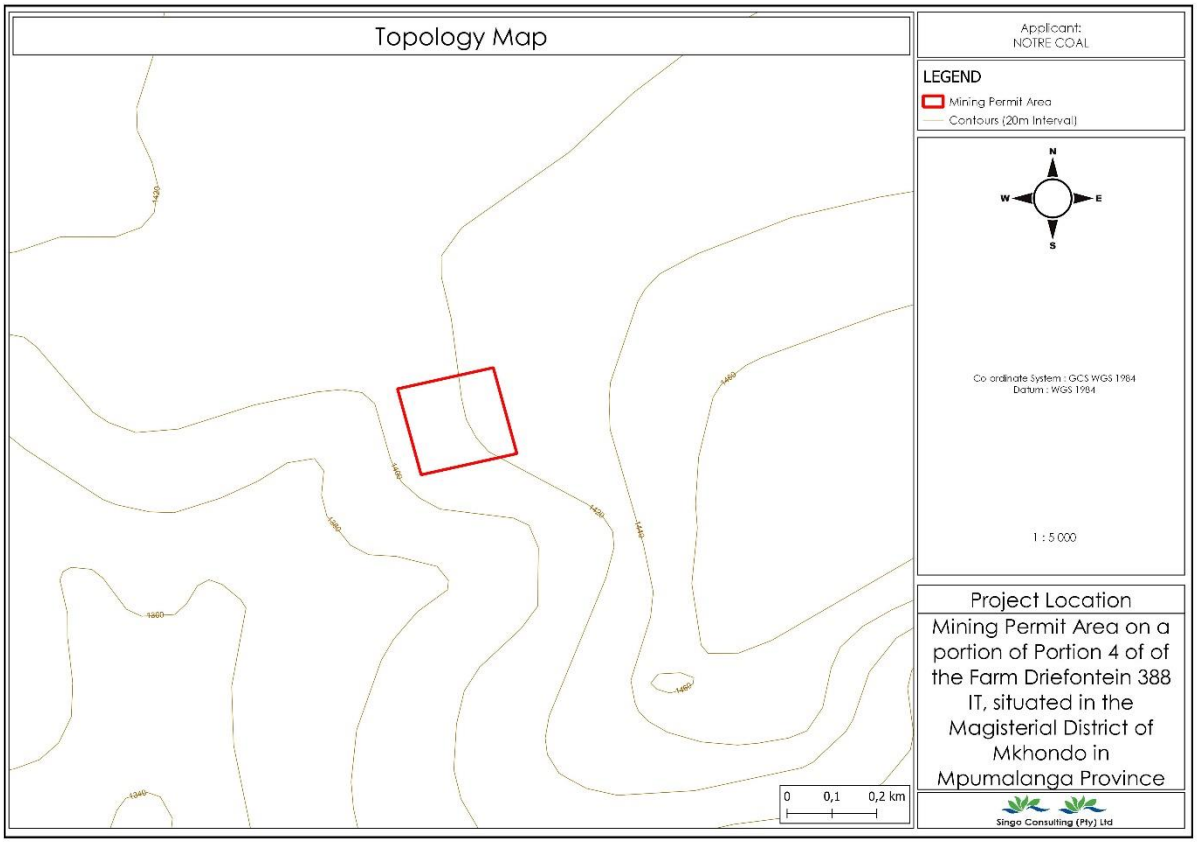

Quaternary Catchment and Water Management Area Map
W52B
W51B
0 0,1 0,2 km
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Quaternary Catchment
Water Management Area
Inkomati-Usuthu
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
Singo Consulting (Pty) Ltd


Hydrology and Topology Map
0 0,1 0,2 km
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Contours (20m Interval)
River
Non-Perennial
Wetland Type
Channelled Valley Bottom
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
Singo Consulting (Pty) Ltd


Terrestrial Biodiversity Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
MBSP Terrestrial 2019
CBA Optimal
Heavily modified
Moderately modified- Old lands
Other Natural Areas
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd


Vegetation Type Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Vegetation Type
NORTH-EASTERN MOUNTAIN GRASSLAND
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd


Land Use and Land Cover Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Land Use and Land Cover
Plantation
Natural Vegetation
Waterbodies
Bare Land
Wetlands
Cultivated Land
Built-Up Area
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd


Topology Map
Applicant:
NOTRE COAL
LEGEND
Mining Permit Area
Contours (20m Interval)
N
W
E
S
Co-ordinate System : GCS WGS 1984
Datum : WGS 1984
1 : 5 000
Project Location
Mining Permit Area on a portion of Portion 4 of of the Farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province
0 0,1 0,2 km
Singo Consulting (Pty) Ltd

Appendix 2: Background Information Document

BACKGROUND INFORMATION DOCUMENT (BID)

Mining Permit and Environmental Authorization application for Coal, Manganase, Iron, Vanadium, PGMS and Copper on portion of portion 4 of the farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province.

DMRE REF: MP 30/5/1/3/2/13599 MP

Singo Consulting (Pty) Ltd

Office No. 870, 5 Balalaika Street
Tasbet park ext 2
eMalahleni
1040.
Contact person: MsZwivhuya Tshabuse
Tel No.: +27 13 692 0041
Fax No.: +27 86 514 4103
Cell No.: +27 67 904 7475
Email: zwivhuya@singoconsulting.co.za

Plot 106, Road 4, Delmas,
Gauteng, 2210
Contact person: Mr Eddi Aphane
Cell No.: 066 211 8714
Email: eddi@notrecom.co.za

2022

INTRODUCTION AND THE PURPOSE OF THIS DOCUMENT

Singo Consulting (Pty) Ltd has been appointed as an independent Environmental Consultant by **Notre Coal, Manganese, Iron, Vanadium, PGMS and Copper (Pty) Ltd** to conduct Environmental Impact Assessment (EIA), Compile a Basic Assessment Report (BAR), 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 Mining Permit Application for **Coal, Manganese, Iron, Vanadium, PGMS and Copper on portion of portion 4 of the farm Driefontein 388 IT, situated in the Magisterial District of Mkhondo in Mpumalanga Province.**

The Purpose of this Background Information Document (BID) is to provide a perfunctory description of the project and outline EIA processes to be followed and contributions from Interested and Affected Parties (I&APs) on the issues related to the project in question, allowing comments and concerns to be raised.
Results of the EIA, both negative and positive will be submitted and made available to the relevant Departments such as the Department of Mineral Resources and Energy and if requested, Environmental Affairs, Water and Sanitation, Landowner and other interested stakeholders. This Background Information Document therefore requests and invite I&APs to comment on the environmental, physical, social and economic impacts associated with the proposed Mining permit activities. Be assured that your comments are of great value as they ensure that relevant issues are taken into consideration. Attached at the end of this document is a registration from, kindly complete it and send it back to **Ms Mazithi Mangcu** through given means of communication also attached there.

PROJECT DESCRIPTION

Mining Permit Application has been submitted for the extraction of **Coal, Manganese, Iron, Vanadium, PGMS and Copper** resource on the property mentioned above. This Mining Permit Area, as seen in Figure 1, is situated approximately 3.65 km Southeast of Brereton and approximately 7.97km East of St Helena.

Mining activities will be undertaken over a period of two (2) years. This project will entail an open cast method of excavation. The mine design will be according to the dimension of the applied mineral deposit within the project area, but overall mining activities will be limited to an area of 5 Ha as per mining permit requirements. The topsoil will be stockpiled elsewhere on site preferably next to the farm boundary and will be used during rehabilitation period. Once a box cut has been made, the overburden and mineral resources where necessary will be loosened by blasting. The loosened material will then be loaded onto trucks by excavators. A haul road will be situated at the side of the open cast, forming a ramp up which trucks can drive, carrying ore and waste rock. Waste rock will be piled up at the surface, near the edge of the open cast (waste dump). The waste dump will be tiered and stepped, to minimize degradation. All the activities will be guided by the project's EMPr such that the project does not impact the environment negatively.

REGULATORY FRAMEWORK

Therefore, EIA through BAR & EMPr process to be undertaken will be conducted in accordance with the National Environmental Management Act (Act 107 of 1998) and Environmental Impact Assessment regulations as amended (April 2017). The activity is to extract the existence and occurrence of the applied mineral; therefore, this will be conducted in accordance with Mineral and Petroleum Resources Development Act, (Act 28 of 2002). Other regulatory guidelines to be followed includes National Water Act, 1998 (Act 36 of 1998),

National Air Quality Standards (GN 1210: 2009) and National Dust Control Regulations (GN 827: 2013) as amended. These all will accurately be followed to ensure that identified impacts are assessed and mitigated according to their significance so that the protection of the receiving environment and populations is met.

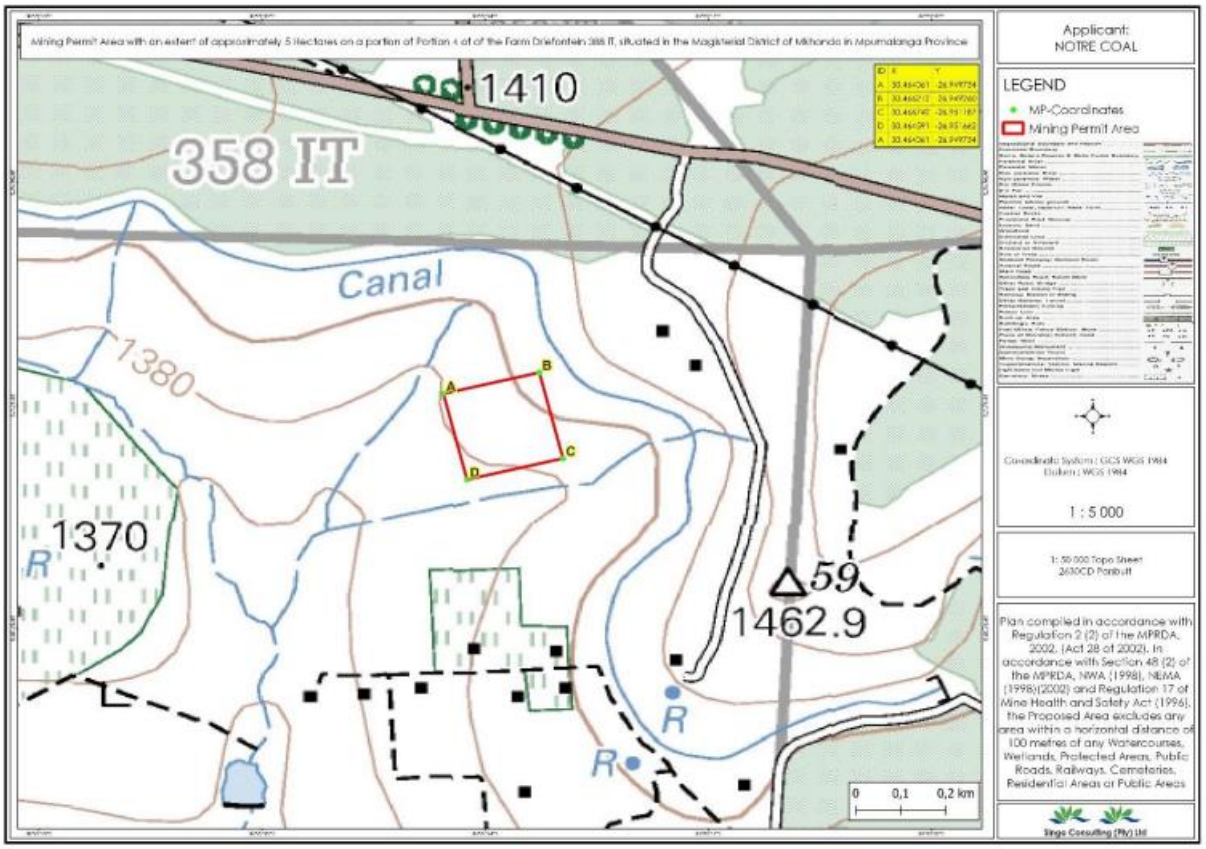


Figure 1: Regulation 2.2 map of the proposed project area

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED DEVELOPMENT FOOTPRINT ENVIRONMENTAL SENSITIVITY

EIA Reference number: New Application

Project name: Mining permit on portion of Portion 4 of of the Farm Driefontein 388 IT,

Project title: Mining permit on portion of Portion 4 of of the Farm Driefontein 388 IT,

Date screening report generated: 29/08/2022 08:42:53

Applicant: Notre Coal

Compiler: Singo Consulting (Pty) Ltd

Compiler signature: .....

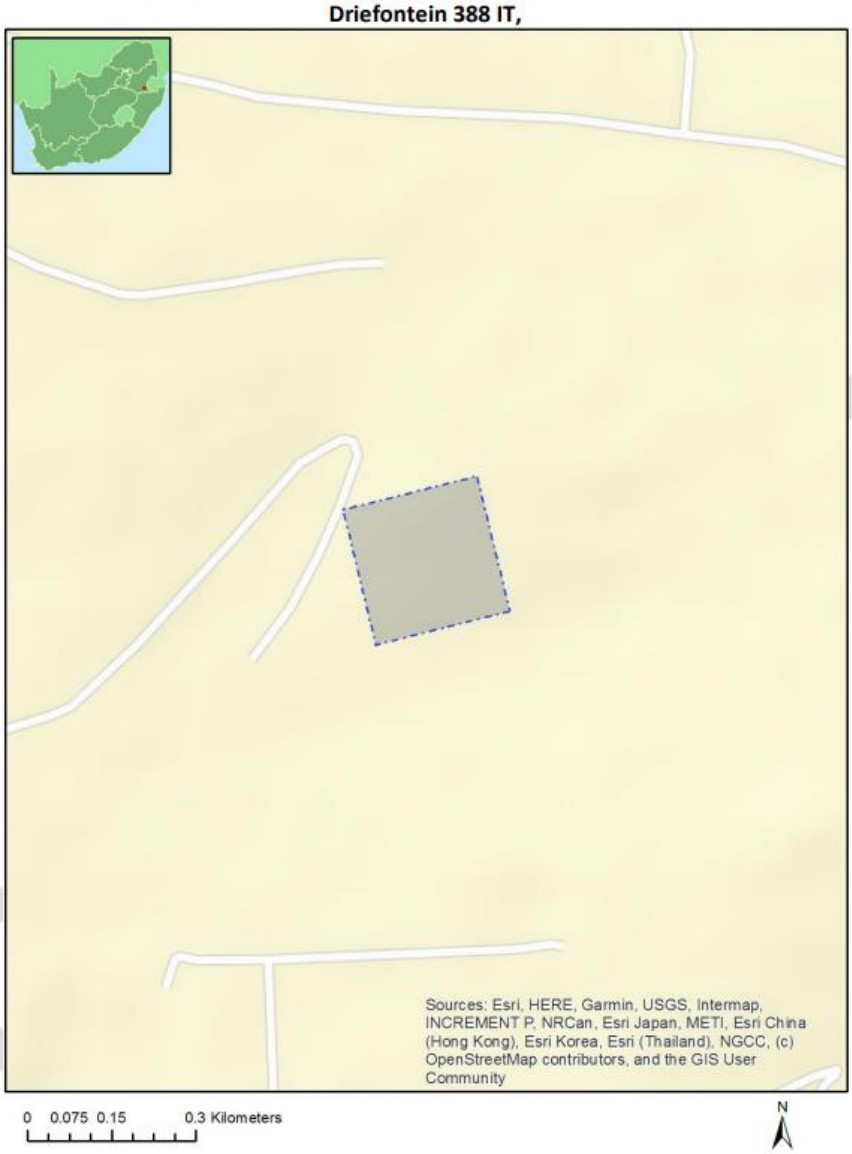
Application Category: Mining|Mining Permit

Table of Contents

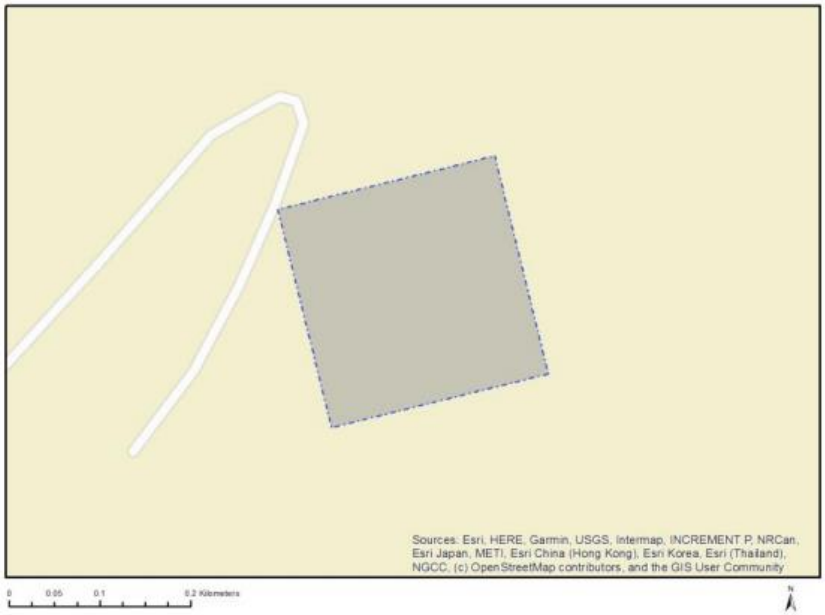
Proposed Project Location

Orientation map 1: General location

General Orientation: Mining permit on portion of Portion 4 of of the Farm Driefontein 388 IT,



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	DRIEFONTEIN	388	0	26°58'51.68S	30°26'27.41E	Farm
2	DRIEFONTEIN	388	4	26°57'17.29S	30°27'9.27E	Farm Portion

Development footprint[1] vertices:

Footprint	Latitude	Longitude
1	26°56'59.04S	30°27'50.62E
1	26°56'57.34S	30°27'58.37E
1	26°57'4.27S	30°28'0.27E
1	26°57'5.98S	30°27'52.52E
1	26°56'59.04S	30°27'50.62E

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmental sensitive features on the footprint based on the footprint sensitivity screening results for the application classification that was selected. The application classification selected for this report is:
Mining|Mining Permit.

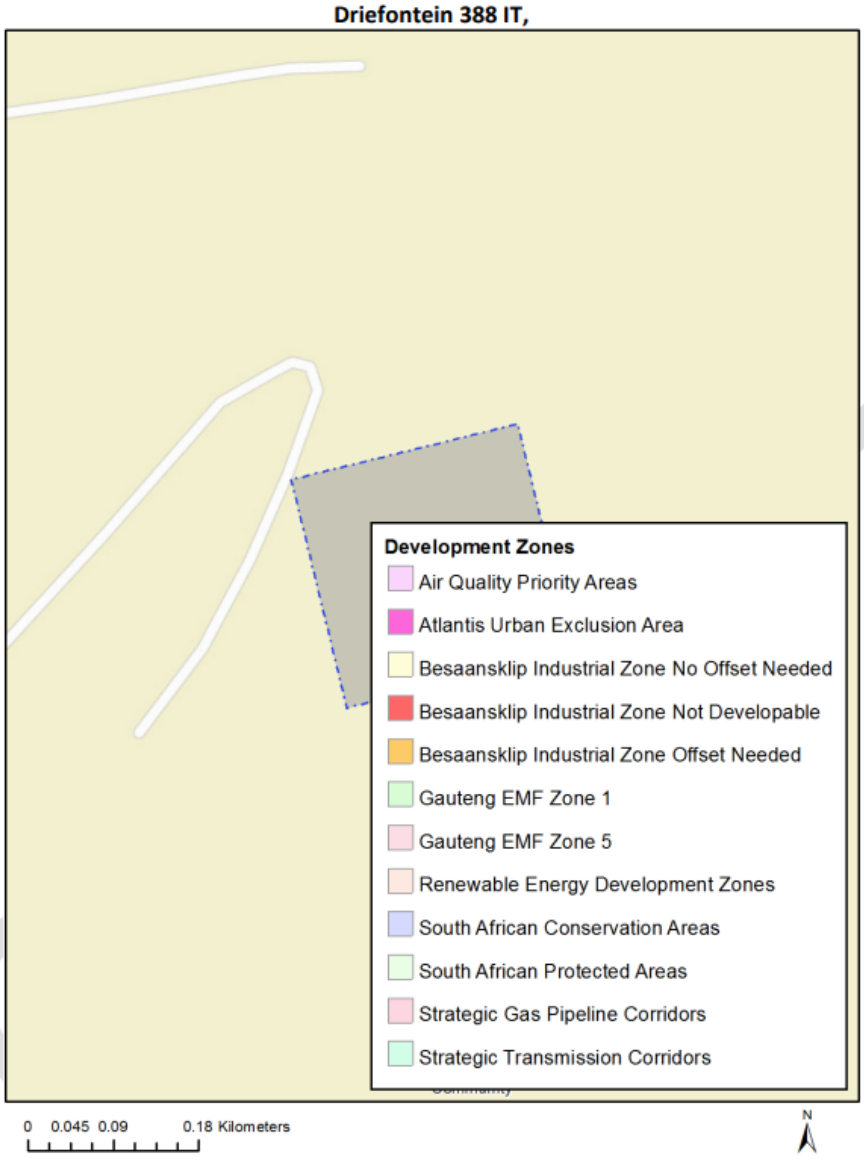
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this footprint are indicated below.

No intersection with any development zones found.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Mining permit on portion of Portion 4 of of the Farm Driefontein 388 IT,



Proposed Development Area Environmental Sensitivity

The following summary of the development footprint environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity

Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation.

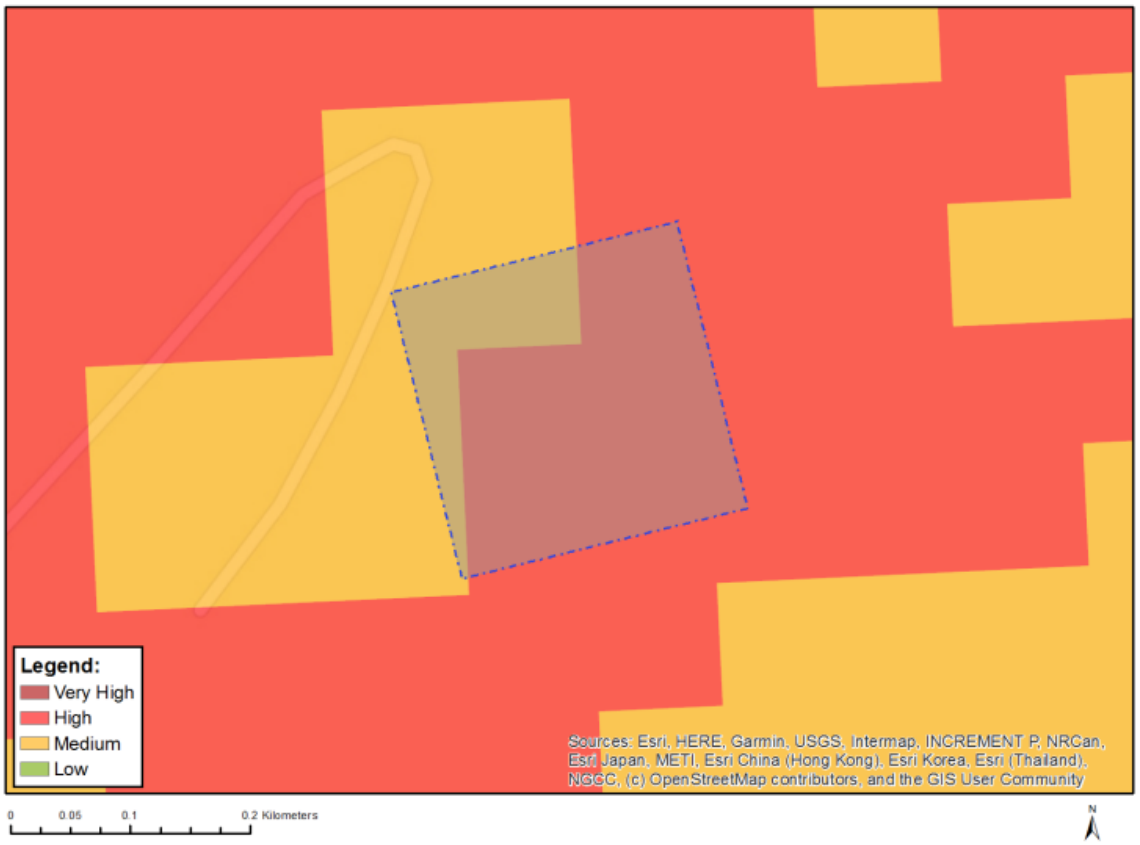
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf

6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
8	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
13	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed footprint for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

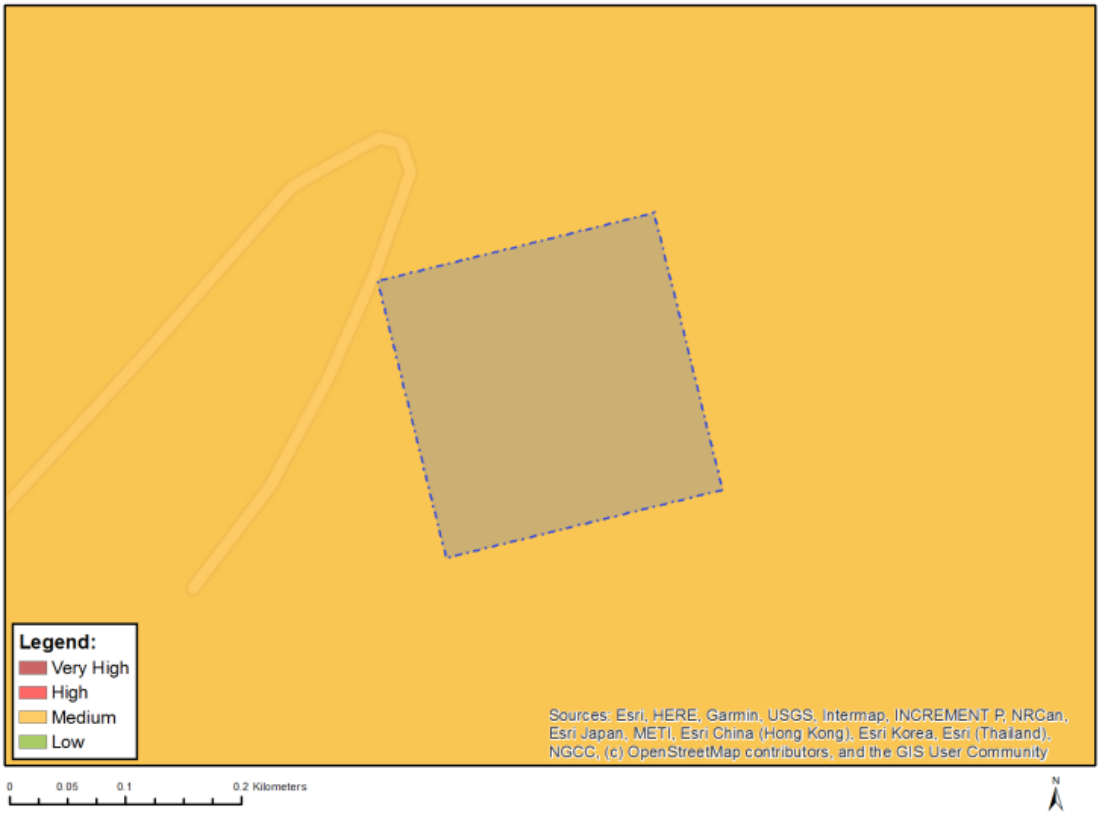


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

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 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)
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Ourebia ourebi ourebi
Medium	Invertebrate-Clonia lalandei
Medium	Invertebrate-Doratogonus praealtus

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Strategic water source area
Very High	Wetlands and Estuaries

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

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

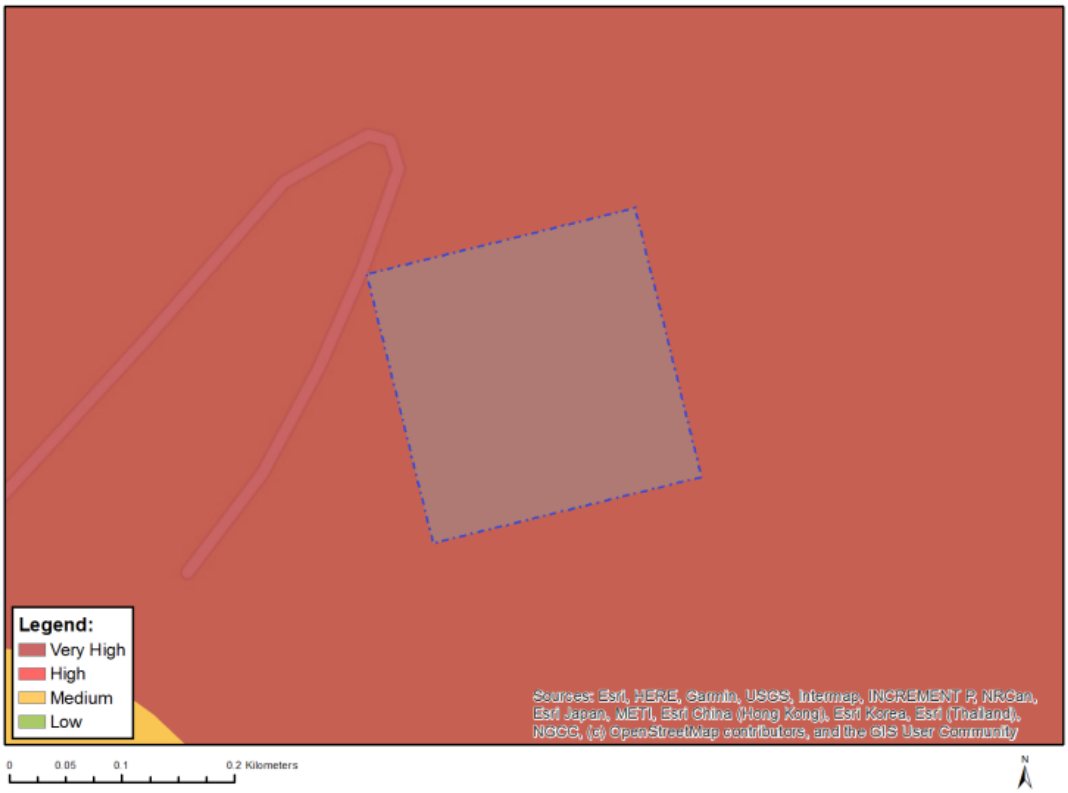
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

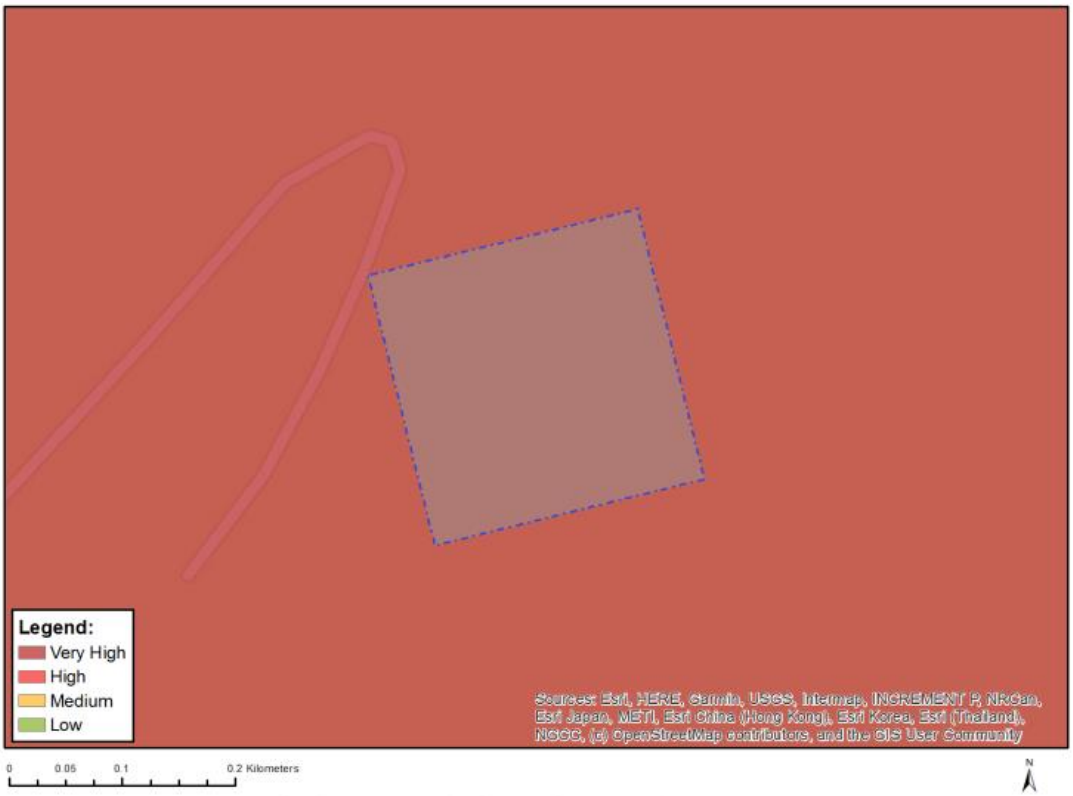
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their 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)
Medium	Indigofera hybrida
Medium	Sensitive species 41
Medium	Sensitive species 691

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem

Appendix 4: EAP CV

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

Appendix 5: Site Pictures