SCOPING REPORT FOR COAL MINING RIGHT APPLICATION, INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL AUTHORISATION

Portion of the Farms: Grootspruit 23 HT (Excluding the Mining Permit Area [MP 30/5/1/3/2/ 11219 MP]), Kaffir Locatie 24 HT (Excluding Mining Permit Area[MP 30/5/1/3/2/12779 MP]), Voorslag 25 HT and Sobbeken 390 IT in Wakkerstroom Magisterial District, Mpumalanga Province: DMRE REF NUMBER: MP 30/5/1/2/1/10341 MR.

PREPARED FOR

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COMPETENT AUTHORITY

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

MPUMALANGA REGIONAL OFFICE

DMRE SAMRAD REF: MP 30/5/1/2/2/10341 MR

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Disclaimer:

The opinion expressed in this, and associated reports are based on the information provided by Mamokebe Investments (Pty) Ltd to Singo Consulting (Pty) Ltd ("Singo Consulting") and is specific to the scope of work agreed with Mamokebe Investments (Pty) Ltd. Singo Consulting acts as an advisor to the Mamokebe Investments (Pty) Ltd and exercises all reasonable skill and care in the provision of its professional services in a manner consistent with the level of care and expertise exercised by members of the environmental profession. Except where expressly stated, Singo Consulting has not verified the validity, accuracy or comprehensiveness of any information supplied for its reports. Singo Consulting shall not be held liable for any errors or omissions in the information given or any consequential loss resulting from commercial decisions or acts arising from them. Where site inspections, testing or fieldwork have taken place, the report is based on the information made available by the Mamokebe Investments (Pty) Ltd or their nominees during the visit, visual observations, and any subsequent discussions with regulatory authorities. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Singo Consulting is both complete and accurate. It is further assumed that normal activities were being undertaken at the site on the day of the site visit(s), unless explicitly stated otherwise. These views do not

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

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

For listed activities associated with mining right and/or bulk sampling activities including trenching in cases of alluvial diamond prospecting.

Submitted for environmental authorizations in terms of the National Environmental Management Act, 1998 and the National Environmental Management Waste Act, 2008 in respect of listed activities that have been triggered by applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended).

NAME OF APPLICANT:	**Mamokebe Investments (PTY) LTD** **(2006/028647/07)**
TEL NO.:	**082 256 0854**
E-MAIL.:	**mmamotjoadi@gmail.com**
FAX NO.:	**011 482 1815**
PHYSICAL ADDRESS.	**Stand No 145, Lenting Village, Ga Mphahlele, Limpopo** **0736**
FILE REFERENCE NUMBER SAMRAD:	**MP 30/5/1/3/2/10341 MR**

1. Important notice

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment". Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment (EIA) and an Environmental Management Programme report (EMPr) 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 an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused. It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVES OF THE SCOPING PROCESS

The objective of the scoping process through a consultative process is to:

a) Identify the relevant policies and legislation relevant to the activity.
b) Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location.
c) Identify and confirm the preferred activity and technology alternatives through an impact and risk assessment and ranking process.
d) Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment.
e) Identify the key issues to be addressed in the assessment phase.
f) Agree on the key issues addressed in the assessment phase; including the methodology to be applied, the expertise required as well as the extend of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site.
g) Identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Executive summary

Mamokebe Investments (PTY) LTD (hereafter the applicant) has appointed Singo Consulting (Pty) Ltd (Consultant) to apply for a mining right and undertake environmental authorization associated with the proposed Coal Mine. The applicant had their Prospecting Right together with mining permit renewed in 2019 on farm Kaffir Locatie 24 HT, Voorslag 25 HT and Sobbeken 390 IT, Mkhondo Local Municipality, Mpumalanga province. The mining right application to the DMRE includes the above-mentioned properties and on an extent of 10 239.0 ha. The extent of the mining right covers the above-mentioned farm portions and the proposed project relate to the Coal Mine.

The applicant had a Mining Permit (MP 30/5/1/3/2/ 11219 MP) over the proposed area where they are expanding to have a mining right. The mining permit is not included in this application, thus the purpose of this mining right application is to gain more material (topsoil and subsoil) which will be used to close the void which was abandoned due to over flooding in the pit. The aforementioned permit was operated by Iviyo Consulting Engineers (Pty) Ltd who are mining contractors on behalf of Mamokebe Investments (Pty) Ltd. The permit was ceased and there was a need for rehabilitation as requested by the department of water and sanitation (DWS), hence Singo Consulting (Pty) Ltd was appointed to develop the rehabilitation plan which will ensure that the disturbed ;land will be returned into an acceptable condition to can accommodate for day-to-day activities. It was therefore recommended that the material for closing the void should be acquired through the application of a new permit and also its extension through a mining right application. In conclusion, a working relationship between Iviyo Consulting Engineers (Pty) Ltd and Mamokebe Investments (Pty) Ltd was developed in order to allow Iviyo Consulting Engineers (Pty) Ltd and to apply a mining permit [MP 30/5/1/3/2/12779 MP] in the close vicinity of Mamokebe Permit [MP 30/5/1/3/2/ 11219 MP] and such proof is also enclosed in Appendix 2.

For the proposed mine to operate, the applicant is required to submit an application for a mining right with the DMRE. In support of the application to obtain the mining right, the applicant is required to conduct a Scoping and Environmental Impact Assessment (S&EIA) for submission to the DMRE for adjudication. This assessment must include activities triggered under the Environmental Impact Assessment Regulations of 2014 (as amended) promulgated under the National Environmental Management Act, 1998 (Act 107 of 1998) and activities triggered under the National Environmental Management: Waste Act, 2008 (NEM:WA) (Act 59 of 2008).

Scoping and Environmental Impact Assessment process

A S&EIA is conducted in two phases: Scoping and EIA compilation. The scoping phase will commence with the following activities once the application has been submitted with the competent authority:

- Identify interested and affected parties (I&APs) and stakeholders
- Identify relevant policies and legislation
- Consider the need and desirability of the project
- Consider alternative technologies and sites
- Identify the potential environmental issues
- Determine the level of assessment and public participation process required for the EIA phase
- Identify preliminary measures to avoid, mitigate or manage potential impacts

The objectives of the EIA phase will be to assess the potential impacts associated with the preferred project alternatives as per the terms of reference for the assessment set out in the scoping report. The EIA/EMPr report will document the assessment findings and detail the measures required to avoid, mitigate and/or manage the potential impacts.

The S&EIA process requirements are contained in Chapter 4, Part 3 of the NEMA Reg No 326 (amended on 7 April 2017). The EIA process can take up to 300 days to complete (87 days for the scoping phase, 106 days for the EIA phase, 107 days for competent authority to review).

List of abbreviations

BID	Background Information Document
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIAr	Environmental Impact Assessment Report
EMPr	Environmental Management Programme Report
GDARD	Gauteng Department of Agriculture and Rural Development
GIS	Geographic Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
IBA	Important Bird Area
IWULA	Integrated Water Use Licence Application
ASAPA	Association of Southern African Professional Archaeologists
LoM	Life of Mine
MPRDA	Minerals and Petroleum Resources Development Act, 2002
Mtpa	Million tonnes per annum
NEM:WA	National Environmental Management: Waste Amendment Act, 2008
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public Participation Process

RoM	Run of Mine
SAHRA	South African Heritage Resources Agency
SANS	South African National Standard
SCC	Species of Conservation Concern
S&EIA	Scoping and Environmental Impact Assessment
WMA	Water Management Area

1 INTRODUCTION AND BACKGROUND

Mamokebe Investments (PTY) LTD (hereafter the applicant) has appointed Singo Consulting (Pty) Ltd (Consultant) to apply for a mining right and undertake environmental authorization associated with the proposed Coal Mine. The applicant had their Prospecting Right together with mining permit renewed in 2019 on farm Kaffir Locatie 24 HT, Voorslag 25 HT and Sobbeken 390 IT, Mkhondo Local Municipality, Mpumalanga province. The mining right application to the DMRE includes the above-mentioned properties and on an extent of 10 239.0 ha. The extent of the mining right covers the above-mentioned farm portions and the proposed project relate to the Coal Mine.

The applicant had a Mining Permit (MP 30/5/1/3/2/ 11219 MP) over the proposed area where they are expanding to have a mining right. The mining permit is not included in this application, thus the purpose of this mining right application is to gain more material (topsoil and subsoil) which will be used to close the void which was abandoned due to over flooding in the pit. The aforementioned permit was operated by Iviyo Consulting Engineers (Pty) Ltd who are mining contractors on behalf of Mamokebe Investments (Pty) Ltd. The permit was ceased and there was a need for rehabilitation as requested by the department of water and sanitation (DWS), hence Singo Consulting (Pty) Ltd was appointed to develop the rehabilitation plan which will ensure that the disturbed ;land will be returned into an acceptable condition to can accommodate for day-to-day activities. It was therefore recommended that the material for closing the void should be acquired through the application of a new permit and also its extension through a mining right application. In conclusion, a working relationship between Iviyo Consulting Engineers (Pty) Ltd and Mamokebe Investments (Pty) Ltd was developed in order to allow Iviyo Consulting Engineers (Pty) Ltd and to apply a mining permit [MP 30/5/1/3/2/12779 MP] in the close vicinity of Mamokebe Permit [MP 30/5/1/3/2/ 11219 MP] and such proof is also enclosed in Appendix 2.

Mamokebe Investments (PTY) LTD has now appointed Singo Consulting (Pty) Ltd (Consultant) to apply for a mining right and undertake environmental authorization associated with the proposed Coal Mine. The applicant has obtained a mining right (DMRE Reference Number MP 30/5/1/3/2/ (10341) MR), which the EMPr was approved on 29 March 2022 by the Department of Mineral Resources and Energy (DMRE) to mine coal on Farms: Kaffir Locatie 24 HT which is now called 24 HT (excluding the mining right area), Grootspruit 23 HT (excluding mining right area), Voorslag 25 HT and Sobbeken 390 IT. Wakkerstroom Magisterial District, Mkhondo Local Municipality, Mpumalanga province. The mining right application to the DMRE includes the above-mentioned properties and on an extent of 10 239.9 Ha. The extent of the mining right covers the above-mentioned farm portions and the proposed project relate to the opencast

mining. There are diggings in Driefontein which were done by Kangra Coal Mine but they were abandoned because the area is water filled.

For the proposed mine to operate, the applicant is required to apply for a mining right to the DMRE. In support of the application to obtain the mining right, the applicant is required to conduct a Scoping and Environmental Impact Assessment (S&EIA) for submission to the DMRE for adjudication. This assessment must include activities triggered under the Environmental Impact Assessment Regulations of 2014 (as amended) promulgated under the National Environmental Management Act, 1998 (Act 107 of 1998) and activities triggered under the National Environmental Management: Waste Act, 2008 (NEM:WA) (Act 59 of 2008).

The proposed open-cast coal mining operations constitute various listed activities, as contained in the scheduled activities in Government Notice Regulation No 324, 325 and 327 (amended 7 April 2017), now amended as GNR 517 (11 June 2021). As such, a full Scoping and EIA process must be followed. Prior to any listed activity being approved by the DMRE, an environmental process must be undertaken, and a report submitted to the relevant environmental authority for consideration.

The purpose of the S&EIA process is to ensure that potential environmental, economic and social impacts associated with operation and closure/rehabilitation of a project are identified, assessed and appropriately managed. This is done in two primary phases: the scoping phase and the impact assessment phase, both of which are discussed in more detail throughout the report.

1.1 Scoping phase

The scoping phase is conducted as a precursor to the EIA process, during which:

- Project and baseline environmental information is collated. Baseline information for the scoping report is gathered through visual inspections during field visits to the proposed project area and surroundings, desktop studies (including GIS mapping), and review of existing reports, guidelines and legislation.
- Landowners, adjacent landowners, local authorities, environmental authorities, and other stakeholders who may be affected by/or have an interest in the environmental impacts of the project, are identified.
- Interested and affected parties (I&APs) are informed about the proposed project.
- Environmental authorities are consulted to confirm legal and administrative requirements.
- Environmental issues and impacts are identified and described.
- Development alternatives are identified and evaluated, and non-feasible development alternatives are eliminated.
- The nature and extent of further investigations and specialist input required in the EIA phase is identified.
- The draft and final scoping reports are submitted for review by authorities, relevant organs of state and I&APs.
- Key I&AP issues and concerns are collated into an issues and response section for consideration in the EIA phase.

1.2 Environmental Impact Assessment process

After the initial scoping phase, the following EIA activities are completed:

- Specialist investigations are undertaken in accordance with the terms of reference established in the scoping assessment (plan of study for EIA appended to the scoping report). The scope for specialist work is determined by the nature and scale of the project impacts.
- Evaluation of development alternatives and identification of a proposed option.
- Assessment of existing impacts (no-go development option), environmental impacts that may be associated with the proposed project option, and cumulative impacts using the impact assessment methodology.

- Identification of mitigation measures to address the environmental impacts and development of actions required to achieve the mitigation required.
- Consultation with I&APs.
- Incorporation of public comments received during scoping into the Environmental Impact Assessment (EIA) and Environmental Management Programme report (EMPr), and finalisation of the EIA report.
- Issuing of the final EIA report for review.
- The requirements for the S&EIA process are contained in Chapter 4, Part 3 of the NEMA Reg No 326 (amended on 7 April 2017). The EIA process can take up to 300 days to complete (87 days for the scoping phase, 106 days for the EIA phase, and 107 days for the competent authority review).

2 PROPONENT AND ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS

2.1 Details of the proponent

The following person may be contacted regarding this project:

Table 1: Proponent's contact details

NAME OF APPLICANT:	**Mamokebe Investments (PTY) LTD (2006/028647/07)**
TEL NO.:	**082 256 0854**
E-MAIL.:	**mmamotjoadi@gmail.com**
FAX NO.:	**011 482 1815**
PHYSICAL ADDRESS.	**Stand no 145, Lenting Village. Ga-Mphahlele. Limpopo, 0736**
FILE REFERENCE NUMBER SAMRAD:	**MP 30/5/1/3/2/ 10 341 MR**

2.2 Details of the Environmental Assessment Practitioner

Singo Consulting has been selected by the applicant as an independent EAP to undertake an S&EIA in support of the application for a mining right. Singo Consulting (Pty) Ltd has no vested interest in the proposed project and as required by the EIA Regulations, asserts its independence. Any questions about this S&EIA should be sent to one of Singo Consulting's EAPs:

Environmental assessment practitioner	Singo Consulting (Pty) Ltd
Contact person(s)	Ndimuhulu Shammah Mulaudzi (Junior EAP) Rudzani Shonisani (EAP) Kenneth Singo (Senior EAP REVIEWER)
Physical address	5 Balalaika, Tasbet Ext 2, Witbank, 1040
Postal address	Private Bag X7297, Postnet Suite 87, Witbank, 1035
Contact number(s)	Kenneth Singo: 078 272 7839 / 072 081 6682 Rudzani Shonisani: 078 548 1244 / 079 930 4772 Ndimuhulu Shammah Mulaudzi: 071 587 3383
Telephone number	013 692 0041
Fax	086 5144 103
Email(s)	Ndimuhulu Shammah Mulaudzi: ndimuhulu@singoconsulting.co.za Rudzani Shonisani: rudzani@singoconsulting.co.za Kenneth Singo: kenneth@singoconsulting.co.za

Table 2: EAP's contact details

2.2.1 Expertise of Environmental Assessment Practitioner

See **Error! Reference source not found.** for EAP CVs.

2.2.2 Specialist studies

Hydrology and Heritage studies were conducted on the 23rd of May 2022 and results are awaiting. Other studies will be done and the results will be made available during the EIA phase. These investigations entail acquiring data that is useful to identifying and analysing potential repercussions from the proposed activity. The experts will provide recommendations for suitable mitigation, control, or optimization methods to reduce any negative consequences while maximizing potential advantages. During in the EIA phase, the appropriate expert evaluations will be made public.

2.3 Property description

The property description of the proposed Mamokebe Investments Coal mine is provided. The farm name applicable to this S&EIA is listed in this table. Several S&EIA processes would have to be followed for the proposed mining operations.

Table 3: Property descriptions of the proposed Mamokebe Investments Coal Mine

Farm name(s)	24 HT (previously known as Kaffir Locatie), Grootspruit 23 HT, Voorslag 25 HT and Sobbeken 390 IT
Proposed name of the mine	Mamokebe Investments Coal Mine
Application area (ha)	The total development footprint size of the operation is 10 239.9 ha
Magisterial district:	Wakkerstroom
Local government municipalities	Mkhondo Local Municipality Gert Sibande District Municipality
Distance and direction from nearest town	About 25 km west of the town Piet Retief
21-digit Surveyor General code for farm portion	T0THT00000000024 00000
Locality map	Locality map at a scale not smaller than 1:250000 (see figures below).

2.4 Locality map

The mining right area falls under Wakkerstroom Magisterial District, Mkhondo Local Municipality, Mpumalanga Province. The mining area can be reached by an existing access road from the provincial road bordering the property (R543). No new road infrastructure need to be constructed. It is situated approximately 25km West of Piet Retief and approximately 18km Northeast of Dirkiesdorp town which is

along the R543 National Route. The mining right area covers KwaNgema town/ settlement and parts of the Heyshope dam in its radius.

There are two coal fired power stations located in less than 80km from the project area, namely Amajuba and Camden power stations. Refer to Figure 1 and Figure 2. There is a community located after the R543 National Route closer called Dirkiesdorp.

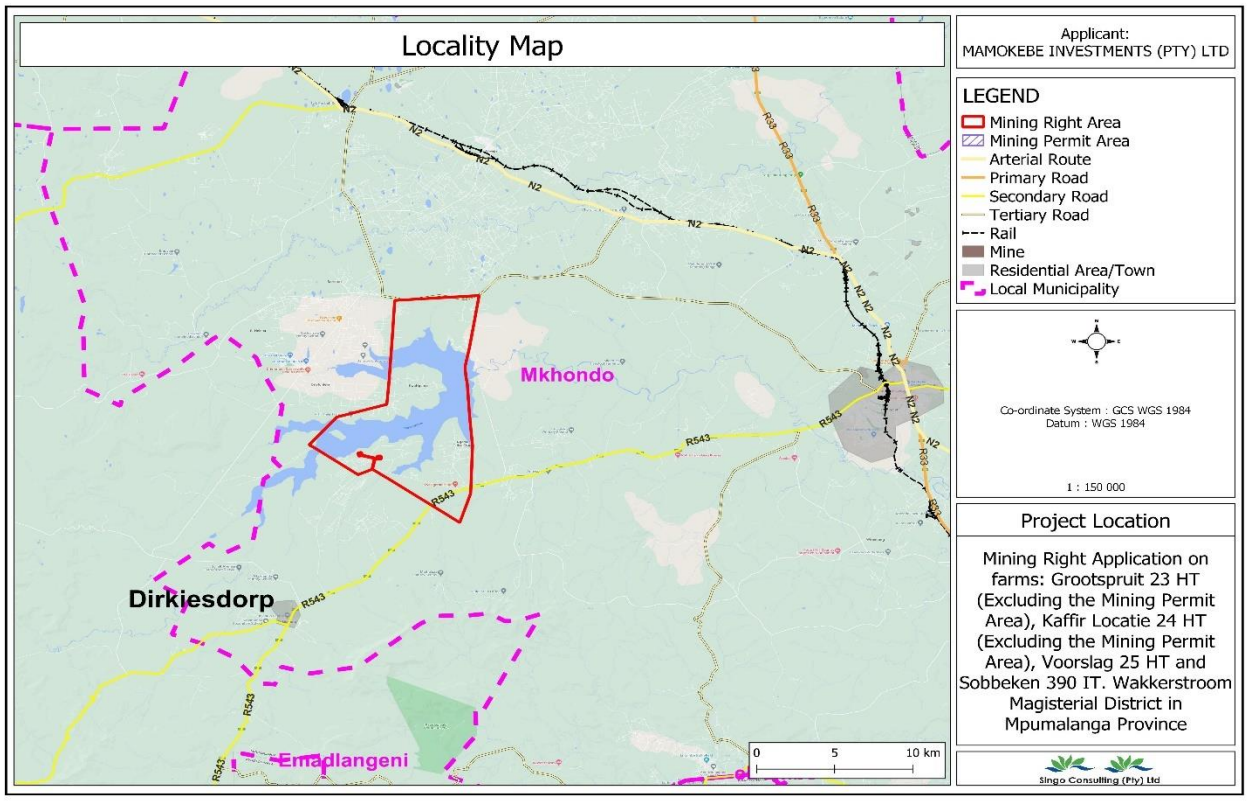

Figure 1: Project area locality (Singo Consulting (Pty) Ltd, 2022)

Figure 2: Google Earth view of the project area (Google Earth View , 2022)

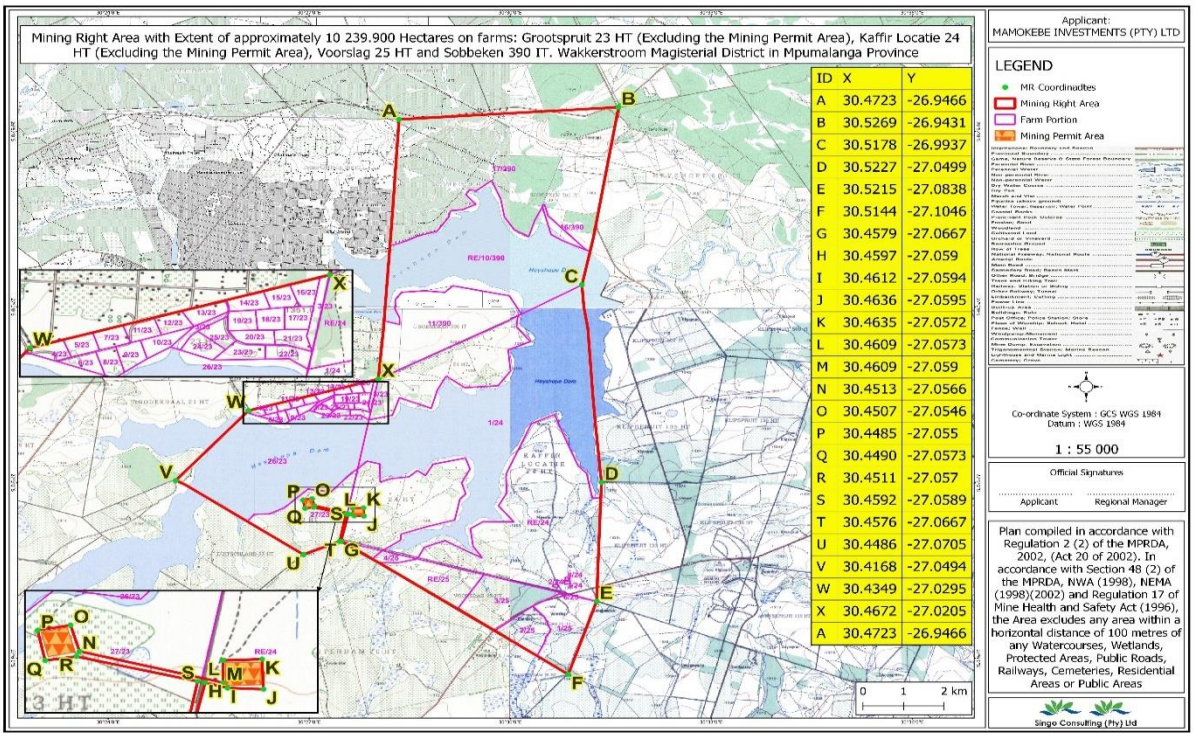

Figure 3: Regulation 2(2) map showing locality of the project area (Singo Consulting (Pty) Ltd)

2.4.1 Landowner

The mining right is applicable for farm Kaffir Locatie 24 HT which had a change of name and it is now called 24 HT, Grootspruit 23 HT (excluding the mining permit area), Voorslag 25 HT and Sobbeken 390 IT.

The environmental authorisation process for the project study area includes the property indicated in the table below:

Landowner	Property description	Title deed number
NGEMA FAMILY TRUST HIESTERMANN RUDOLF KURT NGEMA JABULANE SIMON NATIONAL GOVERNMENT OF REPUBLIC OF SOUTH AFRICA NGEMA MFANAFUTHI WILSON	VOORSLAG 25 HT, portions 0,3 & 5 VOORSLAG 25 HT, portion 1 VOORSLAG 25 HT, portion 3 VOORSLAG 25 HT, portion 4 VOORSLAG 25 HT, portion 6	T69638/1996 & T69639/1996 T113799/1998 T3956/2000 T23433/1988 T7577/2008
REPUBLIEK VAN SUID-AFRIKA NGEMA FAMILY TRUST HEYSHOPE LODGE SHARE BLOCK LTD BREDA TRUST	SOBBEKEN 390 IT, portion 10 SOBBEKEN 390 IT, portion 11 SOBBEKEN 390 IT, portion 16 SOBBEKEN 390 IT, portion 17	T69634/1996 T69635/1996 T51201/2000 T43449/2001
REPUBLIEK VAN SUID-AFRIKA NGEMA FAMILY TRUST	GROOTSPRUIT 23 HT, portion 26 GROOTSPRUIT 23 HT, portion 27	T69636/1996 T69637/1996
REPUBLIEK VAN SUID-AFRIKA	24 – HT, portion 0	T95163/1998

Table 4: Landowner of the affected properties

Deeds Office Property

HT, 24, 24, 0, MPUMALANGA

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

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

SEARCH CRITERIA			
Search Date	2022/05/16 14:56	Farm Number	24
Reference	-	Registration Division	HT
Report Print Date	2022/05/16 14:57	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

PROPERTY INFORMATION			
Property Type	FARM	Diagram Deed Number	DB107/38
Farm Name	24	Local Authority	MKHONDO LOCAL MUNICIPALITY
Farm Number	24	Province	MPUMALANGA
Registration Division	HT	Remaining Extent	NO
Portion Number	0	Extent	4349.3982H
Previous Description	-	LPI Code	T0HT00000000002400000
Suburb / Town**	0KM NORTH OF KWANGEMA	Co-ordinates (Lat/Long)**	-27.049014 / 30.500777

OWNER INFORMATION (1)			
REPUBLIEK VAN SUID-AFRIKA			Owner 1 of 1
Company Type**	GOVERNMENT	Document	T95163/1998
Registration Number	-	Microfilm / Scanned Date	-
Name	REPUBLIEK VAN SUID-AFRIKA	Purchase Price (R)	CRT
Multiple Owners**	NO	Purchase Date	-
Multiple Properties**	NO	Registration Date	1998/08/24
Share (%)	-		

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Deeds Office Property - List
IT, 390, MPUMALANGA

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SEARCH CRITERIA			
Search Date	2022/05/16 08:57	Farm Number	390
Reference	-	Registration Division	IT
Report Print Date	2022/05/16 08:57	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

PORTION LIST

Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
0	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
2	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
3	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
4	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
7	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
8	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
9	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
10	REPUBLIEK VAN SUID-AFRIKA	T69634/1996	-	-
11	NGEMA FAMILY TRUST	T69635/1996	-	-
12	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
13	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
14	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
16	HEYSHOPE LODGE SHARE BLOCK LTD	T51201/2000	-	-
17	BREDA TRUST	T43449/2001	-	-

Deeds Office Property - List
HT, 23, MPUMALANGA

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SEARCH CRITERIA			
Search Date	2022/05/16 09:08	Farm Number	23
Reference	-	Registration Division	HT
Report Print Date	2022/05/16 09:08	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

PORTION LIST

Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
0	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
1	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
2	*** NO LONGER EXISTS - SEE ENDORSEMENTS ***	-	-	-
26	REPUBLIEK VAN SUID-AFRIKA	T69636/1996	-	-
27	NGEMA FAMILY TRUST	T69637/1996	-	-

Deeds Office Property - List

HT, 25, MPUMALANGA

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SEARCH CRITERIA			
Search Date	2022/05/16 08:59	Farm Number	25
Reference	-	Registration Division	HT
Report Print Date	2022/05/16 08:59	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Mpumalanga	Search Source	Deeds Office

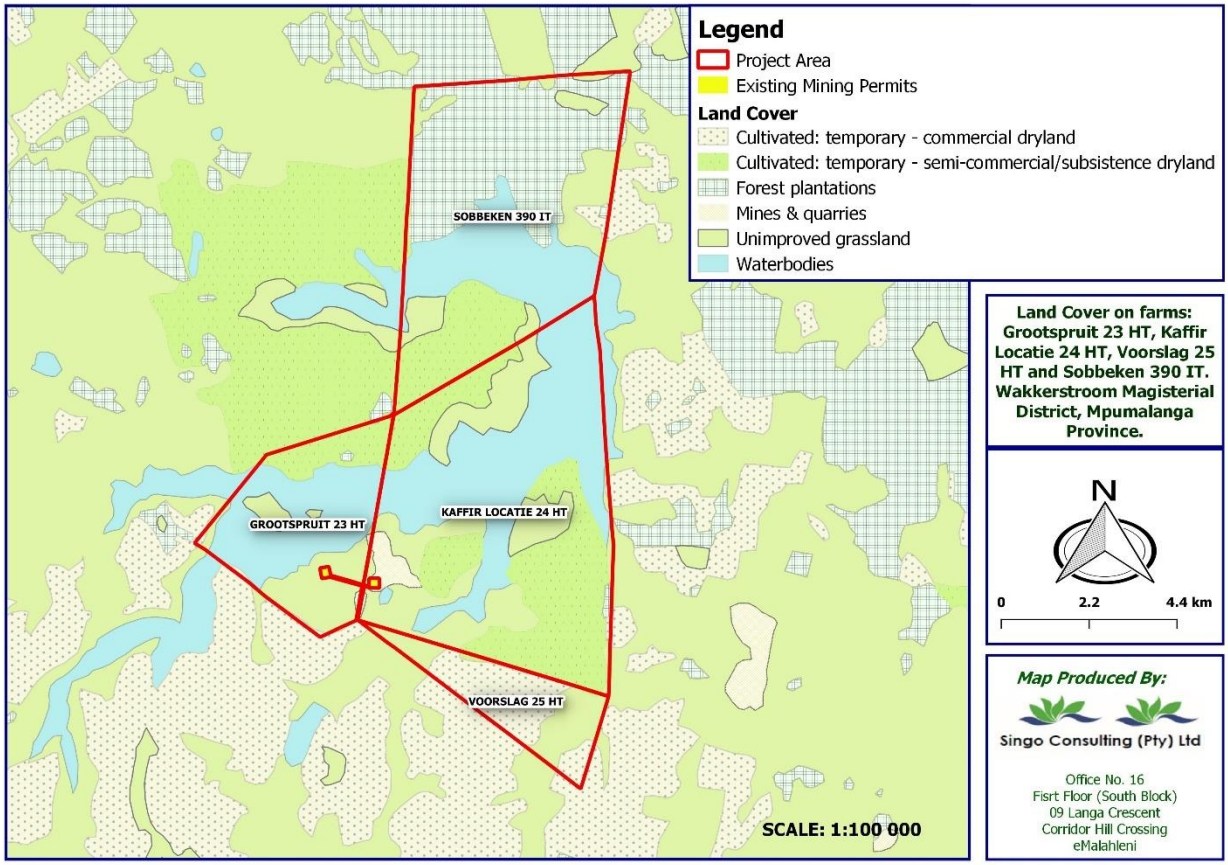
PORTION LIST

Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
0	NGEMA FAMILY TRUST	T69638/1996	-	-
1	HIESTERMANN RUDOLF KURT	T113799/1998	-	-
2	NGEMA JABULANE SIMON	T3956/2000	-	-
3	NGEMA FAMILY TRUST	T69638/1996	-	-
4	NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA	T23433/1988	-	-
5	NGEMA FAMILY TRUST	T69639/1996	-	-
6	NGEMA MFANAFUTHI WILSON	T7577/2008	-	-

2.4.2 Description of current land cover

Land cover information is a crucial reference dataset that informs a variety of activities, including environmental planning and protection, development planning, economic development, compliance monitoring, enforcement and strategic decision making.

The area in Kaffir Locatie Farm 24 HT which is now called 24 HT, is covered or dominated by cultivated land (semi – commercial/subsistence dryland) and unimproved grassland and the interior of the area is covered by water and a small portion of mines & quarries. Farm Voorslag 25 HT is dominated or covered by cultivated land (commercial dryland) and the other parts are unimproved grassland. Grootspruit 23 HT is dominated by water and its remaining parts are unimproved grassland and cultivated land (semi-commercial/subsistence dryland) and a very little portion of commercial dry land. Lastly the Sobbeken 390 IT which a mix of land covers. Its top part is dominated by forest plantations, but it also has unimproved grassland, cultivated land (semi-commercial/subsistence dryland) then the remaining area is covered by water. The water body covering all these areas is the Heyshope dam.



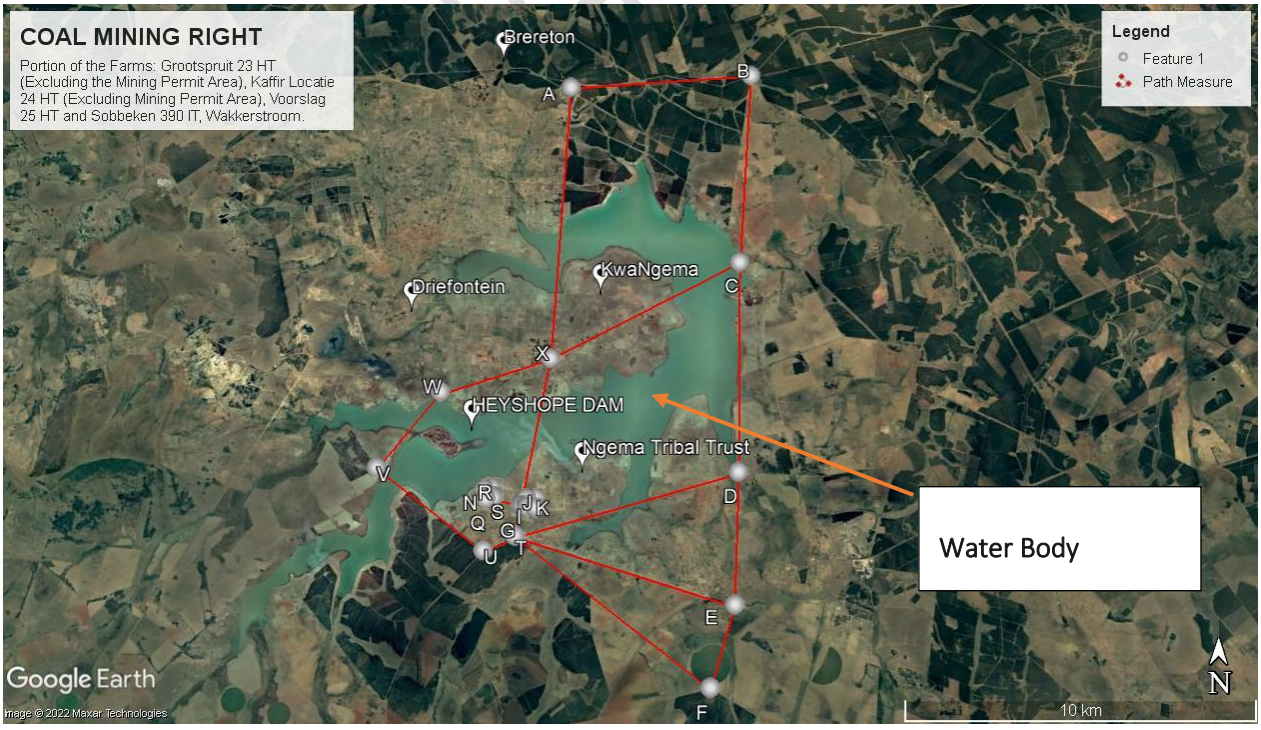


Figure 4:(A, B) Study area in relation to current land cover (Singo Consulting (Pty) Ltd, 2022) & (Google Earth View , 2022)

2.4.3 Land claims

A land claim enquiry was lodged on the 30 March 2022 to Lazarus Masuku (Lazarus.Masuku@drdlr.gov.za) and Vusi Kleinboy Khoza <Vusi.Khoza@drdlr.gov.za. outcomes are awaited upon. According to research, they are exiting claims within the area.

3 POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation relating to the proposed project.

3.1 Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa, Act 108 of 1996 (as amended) Section 24 states that:

"Everyone has the right— (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that—

a) prevent pollution and ecological degradation
b) Promote conservation; and
c) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

3.2 Mineral and Petroleum Resources Development Act

The Mineral and Petroleum Resources Development At, 2002 (MPRDA), outlines the procedural requirements an applicant must follow to obtain a mining right before proceeding with a mining project. Applicants are required to obtain Environmental Authorisation (EA) in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA).

The MPRDA is administered by the Department of Mineral Resources (DMRE) and governs the sustainable utilisation of South Africa's mineral resources. The MPRDA aims to "make provision for equitable access to, and sustainable development of, the nation's mineral and petroleum resources".

3.3 National Environmental Management Act

The aim of the NEMA is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA regulations, the applicant is required to appoint an EAP to undertake the EIA, as well as conduct the public participation process (PPP). In South Africa, EIAs became a legal requirement in 1997 with the promulgation of regulations under the Environment 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. These regulations, in terms of the NEMA, were amended in June 2010 and December 2014. The December 2014 NEMA regulations apply to this project. Mining activities officially became governable under the NEMA EIA in December 2014. The objective of the Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the identified activities. The purpose of these procedures is to provide the competent authority with adequate information to refuse authorisation of activities which may impact negatively on the environment to an unacceptable degree. These procedures also aim to ensure that authorised activities are undertaken in a manner that responsibly manages environmental impacts.

In accordance with the provisions of Section 24 (5) and Section 44 of the NEMA, the Minister has published regulations (GN R. 982) pertaining to the required process for conducting EIAs in order to be considered for the issuing of EA. These regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity.

The regulations differentiate between a simple Basic Assessment Process (required for activities listed in GN R. 983 and 985) and a more complete EIA process (activities listed in GN R. 984). In the case of this project, activities under GN R. 984 are triggered, requiring a full EIA process. On 7 April 2017, the NEMA 2014 regulations were amended, making activities triggered under GN R. 324, 325 and 327, now amended as GNR 517 OF 11 June 2021 applicable to this application.

A scoping and EIA process is reserved for activities with potentially significant impacts that are complex to assess. Scoping and EIA provides a mechanism for the comprehensive assessment of activities that are likely to have significant environmental impacts.

3.4 National Water Act

The National Water Act, 1998 (NWA) also has a role to play in regulating mining. Mining almost always uses water and/or has an impact on water resources, like streams, wetlands or rivers. The NWA is administered by the Department of Water and Sanitation (DWS).

The NWA Section 21 defines eleven water uses that require EA:

21 (a): taking water from a water resource

21 (b): storing water

21 (c): impeding or diverting the flow of water in a watercourse

21 (d): engaging in a stream flow reduction activity contemplated in section 36

21 (e): engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1)

21 (f): discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit

21 (g): disposing of waste in a manner which may detrimentally impact on a water resource

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

21 (i): altering the bed, banks, course or characteristics of a watercourse

21 (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

21 (k): using water for recreational purposes. The proposed mine is in the process of applying for an Integrated Water Use Licence (IWUL) as per the water uses indicated.

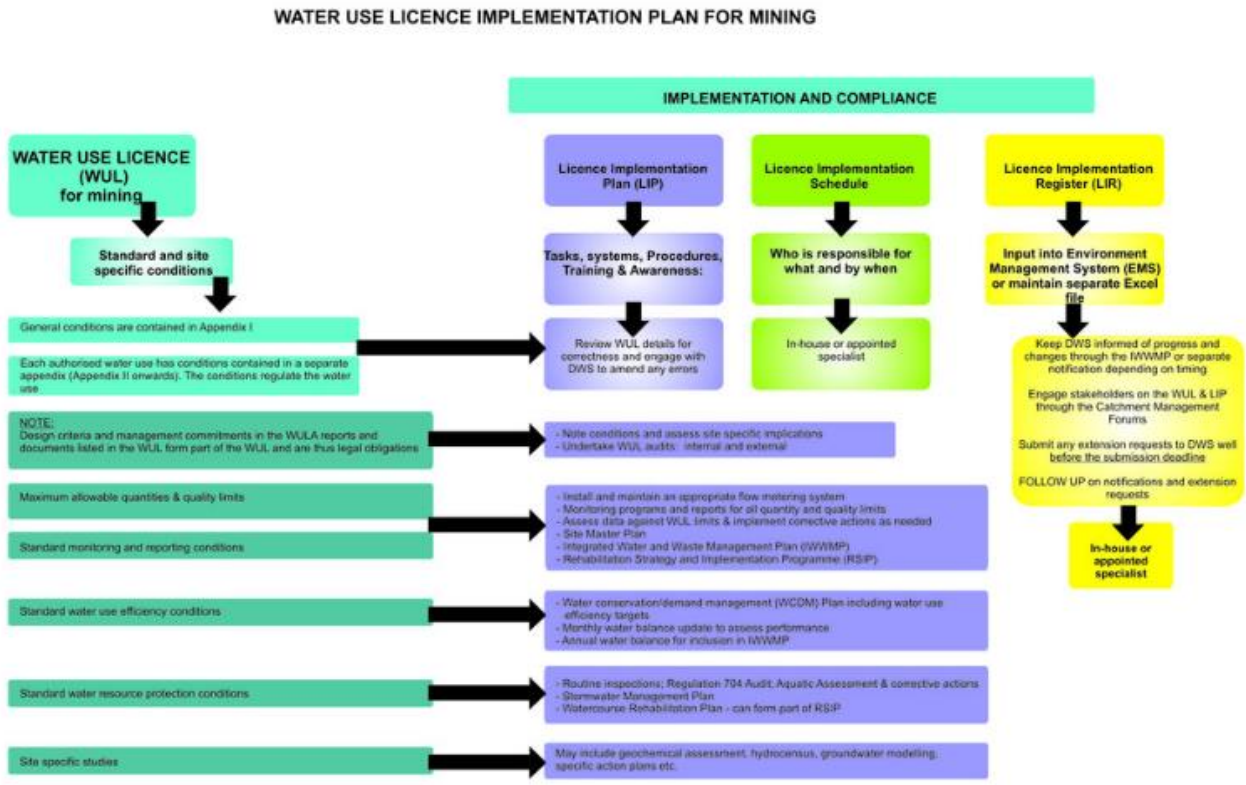


Figure 5 : Water Use License Implementation Plan for Mining

3.5 National Environmental Management: Waste Act

The National Environmental Management: Waste Act, 2008 (NEM:WA) (Act 59 of 2008) lists mining activities that must be undertaken to manage waste generated by the project and prevent environmental pollution and littering. On 2 June 2014, the NEM:WA (amended) came into force. As per the amended Act, waste is longer governed by the MPRDA, but is subject to all the provisions of the NEM:WA). As per Section 16 of the NEM:WA, "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, odour, or visual impacts;
- Prevent any employee or any person under his or her supervision from contravening the Act; and

- Prevent the waste from being used for unauthorised purposes."

These general principles of responsible waste management will be incorporated into this project's EMPr requirements. The NEM:WA provides for specific waste management measures to be implemented and provides for the licensing and control of waste management activities. Waste management activities apply to Category A, B and C according to GN R 921 (Nov 2013) and the proposed residue stockpiles in terms of Category B, Activity 11 of GNR 921, and, therefore, form part of the application process.

NEM:WA – Planning and Management of Residue Stockpiles and Residue Deposits Regulations, 2015 (GN R 632)

This regulates the planning and management of residue stockpiles and deposits from a prospecting, mining, exploration or production operation.

3.5.1 NEM:WA – National Norms and Standards for the Assessment of Waste for Landfill Disposal, 2013 (GN R 635)

These norms and standards prescribe the requirements for the assessment of waste prior to disposal to landfill. The aim of the waste assessment tests is to characterise the material to be deposited or stored in terms of the above-mentioned waste assessment guidelines set by the DEA.

3.5.2 NEM:WA – Waste Classification and Management Regulations, 2013 (GN R 634)

Chapter 9 of the NEM:WA stipulates the requirements for a motivation for and consideration of listed Waste Management Activities that do not require a Waste Management License. The motivation must:

- Demonstrate that the waste management activity can be implemented without unacceptable impacts on, or risk to, the environment or health
- Must provide a description of the waste
- Description of waste minimisation or waste management plans
- Description of potential impacts, etc.
- The transitional provisions under Chapter 6 of this Regulation prescribes timeframes in which all waste must be classified within 18 months from the date of commencement of these regulations (23 August 2013)

Waste streams generated from mine activities will, where applicable, be classified to determine their nature (i.e., general or hazardous), managed and disposed of in accordance with the relevant legislation.

3.6 National Environmental Management: Air Quality Act

The National Environmental Management: Air Quality Act (NEM: AQA) (Act No. 39 of 2004 as amended) is the main legislative tool for the management of air pollution and related activities.

The objectives of the Act are to protect the environment by providing reasonable measures for:

- The protection and enhancement of the quality of air in the republic
- The prevention of air pollution and ecological degradation
- Securing ecologically sustainable development while promoting justifiable economic and social development
- Generally, to give effect to Section 24(b) of the constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and wellbeing of people

The NEM:AQA mandates the Minister of Environmental Affairs to publish a list of activities that result in atmospheric emissions and consequently cause detrimental effects on the environment, human health and social welfare. The Listed Activities and Minimum National Emission Standards were published on 22 November 2013 (Government Gazette No. 37054).

According to NEM:AQA, air quality management control and enforcement is the responsibility of local government, with district and metropolitan municipalities being the licensing authorities. Provincial government is primarily responsible for ambient monitoring and ensuring municipalities fulfil their legal obligations, with national government primarily as policy maker and coordinator. Each sphere of government must appoint an Air Quality Officer responsible for coordinating matters pertaining to air quality management. Under the old Act, air quality management was the sole responsibility of national government, with local authorities only being responsible for smoke and vehicle emission control. The National Pollution Prevention Plan Regulations, which came into effect on 21 July 2017, tie in with The National Greenhouse Gas Emission Reporting Regulations, which took effect on 3 April 2017.

These regulations aim to prescribe the requirements that greenhouse gas (GHG) pollution prevention plans need to comply with (in terms of priority air pollutants), as per NEM:AQA. The regulations specify

who needs to comply, and by when, and prescribes the content requirements. Mines do have an obligation to report on the GHG emissions under these regulations.

3.7 The National Heritage Resources Act

The National Heritage Resources Act (NHRA) (Act 25 of 1999) 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 informs the identification, evaluation and management of heritage resources and, in the case of Cultural Resource Management (CRM), affected by development (as stipulated in Section 38 of NHRA) and those developments administered through the NEMA, MPRDA and NEMWA 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 authorizations are granted for development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of EIAs required by NEMA and MPRDA. This change requires an evaluation of the section of these Acts relevant to heritage. 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".

Subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) require the (compulsory) inclusion of the identified 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. Regulations under NEMA's regulations on the Specialist Report requirements must be considered when compiling such a report.

The MPRDA and NEMA have similar definitions of "environment". Both acknowledge 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 NHRA. Section 40 of the same Act requires consultation with any state department administering any law relevant to 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).

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA) have been incorporated to ensure that a comprehensive and legally compatible Heritage Impact Assessment (HIA) is compiled.

3.8 National Environmental Management: Biodiversity Act

The overarching aim of the National Environmental Management: Biodiversity Act (No 10 of 2004) (NEM:BA), within the framework of NEMA, is to provide for:

- The management and conservation of biological diversity in South Africa and of the components of such diversity.
- The use of indigenous biological resources in a sustainable manner.
- The fair and equitable sharing, among stakeholders, of benefits arising from bioprospecting involving indigenous biological resources.
- The South African National Biodiversity Institute (SANBI) was established on 1 September 2004 through the signing into force of the NEM:BA, its purpose being (*inter alia*) to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems.
- Other objectives include the identification, control and eradication of declared weeds and alien invaders in South Africa. These are categorised according to one of the following categories, and require control or removal:
    - Category 1a Listed Invasive Species: Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combated or eradicated.
    - Category 1b Listed Invasive Species: Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled.
    - Category 2 Listed Invasive Species: Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit.
    - Category 3 Listed Invasive Species: Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to

exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

- The provisions of this Act have been considered and, where relevant, incorporated into the proposed mitigation measures and requirements of the EMPr. It is also appropriate to undertake a Fauna and Flora Impact Assessment for developments in an area that is considered ecologically sensitive which require environmental authorisation in terms of NEMA, with such Assessment taking place during the EIA phase.

3.9 The Conservation of Agricultural Resources Act

This Act informs the utilisation of the natural agricultural resources in South Africa to promote soil, water and vegetation conservation, as well as combat weeds and invader plants.

3.10 Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA)

The Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA) is a framework law, which means that the law provides broad principles for a set of provincial laws that will regulate planning for the country. The Act introduces provisions to cater for development principles; norms and standards; inter-governmental support; Spatial Development Frameworks (SDFs) across national, provincial, regional and municipal areas; Land Use Schemes (LUS); and municipal planning tribunals.

SPLUMA also provides clarity on how planning law interacts with other laws and policies. It is a uniform, recognisable and comprehensive system that addresses the past spatial and regulatory imbalances and promotes optimal exploitation of minerals and mineral resources. SPLUMA achieves this by strengthening the position of mining right holders when land needs to be rezoned for mining purposes. SPLUMA's impact on optimal exploitation is particularly evident where conflict exists between mining right holders and landowners. Economic and policy considerations, as well as practical necessities, often motivate the state to grant mining rights to entities other than landowners. SPLUMA is a new national framework Act that provides clear principles and standards for provincial and local governments to formulate their own new spatial planning and land use policies. The new provincial legislation can regulate, among other things, land development, land use management, spatial planning and municipal planning.

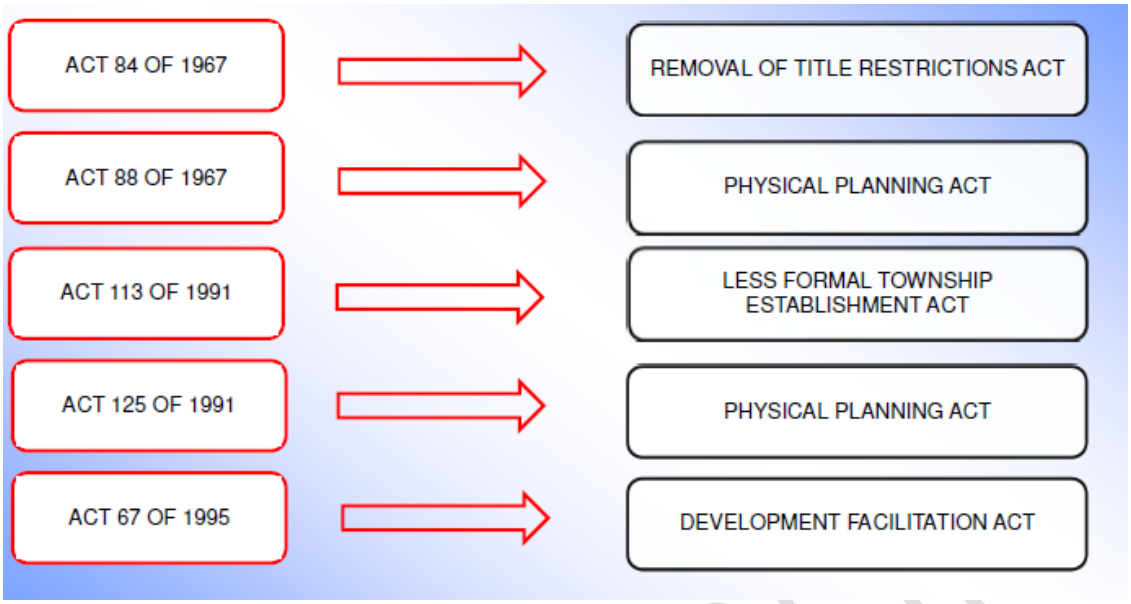


Figure 6: Repealed legislation as a result of SPLUMA

3.11 Environment Conservation Act, 1989 (Act 73 of 1989) – Noise control regulations

In terms of section 25 of the ECA, the national Noise Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) were promulgated. The NCRs were revised under GN R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. The Gauteng Province promulgated provincial regulations: Noise Control Regulations of Gauteng 1999, (Provincial Gazette, Extraordinary no 75 of August 1999).

The noise control regulations must be considered in relation to the potential noise that may be generated during the construction and decommissioning phases of the proposed project. The two key aspects of the noise control regulations relate to disturbing noise and noise nuisance. Section 4 of the regulations prohibits a person from making, producing or causing a disturbing noise, or allowing it to be made produced or caused by any person, machine, device or apparatus or any combination thereof.

A disturbing noise is defined in the regulations as “a noise level which exceeds the zone sound level or if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more”. Section 5 of the noise control regulations prohibits the creation of a noise nuisance. A noise nuisance is defined as “any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person”. Noise nuisance is anticipated from the proposed project particularly to those residents that are situated near the project sites. South African National Standard

10103 also applies to the measurement and consideration of environmental noise and should be considered in conjunction with these regulations. A noise specialist study is proposed for the EIA.

3.12 Noise standards

The following South African Bureau of Standards (SABS) requirements relate to noise from mines, industry and roads:

- South African National Standard (SANS) 10103:2008. "The measurement and rating of environmental noise with respect to annoyance and to speech communication".
- SANS 10210:2004. "Calculating and predicting road traffic noise".
- SANS 10328:2008. "Methods for environmental noise impact assessments".
- SANS 10357:2004. "The calculation of sound propagation by the Concave method".
- SANS 10181:2003. "The Measurement of Noise Emitted by Road Vehicles when Stationary".
- SANS 10205:2003. "The Measurement of Noise Emitted by Motor Vehicles in Motion".

The relevant standards use the equivalent continuous rating level as a basis to determine what is acceptable. The levels may take single event noise into account, but single event noise by itself does not determine whether noise levels are acceptable for land use purposes. With regards to SANS 10103:2008, the recommendations are likely to inform decisions by authorities, but non-compliance with the standard will not necessarily render an activity unlawful. The noise assessment will take these noise standards and impacts into consideration.

4 SCOPE OF THE PROPOSED OVERALL ACTIVITY

4.1 Mining operations

Site Establishment / Construction phase:

During the site establishment phase the applicant must demarcate the boundaries of the site 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 quarry pit to be used 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 coloured 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. The topsoil will be stockpiled in the form of a berm alongside the boundary of the quarry where it will not be driven over, 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. The stripped overburden will be stockpiled on a designated area after the topsoil has been removed.

The applicant will introduce the mining equipment to the area during the site establishment phase. The equipment to be used on site will entail the following:

- Weigh bridge
- Mobile Crusher Plant
- Chemical Toilet
- Drilling equipment
- Excavating equipment
- Earth moving equipment

Operational phase:

The coal mining process includes drilling to set charges; detonation; loading and short haul; and stockpiling. The mining will be conducted by blasting benches from the rock face of the pit face. Blasting is

anticipated to occur weekly. The noise caused by blasting will be instantaneous and of short duration. The applicant should ensure that all surrounding residents/farmers are informed of each blasting event. After a blast the larger coal will be broken into smaller pieces by hydraulic hammer. The manageable pieces will then be transported by tipper or dumper trucks to the crusher plant. The coal is run through the crushers to produce the final product, in various grades of coal dependent on the market.

The mining activities will consist of the following:

- Blasting
- Excavating
- Crushing
- Stockpiling and transporting

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 above-mentioned workshop. The mining site will not require the storage of large quantities of diesel as this is already available at the applicant's workshop area. Fuelling of tracked vehicles must be done in the quarry due to logistical reasons.

A chemical toilet will be established on site to be used by the employees. The existing farm road will be used to access the mining area.

<u>Decommissioning phase:</u>

The closure objectives are for the coal pit to be made safe and the remainder of the site to be returned to agricultural use. The coal pit will be incorporated into the closure objectives of the proposed extension area and will entail the benching of the site. Benches will be built with overburden, 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:

- Sloping and landscaping during rehabilitation
- Replacing of topsoil
- Implementation of an alien invader plant management plan

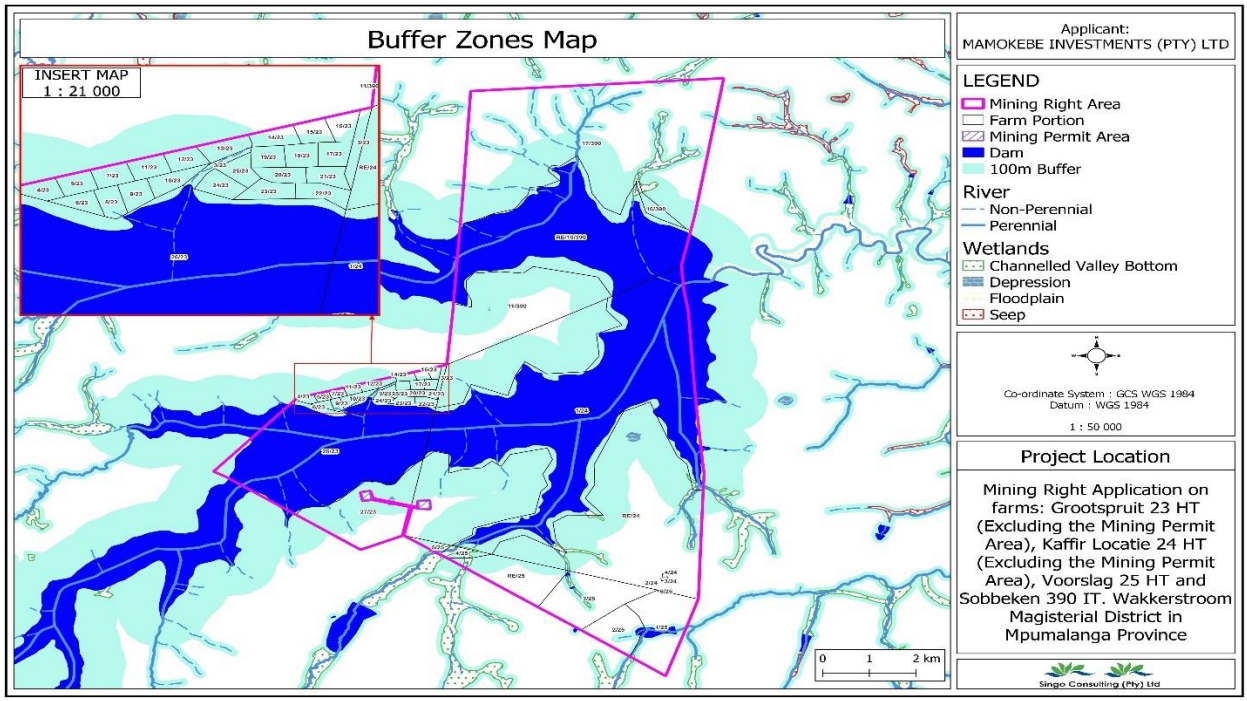


Figure 7: Buffer zone map

4.2 Mining methodology

The mining method proposed involves open cast extraction of coal from a pit. The pit at the site will be established by cutting a bench which will be progressed further along the area of interest. The top and subsoil will be removed and stockpiled at a nearby clear area. Blasting and drilling methods will be used when loosening the hard rock (overburden) when necessary. The material swill then be loaded with excavators and hauled to the mobile crushing and screening plants that will be established within the boundaries of the area of operation. They will be crushed and screened to various sized specs as per customer requirements. The coal will be stockpiled and transported to clients via tipper trucks and trailers. All activities will be contained within the boundaries of the mining site.

A preliminary mining layout for the mine shown below.

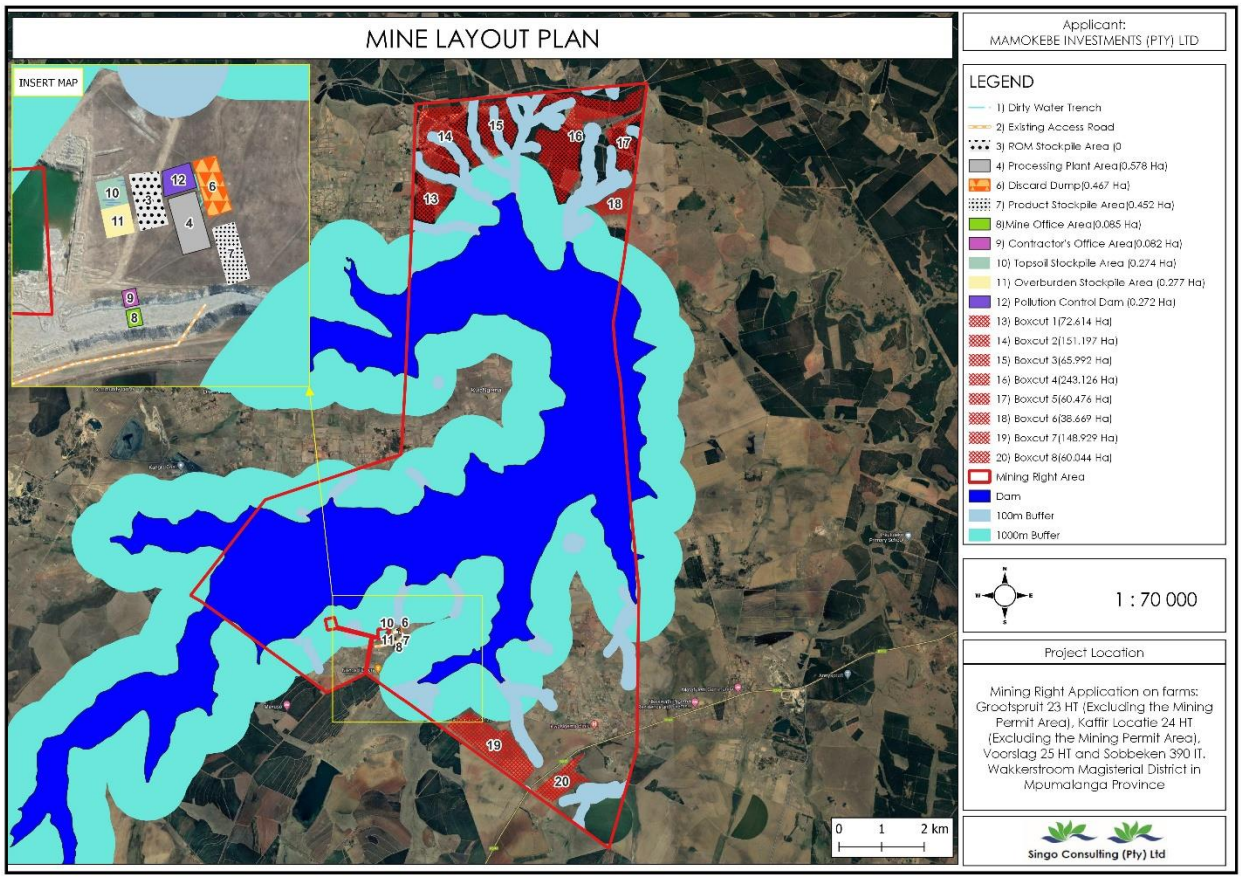


Figure 8: Preliminary Layout plan for Mamokebe Investments mining right

4.2.1 Infrastructure requirements

The project has the following infrastructure requirements:

- Access and haul roads (with necessary security), including upgrading the access point to the gravel road
- Offices with septic/chemical ablution facilities
- Weighbridge, workshop and stores (with septic/chemical ablution facilities)
- Diesel facilities and a hardstand
- Power and water
- Boxcut
- Stockpiles (topsoil, overburden, subsoil/softs, RoM)

- Surface water management measures (storm water diversion berms and trenches, pollution control dams, discard dump, etc.)
- Washing plant facility

The preliminary mine schedule layout is indicated in appendices. This layout will change once specialist investigations have been completed and alternatives have been assessed. The layout design will adhere to EA requirements for the NEMA and WULA processes. This will be discussed in detail during the EIA phase, once the draft Mining Work Programme has been updated.

4.3 Listed and specified activities

The applicant has applied for a mining right and EA for the development of a mine and supporting infrastructure for the mining blocks identified. Both applications are pending. The listed activities require EA in terms of the NEMA EIA Regulations GN R. 326/324/325/327 amended on 7 April 2017, now amended as GNR 517 of June 2021 and the Waste Management Activities listed in terms of the NEM:WA GN R. 921 (2013) and GN R. 633 (amended 2015). The water uses in terms of Section 21 are indicated in the following tables.

Table 5: Listed activities according to NEMA requiring environmental authorisation

Government notice	Activity number	Description
Listing Notice 1: GN 517 (11 June 2021)	9	The development of infrastructure exceeding 1,000 m in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 m or more; or (ii) with a peak throughput of 120 l per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or

		storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.
	10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes- (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where- (a) such infrastructure is for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.
	12	The development of— a) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 m^2; or b) infrastructure or structures with a physical footprint of 100 m^2 or more; where such development occurs – • within a watercourse; • in front of a development setback; or • if no development setback exists, within 32 m of a watercourse, measured from the edge of a watercourse
	13	The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50,000 m^3 or more.
	14	The development and related operation of facilities or infrastructure for the storage/storage and handling of dangerous good, where such storage occurs in containers with a combined capacity of 80 m^3 or more, but not exceeding 500 m^3.
	19	The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells,

		shell grit, pebbles or rock of more than 10 m^3 from a watercourse. Mining activities associated with the physical mining activities, construction of wetland and stream crossing or any other related mining activities that trigger this activity.
	24	The development of a road – a) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or b) with a reserve wider than 13,5 m, or where no reserve exists where the road is wider than 8 m Construction of mining road infrastructure, which will include service, access and haul roads as part of the proposed mining activities.
	25	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2,000 m^3 but less than 15,000 m^3. Pollution Control Dams.
	28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: a) will occur inside an urban area, where the total land to be developed is bigger than 5 Ha; or b) will occur outside an urban area, where the total land to be developed is bigger than 1 ha.
	31	The decommissioning of existing facilities, structures or infrastructure for – a) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014 b) Any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 or Listing Notice 3 of 2014;

		c) … d) Any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or e) Any activity regardless the time the activity was commenced with, where such activity: a. Is similarly listed to an activity in i. or ii. above; and b. Is still in operation or development is in progress.
	56	The widening of a road by more than 6 m, or the lengthening of a road by more than 1 km – a) where the existing reserve is wider than 13,5 m; or b) where no reserve exists, where the existing road is wider than 8 m Upgrades to existing roads.
Listing Notice 2: GN.517 (11 June 2021)	4	The development and related operation of facilities or infrastructure, for the storage/storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 m^3. Storage of diesel and other hydrocarbons.
	15	The clearance of an area of 20 ha or more of indigenous vegetation, excluding 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.
	17	Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the mining right.
	19	The removal and disposal of a mineral, which requires a permission stated in terms of section 20 of the Mineral and Petroleum Resources

		Development Act, as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the permission. Relates to coal crushing, screening and washing on site.
	24	The extraction or removal of peat or peat soils, including the disturbance of vegetation or soils in anticipation of the extraction or removal of peat or peat soils, but excluding where such extraction or removal is for the rehabilitation of wetlands in accordance with a maintenance management plan.
Listing Notice 3: GN.517 (11 June 2021)	4	*(The development of a road wider than 4 metres with a reserve less than 13,5 metres.)* f) Mpumalanga i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding disturbed areas; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; or (gg) Areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas, where such areas comprise indigenous vegetation; or ii. Inside urban areas:

		(aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.
	10	*(The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.)* f. Mpumalanga i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an international convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) Areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, where such areas comprise indigenous vegetation; or (hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland; or ii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development

		Frameworks adopted by the competent authority or zoned for a conservation purpose.
	12	*(The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.)* f. Mpumalanga i. Within any critically endangered or endangered ecosystem listed in terms of Section 52 of the NEM:BA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning or proclamation in terms of NEMPAA.
	14	*(The development of-* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or* *(ii) infrastructure or structures with a physical footprint of 10 square metres or more;* *where such development occurs-* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.)*

		f. Mpumalanga i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an international convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Core areas in biosphere reserves; or (hh) Areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation; or ii. Inside urban areas: (aa) Areas zoned for use as public open space; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose.

Table 6: Waste management listed activities according to NEM:WA requiring environmental authorisation

Government notice	Activity	Description

R.921: Category A	7	Treatment of hazardous waste using any form of treatment at a facility with the capacity to process between 10 and 100 tonnes.
	12	Construction of a facility for a waste management activity listed in Category A of this schedule.
R.921: Category B	1	Storage of hazardous waste in lagoons, excluding storage of effluent, wastewater or sewage.
	7	Disposal of any quantity of hazardous waste to land (Discard Dump).
	10	Construction of a facility for a waste management activity listed in Category B of this schedule.
R.633: Category B	11	Establishment/reclamation of a residue stockpile or deposit resulting from activities that require a mining, exploration or production right in terms of the MPRDA.
R.921: Category C	2	Storage of hazardous waste at a facility with the capacity to store more than 80m^3 of hazardous waste at any time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste

Table 7: Water uses according to NWA requiring environmental authorisation

Section 21 water use	Description
21 (a)	Abstraction of water
21 (b)	Storage of water
21 (c)	Impeding or diverting the flow of water in a watercourse
21 (g)	Disposing of waste in a manner which may detrimentally impact a water resource.
21 (i)	Altering the bed, banks, course or characteristics of a watercourse
21 (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

5 NEED AND DESIRABILITY OF PROPOSED ACTIVITIES

The applicant had a Mining Permit (DMRE Ref: MP 30/5/1/3/2/11219 MP) over the proposed mining right area of which was abandoned because they mined more than 5 Ha, which is against the MPRDA regulation. The company got reported and they had to stop mining and they left the area without proper rehabilitation. This is one of the primary reasons for the applicant to lodge an application for the mining right which includes this area. Jobs were lost when the mining permit was stopped, and many people have no jobs more especially the people in KwaNgema community since the Kangra coal mine is in Driefontein. So, there is also a need to create jobs for the local community. This will improve the economy or the financial status of the community.

Piet Retief mines are a multi-product mine which supplies both export grade, as well as power station grade coal that is used in the Camden Power Station for the purpose of power generation. The proposed Mamokebe Investment opencast mining operation forms part of the short-term planning of 24 HT farm (Kaffir Locatie) North Section and will therefore ensure that Eskom's Camden Power Station receives an ongoing supply of coal for power generation purposes. The locality of the infrastructure needed in order to support the proposed mining operations at the Mamokebe Investment Coal Mine is dictated by the locality of the coal reserve of the study area. Existing infrastructure that is situated in the area of the proposed Mamokebe Investment Coal Mine will be used as far as possible, and all additional infrastructure developments will be limited to aspects that is not sufficiently catered for by the existing infrastructure.

5.1 Project selection area

Since the applicant holds an existing Mining Permit (DMRE Ref: MP 30/5/1/3/2/11219 MP), which was abandoned or stopped due to over flooding. They left a pit uncovered so they have a need to tend to that pit hence their application includes the area of the mining permit to can have excess material in order to perform rehabilitation in an acceptable manner. The results or the outcomes of the MP they had is also a reason they decided to apply for this portion too. There are other broad reason that contribute to this application over this area which are discussed throughout the report.

The most important reason behind the area selection is the presence of an economical mineable coal resource. The Mamokebe Investments project offers several economic benefits; mine revenue will facilitate fund allocation to local economic development through the implementation of projects

identified on the social and labour plan. Local contractors and businesses will benefit from supplying the mine with goods and services. The applicant is fully committed to implementing development plans and projects that will align with the provisions of the broad-based socio-economic empowerment charter of the South African mining industry.

Project development will contribute to the South African economy through exports that will leverage foreign income to the country. The National Government will obtain tax revenue from the project. The project will provide income for the mining company through profits and will provide wages for employees. Indirect income will also be increased through the mine's procurement of goods and services. More information regarding employment generated by this project will be included in the EIA report.

The Mkhondo spatial development framework (STM, 2021-2022), Forestry, mining and subsistence farming are the main economic factors within the municipality. There are two major mining companies within Mkhondo Local Municipality (Jindal and Kangra Coal Pty (Ltd)). Mkhondo Local Municipality ranks low in terms of tourism statistics compared to other local municipalities in Mpumalanga. However, there is a lot of tourism potential within the municipality, with the South African Heritage sites which lie within the municipality namely the Entombe Battlefield, Rooikraal, Confidence, Kalkoenvlakte and the Heyshope Dam. The Heyshope Dam is the only other main tourist fascination in the municipality despite the numerous guest houses and 'bed & break- fasts' within the municipality.

Mkhondo Local Municipality has a HDI of 0,53 which falls within the United Nations 'Low Human Development Category. Mkhondo local Municipality ranks very low compared to other local municipalities in Mpumalanga Province. The number of people that are unemployed has declined. It is noteworthy that settlements with high unemployment rates are Saul Mkhize Ville, KwaNgema Tribal Trust and Dirkiesdorp.

The sector or industry that contributes the most to the GVA of the municipality is community services (22.2 %) followed by trade (20.4 %), agriculture and forestry (16 %), finance (12.8 %), mining (11.9 %), transport (7.6 %), manufacturing (5.4%), construction (2.3%) and utilities (1.4 %). Mining will enable community members to gain skills in mine construction and operation. Although mining is a large contributor to the local economy, the primary objective should be to prevent mining activities from encroaching onto high-potential agricultural land and areas of high biodiversity, and to ensure that the mining area is properly rehabilitated, and the agricultural value of the land use are restored once the mineral resource is fully depleted. The location of the coal resource to be mined is a phenomena natural resource that cannot be moved, but the mine infrastructure can be located with due consideration to

known environmental and social sensitivities, while still considering engineering feasibility and financial factors.

The Mamokebe Investments project will:

- Enable the applicant to commence coal mining and produce coal
- Enable the community to benefit and ensure that resource that could not be mined out in its full potential by Kangra, it is thus mined.
- Enable the applicant to produce a sufficient quality of coal to satisfy its clients' requirements
- Facilitate economic development opportunities created by the project.
- Create jobs for the local community

More details relating to the need and desirability of the proposed project will be contained in the EIA and EMP reports.

5.2 Coal as an important resource

According to South African Coal Sector Report, Coal is a combustible sedimentary rock formed from vegetation that has been consolidated between other rock strata and altered by the combined effects of pressure and heat over millions of years. Coal is composed primarily of carbon, and contains varying amounts of other components, like hydrogen, oxygen, sulphur and other impurities. Main parameters used to define coal are calorific value, ash, moisture and sulphur. According to the energy balance compiled by the DoE, coal constitutes approximately 72% of total primary energy supply in South Africa and is mostly used for power generation. In addition, coal is used to produce virtually all non-recycled iron. Coal is abundant, affordable, easy to transport, store and use, plus free of geopolitical tensions; all these attributes make it very popular. 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. Despite the country's attempts at 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.

Eskom generates approximately 90% of the electricity used in South Africa and approximately 45% of the electricity used in Africa. In global terms, the utility is among the top seven in generating capacity, among

the top nine in terms of sales, and has one of the world's biggest dry-cooled power stations. Eskom uses over 90Mt of coal per annum and typically burns low quality coal characterised by high ash content and low calorific values. The coal which can be used varies between power stations. The Return-to-Service power stations require higher grade coal (23 MJ/kg), another group require 21-23 MJ/kg and only certain power stations can burn the lowest grade (Eskom, 2016).

coal is a good energy source: Cheapest source of energy. Unlike other forms of energy (nuclear, natural gas, oil, hydroelectric), coal provides many jobs in removing coal from the earth, transporting it to the utility, burning it, and properly disposing of coal ash. Eskom has voiced concern over medium and long-term future supply security to its coal-fired electricity generating power stations. If Eskom's needs are not met, it might have severe economic impacts. As such, coal is one of the five minerals selected by the DMRE for local beneficiation as it is considered critical to South Africa's on-going development (DMRE, 2011). See figure 18 of Eskom's power stations.

In South Africa, coal is not only used for electricity generation but also a diverse range of products can be derived from coal. Coal is also used to produce liquid fuels and non-energy coal products such as chemicals. Recently there is a fight amongst Ukraine and Russia over rulership and the impacts of the war has resulted to more need of coal in other areas as Russian country being a provider of cola in other regions is not trading, thus South Africa's coal was valued yet again, and coal price increased in the market ($324.00/t). The need for this thermal coal to can be mined, will increases the JSE market of South Africa as more coal will be required I other parts of the continent.

Table 8: Eskom's coal-fired power stations and their installed capacity (South African Coal Sector Report)

Eskom's current power stations are:[18]

Coal-fired stations

- Arnot Power Station: 2,140 MW installed capacity comprising 4 X 350 MW units and 2 X 370MW units. The power station is located at Middelburg, Mpumalanga;
- Duvha Power Station: 3,600 MW installed capacity comprising 6 X 600 MW units.The power station is located at Witbank, Mpumalanga
- Hendrina Power Station: 2,000 MW installed capacity comprising 10 X 200 MW units. The power station is located at Hendrina, Mpumalanga.
- Kendal Power Station: 4,116 MW installed capacity comprising 6 X 686 MW units. The power station is located at Witbank, Mpumalanga
- Kriel Power Station: 3,000 MW installed capacity comprising 6 X 500 MW units. The power station is located at Kriel, Mpumalanga
- Lethabo Power Station: 3,708 MW installed capacity comprising 6 X 618 MW units. The power station is located at Sasolburg, Free State
- Majuba Power Station: 4,110 MW installed capacity comprising 3 X 657 MW units and 3 X 713 MW units. The power station is located at Volksrust, Mpumalanga.
- Matimba Power Station: 3,990 MW installed capacity comprising 6 X 665 MW units. The power station is located at Ellisras, Northern Province
- Matla Power Station: 3,600 MW installed capacity comprising 6 X 600 MW units. The power station is located at Kriel, Mpumalanga.
- Tutuka Power Station: 3,654 MW installed capacity comprising 6 X 609 MW units. The power station is located at Standerton, Mpumalanga.
- Camden Power Station: 1,580 MW installed capacity comprising 6 X 200 MW units and 2 X 190 MW units. The power station is located at Ermelo, Mpumalanga.

5.3 Mamokebe Investments proposed open-cast mining operations

The proposed open-cast mining operations of the Mamokebe Investments coal mine project will have positive economic impacts on a local, regional and national scale. It will lead to more coal or coal production, job creation and skills development opportunities for both local and foreign citizens. A mine which was the source of income for many and created jobs in the past is Kangra which now only operates in Driefontein so, this increases the unemployment rate and crime rate increases due to lack of jobs. With population increase in Dirkiesdorp, the rate of unemployment increases in the whole of South African. The mine will act as a solution to the unemployment problem in but not limited to Dirkiesdorp, KwaNgema and Driefontein areas. The projected mining activities will blend in with these developments, and the results will be delivered to nearby power stations (Amajuba and Camden) to guarantee that there is no electrical shortage. If the applicant does not proceed with the intended application, another firm may file an application under the MPRDA, Act 28 of 2002. Mining companies will continue to try to extract these coal deposits unless the government deems these regions "NO-GO" for mining and/or the demand for coal falls.

Site Establishment / Construction phase:

During the site establishment phase the applicant must demarcate the boundaries of the site 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 quarry pit to be used 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 coloured 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. The topsoil will be stockpiled in the form of a berm alongside the boundary of the quarry where it will not be driven over, 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. The stripped overburden will be stockpiled on a designated area after the topsoil has been removed.

The applicant will introduce the mining equipment to the area during the site establishment phase. The equipment to be used on site will entail the following:

- Weigh bridge
- Mobile Crusher Plant
- Chemical Toilet
- Drilling equipment
- Excavating equipment
- Earth moving equipment

Operational phase:

The coal mining process includes drilling to set charges; detonation; loading and short haul; and stockpiling. The mining will be conducted by blasting benches from the rock face of the pit face. Blasting is anticipated to occur weekly. The noise caused by blasting will be instantaneous and of short duration. The applicant should ensure that all surrounding residents/farmers are informed of each blasting event. After

a blast the larger coal will be broken into smaller pieces by hydraulic hammer. The manageable pieces will then be transported by tipper or dumper trucks to the crusher plant. The coal is run through the crushers to produce the final product, in various grades of coal dependent on the market.

The mining activities will consist of the following:

- Blasting
- Excavating
- Crushing
- Stockpiling and transporting

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 above-mentioned workshop. The mining site will not require the storage of large quantities of diesel as this is already available at the applicant's workshop area. Fuelling of tracked vehicles must be done in the quarry due to logistical reasons. A chemical toilet will be established on site to be used by the employees. The existing farm road will be used to access the mining area.

A specialist will be hired to do blasting studies during the EIA process.

<u>Decommissioning phase:</u>

The closure objectives are for the coal pit to be made safe and the remainder of the site to be returned to agricultural use. The coal pit will be incorporated into the closure objectives of the proposed extension area and will entail the benching of the site. Benches will be built with overburden, 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:

- Sloping and landscaping during rehabilitation

 Replacing of topsoil

 Implementation of an alien invader plant management plan

5.4 Period for which EA is required

The estimated period for which EA is required, is 30 years. This includes construction, mining and closure, and rehabilitation. A period for post-closure management risks will be investigated during the EIA phase.

6 PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

During the S&EIA phase, all reasonable and practicable alternatives will be identified and appraised for consideration and evaluation during the EIA phase. When considering options for a project of this magnitude, there are several restrictions that must be considered. Social, Economic, and Environmental restrictions are examples of such constraints, which will be considered throughout the examination of the options. It is necessary to emphasize and submit the preferable choice to the authorities. Location, procedure, technology, and activity are generally used to identify alternatives (including the no-go option).

Any option that is regarded feasible (from a technical and environmental standpoint) must fulfil the development proposal's demand while minimizing the related consequences. Such choices must be discussed, as well as the benefits and drawbacks of each. Incremental alternatives are frequently presented as a way of mitigating identified concerns throughout the EIA process. These options are inextricably tied to the selection of mitigation actions and are not clearly defined as separate options.

The development footprint, properties, and activity type possibilities to consider are detailed in the following sub-sections.

6.1 Location alternatives

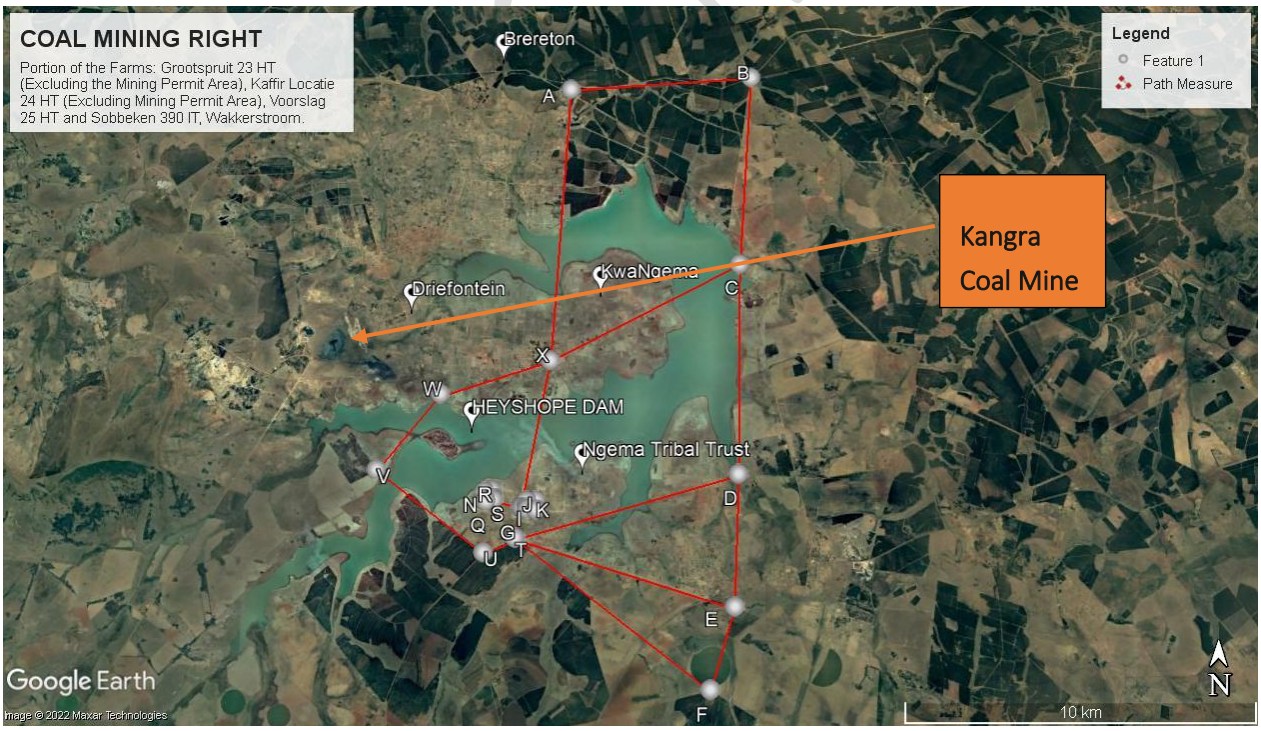
The research region was chosen based on the favourable results gained from data collected from the applicant’s mining permit, which was conducted within the proposed mining right area, Council for Geoscience, as well as information from earlier mining operations by Kangra regarding the underlying coal grade.

6.2 Land use alternatives

Due to the results of the data received from the previous Mining Permit (MP 30/5/1/3/2/11219 MP) the applicant had and the Council for Geoscience, as well as information from previous mining operations by Kangra Coal Mine, the primary priority is coal mining, and the second option is to opt agriculture since the land has the potential to support this activity. A variety of farming activities are currently practiced in this area.

Alternative 1: Coal mining

Based on the google earth view, the area around Driefontein has some diggings. According to the land use map, the area is dominated by natural vegetation, followed by cultivated land, a large waterbody next to it which is the Heyshope dam, few plantations, few build-ups and bare land. Rezoning this land would be a mining area will be a challenge due to the fact the land is wet, or water filled which is the area in Ngema Community. But some parts of the proposed area won't pose much difficulty so it will be possible to mine. Kangra stopped mining on the area because of the same water problems. See Figures below.



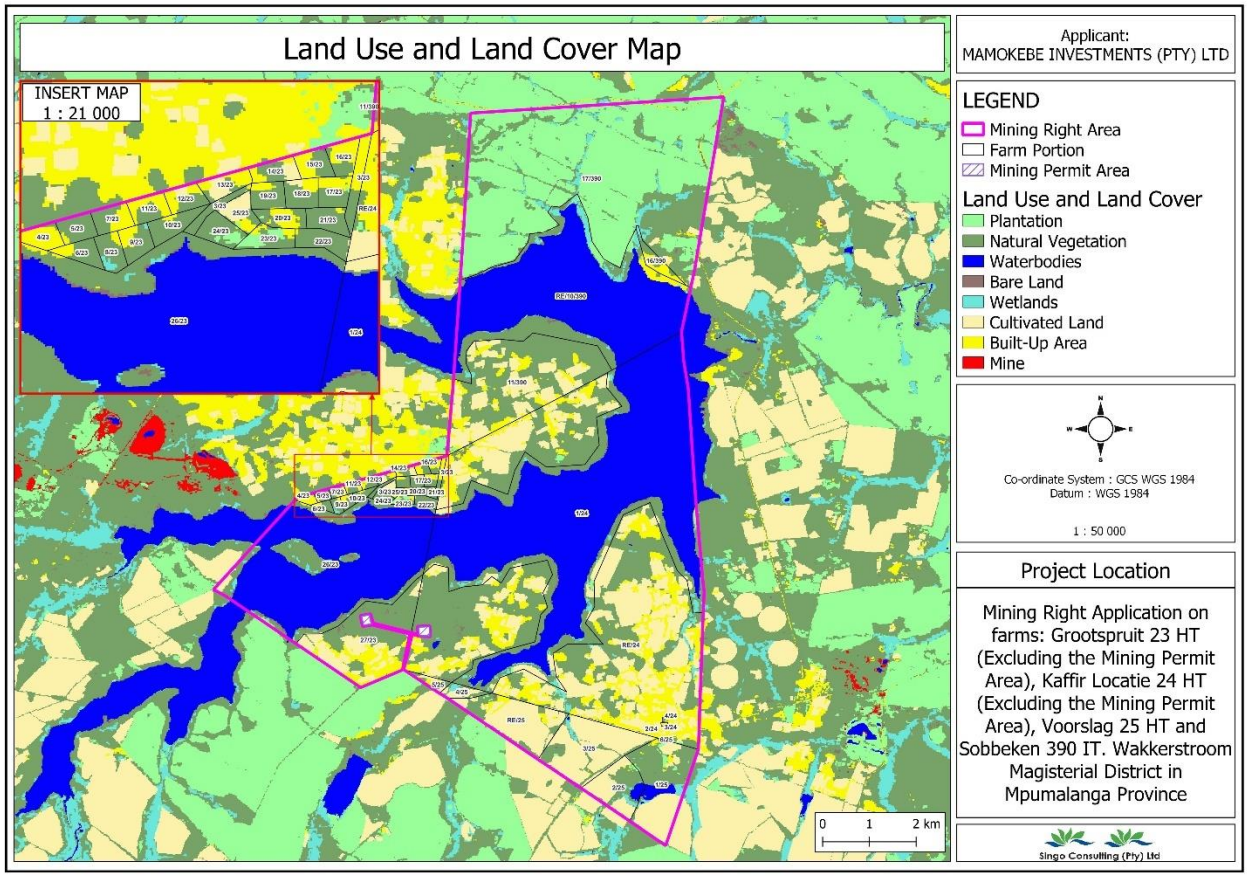


Figure 9: Land use and activity maps around the proposed area (Google Earth View) & (Singo Consulting (Pty) Ltd, 2022)

Alternative 2: Agricultural land

Agriculture and farming are the main current land use of the study area (See Figure 12). The area is mainly compromised natural vegetation and a big waterbody or catchment which is the Heyshope dam followed by cultivated land, plantations, build-ups and bare land. The area falls under CBA Irreplaceable, CBA optimal, heavily modified and moderately modified old lands. CBA irreplaceable are 80% -100% irreplaceable for meeting conservation targets., thus such areas must be maintained in a natural state with no loss of ecosystems, functionality or species; no flexibility in land-use options. CBA Optimal is less in the boundary of the mining area and it is deemed flexible in land-use options. In the heavily modified area, it is where biodiversity and ecological function has been lost to a point that they are not worth considering for conservation at all. Some of the lands are not 100% abandoned but they are not cultivated because the area is now water filled. The land use alternatives must be investigated in more detail once specialist investigations have been completed in the EIA phase.

Most of the villagers use their land for crop farming like maize. Some do it for market or business purposes to sustain their families and be able to afford school fees and other necessities of life. There are a very few trees in Ngema Village, it is highly covered by grasses, and it makes farming quite easy for them. The area is filled with wetlands, so they take this as an advantage and use it as a water source for irrigating purposes which includes collecting water from the Heyshope dam next to them.

Several archaeological and heritage studies were conducted in the project area since 2002 and these presents the nature and heritage character of the area. The HIA conducted in the area also provide some predictive evidence regarding the types and ranges of heritage resources to be expected in the proposed project area: (see reference list for HIA reports). The studies include mining, water pipeline and powerline projects completed by van Vollenhoven (2010, 2011, 2016, 2020, 2021), Coetzee (2021), Pistorius (2012). No sites were recorded, but the reports mention that structures older than 60 years occur in the area, Pelser and Van Vollenhoven (2010, 2011, 2014, 2015) for mining and infrastructure development survey also recorded no sites. Van Schalkwyk did extensive work in the project area mostly for mining and infrastructure developments for example Van Schalkwyk, (2002,2004, 2006, 2006, and 2010). Other than burial sites and buildings older than 60 years the studies did not record any significant archaeological sites in the area.

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 mining development site. See Figure 20 for current activities and features on site.

Figure 10: Site pictures of the current active activities in the mining right application area

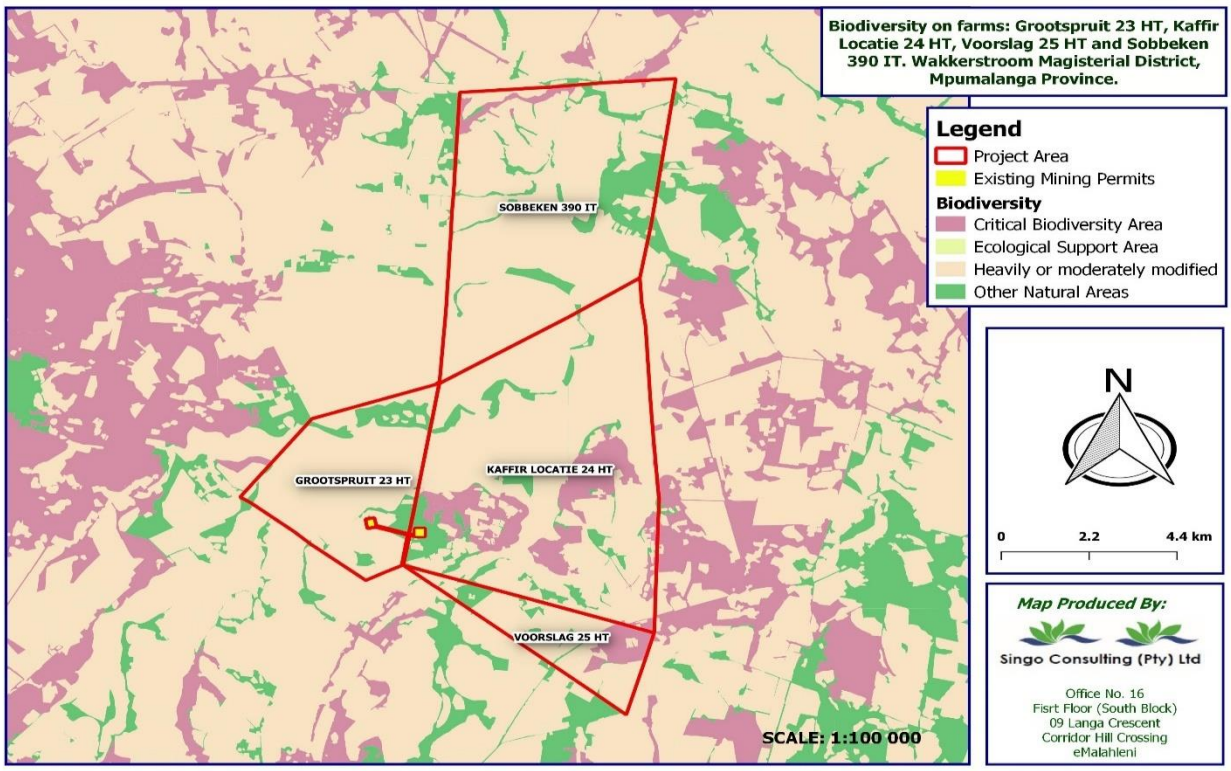


Figure 11: The critical biodiversity map of the area (Singo Consulting (Pty) Ltd, 2022).

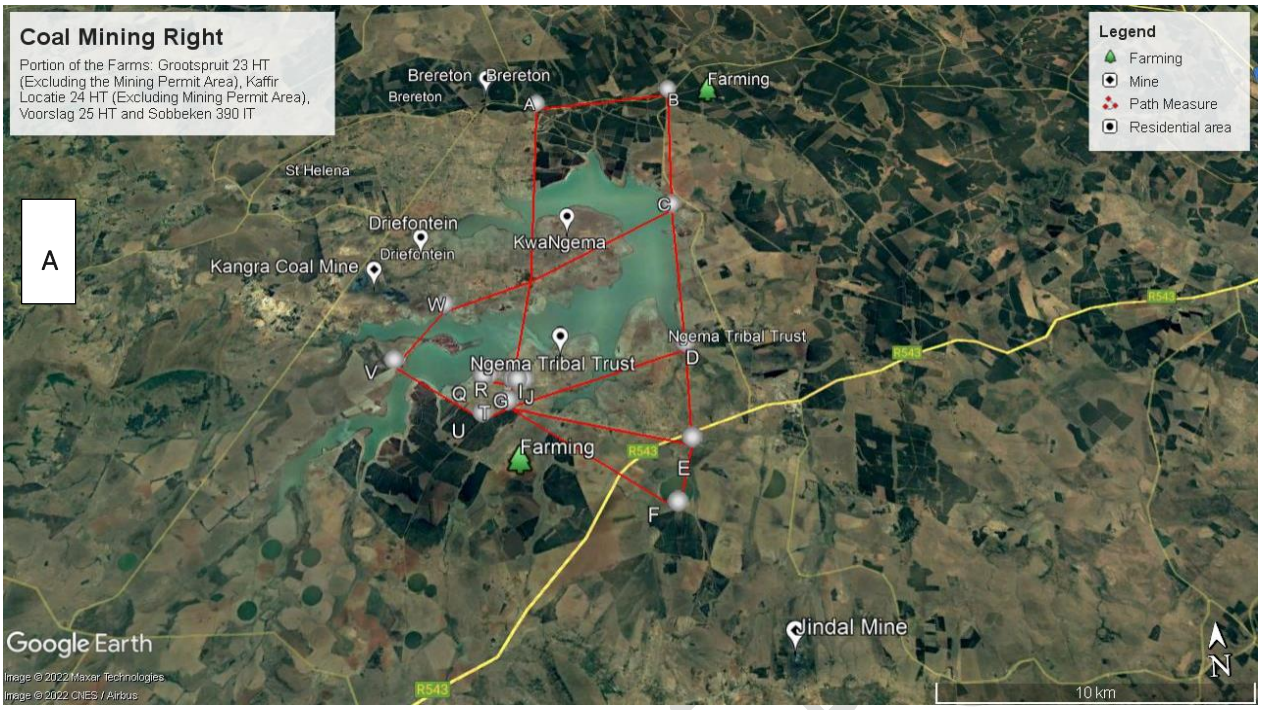


Figure 12: Wide range of activities on and around the proposed area (Integrated Specialist Services (Pty) Ltd, 2022) & (Google Earth View , 2022)

6.3 Process alternatives

6.3.1 Mine technology

The alternative for mining and extracting the target mineral resource is open-cast surface mining.

6.3.2 Mine operational

Operations and associated infrastructure, including a full washing facility will be available for the duration of the LoM.

6.3.3 Water supply

Two alternative water-supply options have been identified, namely:

- Water obtained from drilled boreholes. This activity will trigger section (21a) of the NWA, which is included in the IWUL application.
- Water obtained from the dam, e.g the Heyshope Dam will be used for dust suppression, and this triggers section (21g & 21j) of the NWA, which is included in the IWUL application.

- Any additional triggered sections that can be discussed during meetings and site visits will be added.

6.3.4 Waste disposal

The waste disposal options have been identified:

- A small pit where villagers through away cans.
- Disposal: This option involves disposal of discard to a surface disposal site or into the pit. The disposal of waste will be further investigated and discussed during the EIA phase.

6.4 No-go alternative

Not mining the coal deposit and leaving the region as agricultural land would be a no-go option. No-go options must be researched and analyzed, according to the NEMA. No-go alternatives suggest that the Mamokebe Investments project will not be implemented, resulting in the projected severe environmental and socioeconomic consequences. This option will have to be assessed against the EIA findings as well as the project's potential socioeconomic advantages. The assessment's findings will be reported in the EIA report.

South Africa's coal deposits are a strategic resource, and they are critical to the country's economic prosperity. More than 86 permanent jobs and 20 unskilled positions would be lost if this project is not implemented. Additionally, as raw coal, a resource with good seam quality and a calorific value of mineable in situ tonnage (“MTIS”) for the this Project estimated at 13 365 000 tonnes for all farms where Grootspruit is 1 215 000 tonnes (measured), Sobbeken 7 290 000 tonnes (inferred) and Kaffir 4 860 000 tonnes (indicated) will be sterilised. More of historical boreholes were drilled on Grootspruit area, hence is categorised under measured. During the EIA phase, the environmental, social, and economic implications will be thoroughly analyzed in order to detect and mitigate any negative consequences.

The no-go alternative was not deemed to be the preferred alternative as:

- The applicant will not be able to supply in the demand of coal mineral,

- The application, if approved, would allow the applicant to utilize the available coal as well as provide employment opportunities to local employees. Should the no-go alternative be followed, these opportunities will be lost to the applicant, potential employees and clients.

The no-go alternative's viability cannot be addressed at this time and will be discussed in more detail during the EIA phase once specialist inputs have been received. The brief overview of the no-go alternative is not an in-depth assessment, and the impacts will be assessed and discussed in detail in the EIA report.

7 PUBLIC PARTICIPATION PROCESS

7.1 Objectives of public participation

Public participation aims to:

- Provide I&APs with an opportunity to voice their support, concerns and questions regarding the project, application or decision.
- Provide an opportunity for I&APs, EAPs and the Competent Authority (CA) to obtain clear, accurate and understandable information about the environmental, social and economic impacts of the proposed activity or implications of a decision.
- Provide I&APs with the opportunity to suggest ways to reduce or mitigate an activity's negative impacts and enhance the positive impacts.
- Enable the applicant to incorporate the needs, preferences and values of the I&APs into the application.

7.2 Legislation

The PPP must comply with several important sets of legislation that require public participation as part of an application for authorisation or approval, namely the MPRDA, NEMA, NEM:WA and NWA. Adherence to the requirements of these acts will allow for an integrated PPP, satisfying the requirement for public participation referenced in the Acts. The details of the integrated PPP are provided in the following sections (7.3-7.7) respectively.

7.3 Identification of I&APs

Potential I&APs were identified based on the definition of I&APs in the EIA regulations. The I&APs database includes authorities and landowners. The PPP and consultation have been conducted in adherence to the relevant legislation.

People and/or organisations were registered as I&APs for the project if they:

- Are landowners or tenants adjacent to the proposed study area.
- Are the local municipality/ward councillors with jurisdiction in the area or represent the ratepayers association.

- Are an authority or organ of state with jurisdiction in respect of any aspect of the activity.
- Responded to the Background Information Document (BID), advertisements and site posters.
- Attended a public meeting.

The company had an active MP (MP 30/5/1/3/2/11219 MP) over the mining right area in 2017, but they were forced to stop all activities because of water flooding the pit. They had to shift their focus on rehabilitating that area. The public participation meetings were conducted, media adverts were made and Site visits was done for the mining permit (MP).

Mining Permit operation pictures

- Newspaper advertisement: Published in 'Excelsior Nuus/News''
- Public A2 notices were distributed to an identified police stations in (Drikierdorp and Driefontein), at local shopping complexes, taxi rank, bottle store, Kwa-Ngema clinic and also at the nearby farm portions and the farm portions affected.
- Draft Scoping Reports was shared to registered I&AP's of the project and comments received, were incorporated on the report for submission to the DMRE.

Table 9, 2 to 9 and Section 7.7 for more information on the outcomes of the I&APs meetings.

Table 9: Consultation procedure

A table containing the procedures undertaken to engage with all interested and affected parties physically is demonstrated below.

7.4 Background information document

Included in the I&AP notification letters: facsimiles, and e-mails in a BID, which includes:

- Locality map and description
- Project description and background
- Legal framework
- Explanation of the scoping and EIA process to be followed
- An invitation to get involved and comment on the proposed project
- Time frames of the scoping report

7.5 Notification of availability of scoping report

All registered I&APs and stakeholders have been notified via email of the availability of the Draft Scoping Report for review for a planned period of thirty days. The report were available at: Driefontein Police Station, Dirkiesdorp Police Station, KwaNgema Clinic, Mkhondo Local Municipality & Mkhondo Public Library Respectively and obtainable from Rudzani Shonisani/ Nokuthula Nkosi (rudzani@singoconsulting.co.za)/ nokuthula@singocnsulting.co.za at Singo Consulting.

7.6 Meetings

The following meetings were held:

Names of I & AP's	**Organisation**
Kangra Coal (Pty) Ltd	Landowner
Mr Heino heisterann	Adjacent Landowner (Helena Boerdery / KRH Trust (Portions RE/0, 4, 6, 8, 9 of the Farm St Helena 67 HT))
Jabulani Tshabalala	Adjacent Landowner (Farm Grootlaagte 70HT Portion RE/0)
Wayleaves	Eskom
Mary Mogale	Department of Agriculture, Land Reform & Rural Development
Renall Jacob Siyabulela Mjali	Department of Rural Development and Land Reform (Office of the Regional Land Claims Commissioner: Mpumalanga Province).
Ria Barkhuizen	SANRAL
Livhuwani Ndou Yuza Chabalala	TRANSNET
Phumla Nkosi	Mpumalanga Tourism & Parks Agency (MTPA)
JV Dube	Mkhondo Local Municipality (Environmental Management)
Tebogo M Lindokuhle M	Gert Sibande District Municipality
MMatlala Rabothata Tsholofelo Shalot Sekonko	Biodiversity Mainstreaming EIA: Department of Forestry, Fisheries and the Environment
Nonkanyiso Mcineka	Environmental Officer: Olifants Catchment Management Agency
Zakhele Wiseman Nkonyane	Land Claimant
Mzila HM Incorporated Attorneys	Attorneys (Kubheka & Radebe Family Land Claimants)

7.7 Summary of issues raised by I&APs

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

Municipal councillor					
Municipality					

Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Dept. Land Affairs					
Traditional Leaders					

Dept. Environmental Affairs					
Other Competent Authorities affected					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

8 ENVIRONMENTAL ATTRIBUTES AND DESCRIPTION OF THE BASELINE RECEIVING ENVIRONMENT

8.1 Geology

8.1.1 Regional geology

The Karoo Supergroup which covers the project area is made up of the the Dwyka Formation and the Ecca Group. The Ecca sediments are mostly dominated by sandstone, siltstone, shale and coal. Combinations of these rock types are often found in the form of interbedded siltstone, mudstone and coarse-grained sandstone. The Ecca sediments overlie the Dwyka Formation (loosely referred to as the Dwyka tillite). The latter consists of a proper tillite, sandstone and sometimes thin shale development. The upper portion of the Dwyka sediments may have been reworked, in which case carbonaceous shale and even inclusion of coal may be found. There is a small portion of Sobbeken Farm that consist of onvernwacht.

The Ermelo Coalfield is obtainable at depth 0-100m whereby the Vryheid Formation has the following seams depth: E Seam(0–3 m), D Seam(0.6 m), C Lower Seam(1.5 m, sandstone partings in upper section), C Upper Seam(well developed, 0.7–4 m, sandstone, siltstone or mudstone partings split seam into 2–3 plies, devolatilized/ destroyed by dolerite over large areas), B Lower Seam, B Upper Seam(may coalesce in south, 0–3 m), A (isolated outliers, 1 m), A Seam(0–1.5 m, mainly removed by erosion) Dip gently southwest, minor folding; dykes (2–5 m) common, up to 8 sills (10–250 m) transgress and uplift the seams.

It consists mainly of sandstone, shale and coal beds of the Vryheid Formation of the Ecca Group and is underlain by the Dwyka Formation of the Karoo Supergroup. The Karoo sediments again are underlain at depth by felsitic lavas of the Selons River Formations of the Rooiberg Group and granite from the Lebowa Granite Suite of the Bushveld Complex. The Ecca Group, which is part of the Karoo Supergroup, comprises of sediments deposited in shallow marine and fluvio-deltaic environments with coal accumulated as peat in swamps and marches associated with these environments. The sandstone and coal layers are normally reasonable aquifers, while the shale serves as aquitards. Several layered aquifers perched on the relative impermeable shale are common in such sequences. The Dwyka Formation comprises consolidated products of glaciation (with high amounts of clay) and is normally considered to be an aquiclude. The generally horizontally disposed sediments of the Karoo Supergroup are typically undulating with a gentle regional dip to the south.

The extent of the coal is largely controlled by the pre-Karoo topography. Steep dips can be experienced where the coal buts against pre-Karoo hills. Displacements, resulting from intrusions of dolerite sills, are common. Abundant dolerite intrusions are present in the Ecca sediments. These intrusions comprise sills, which vary from being concordant to transgressive in structure, and feeder dykes. Although these structures serve as aquitards and tend to compartmentalise the groundwater regime, the contact zones with the pre-existing geological formations also serve as groundwater conduits.

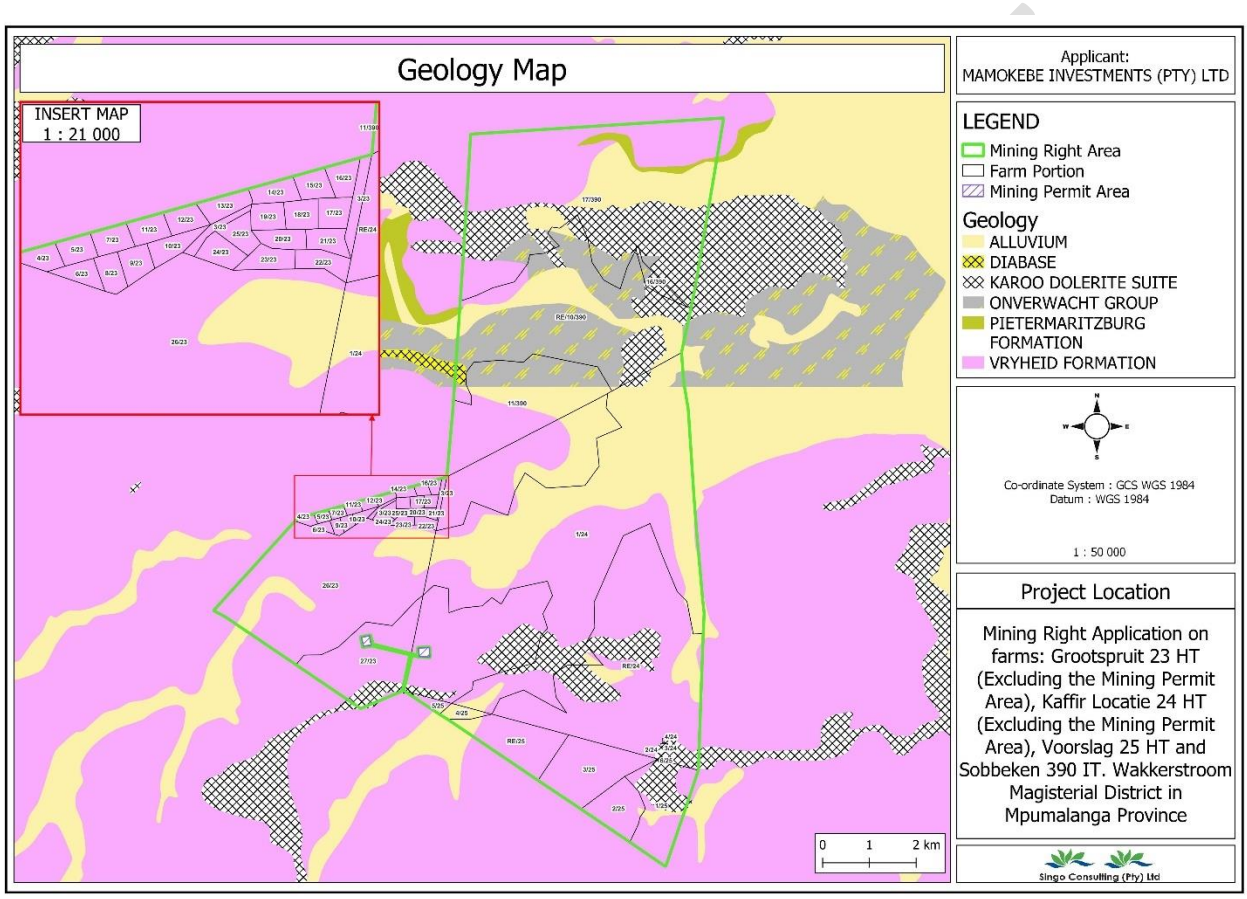


Figure 13: Depiction of the geology where the proposed project is situated (Google Earth View , 2022)

8.1.2 Vryheid formation

The Main Karoo Basin consists of a retro-arc foreland basin filled with a lithological succession ranging in age from the Late Carboniferous to the Middle Jurassic (Johnson et al., 2006). The basin-fill sequence wedges out northwards over the adjacent Kaapvaal Craton. In the Main Karoo Basin of South Africa, the Vryheid Formation is a sandstone and coal-rich stratigraphic unit that interfingers with (i.e., is transitional with and partially time equivalent to) the overlying Volksrust and underlying Pietermaritzburg Formations, both of which are both are predominantly argillaceous. In terms of environment of deposition, the

formation can be divided into lower fluvial-dominated deltaic interval, a middle fluvial interval (the coal-bearing zone) and an upper fluvial-dominated deltaic interval (Johnson et al., 2006). The thickness and frequency of the sandstone units increases from the base of the formation, reaching their maximum in the middle fluvial interval and then decrease again towards the overlying Volksrust Formation. To the south and south-east, the Vryheid Formation grades laterally into undifferentiated, deep-water agrellites of the Ecca Group (Figure 18) The Volksrust and Pietermaritzburg Formations can only be recognised when the Vryheid Formation forms part of the vertical sequence. In the north and north-western portions of the basin, the Pietermaritzburg Formation was not deposited and the coal-bearing strata of the Vryheid Formation rest directly upon the basement.

The Vryheid Formation is one of sixteen recognised stratigraphic units that constitute the Permian Ecca Group. During the deposition of the Ecca Group the basin was dominated by a large sea (the salinity levels of this water body remain unresolved). The exception to this model was the deposition of the coal-bearing strata of the Vryheid Formation along the northern margin during an episode of deltaic progradation into the basin. Deposition of the Vryheid Formation was terminated by a basin-wide transgression that drowned the Vryheid deltas and their coal swamps, resulting in the deposition of the deep-water sediments of the Volksrust Formation. The investigation of the project area did not identify any outcrops of bedrock, the entire area being covered by Cenozoic Regolith.

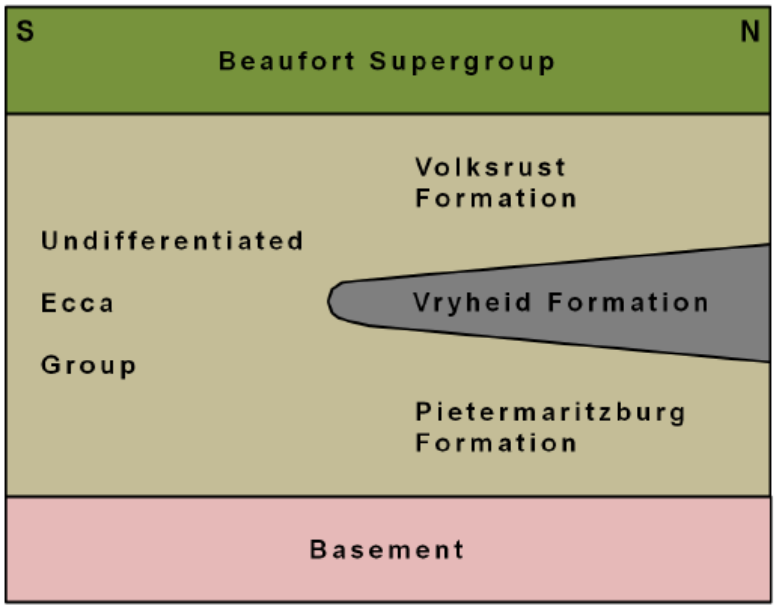


Figure 14: Schematic north-south oriented stratigraphic section of the Ecca Group in the northeast corner of the Karoo Basin.

8.1.3 Local geology and coal seams

8.1.3.1 Ermelo coalfield

According to the geological map of the area of project area below, it can be observed that the area is underlain by Vryheid Formations which forms part of the Ecca Group within the Karoo Supergroup. The Vryheid Formation is composed of shales, sandstones, and coal seams. Vryheid Formation is majority of the economically extracted coal in South Africa, which ranges in thickness in the MKB from less than 70 m to over 500 m. It is thickest to the south of the towns of Newcastle and Vryheid, where maximum subsidence took place (Cadle, 1974; Cadle, 1982; Du Toit, 1918; Stavrakis, 1989; Whateley, 1980a) and where the basin was the deepest.

The proposed mining right area is located within the Ermelo Coalfield. Ermelo Coalfield stretches from Carolina in the north to Wakkerstroom in the south for approximately 150km and the east-west extent of the field is some 80km, from about 25km east of Standerton, eastwards to Sheepmoor. It is bounded by the Witbank Coalfield in the northwest, Highveld in the west and Utrecht Coalfield to the south. It is bounded by the Witbank Coalfield in the northwest, Highveld in the west and Utrecht Coalfield to the south. Previous studies show that anthracite has been mined in areas like Piet Retief, Ermelo and Wakkerstroom in the past. There are four coal seams that are most important namely, the A seam, B Seam, C Seam and Dundus.

The surface geology over the project area is dominated by outcrops and sub-crops of sedimentary rocks of the Ecca Group (Vryheid Formation), with Transvaal Supergroup (Hekpoort Formation) outcrops also present at the surface in the far east of the project area.

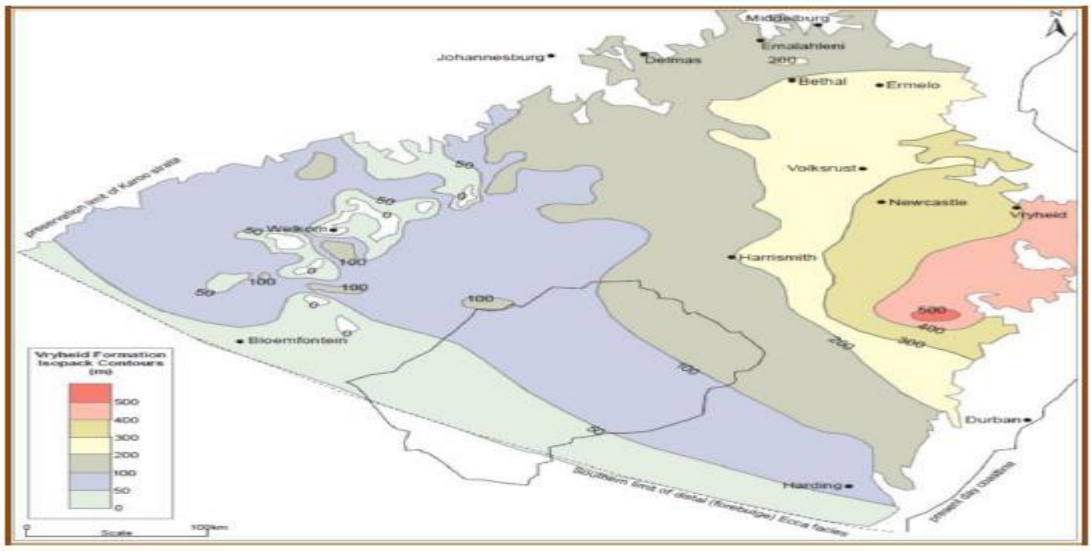


Figure 15:Illustration of the Ermelo Coalfield in the Vryheid Formation. (Google Earth View , 2022)

The four farms of the mining right area fall under different geological composition e.g Sobbeken 390 IT portion has Karoo Dolerite, Onverwacht, Vryheid and small portions of Pietermarizburg Formation and Alluvium. Grootspruit 23 HT, 24 HT, Voorslag HT has Alluvium, Karoo Dolerite and a large portion of Vryheid. The Vryheid Formation is underlain by the Dwyka Group and is gradually overlain by mudstones (and shale) and sandstones of the Volksrust Formation. The typical colours for the Vryheid Formation are grey and yellow for the sediments and black for the coal seam. The thickness of the grey shale can vary, and this is interlayered with variable yellow sandstone and coal seams, see Figure 16.

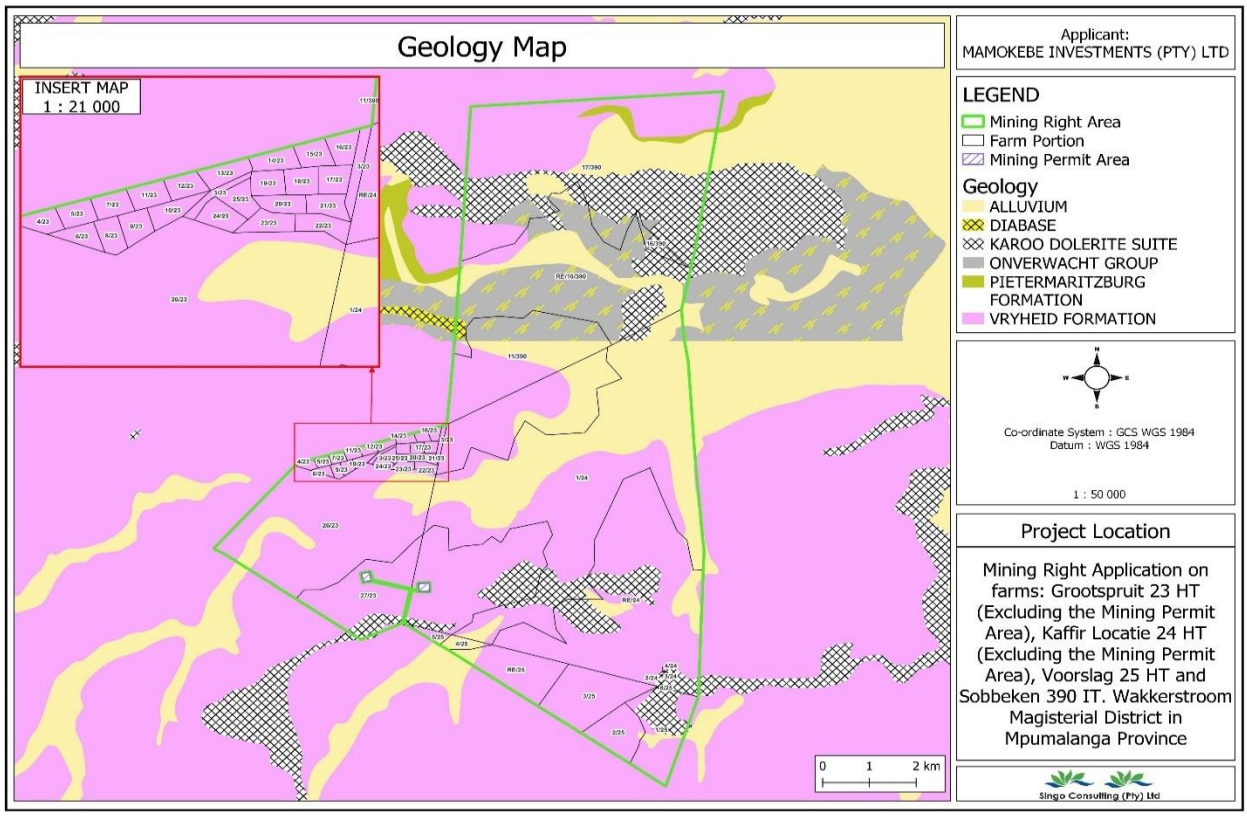


Figure 16: The Geology of the area (Singo Consulting (Pty) Ltd, 2022)

8.1.3.2 Exploration outcome

Singo Consulting did not carry out any sampling because no core was provided. There is an exploration conducted on Grootspruit 23 HT using the Prospecting Right (MP 30/5/1/3/2/ 4338 PR) of Mamokebe Investments (Pty) Ltd. The following picture shows the drilling and core logging conducted. From this exploration, no geological report received by Singo Consulting.

Figure 17: Coal Exploration pictures in Grootspruit 23 HT

8.1.3.3 Local geology

The boundaries or radius of the Mamokebe Investments proposed area extends from Brereton in the north to an area below KwaNgema community in the south which is approximately 18km. The east-west extent of the field is Klipspruit 135 HT farm on the east to an area below Driefontein in the west which is approximately 10.5km. It is bounded by the Witbank Coalfield in the northwest, Highveld in the west and Utrecht Coalfield to the south. Anthracite has been mined in the Piet Retief, Ermelo, Wakkerstroom areas, but most importantly the Coalfield generates bituminous coal. It carries up to eight coal seams within the middle Ecca Group sediments of the Karoo Supergroup, but not all are present in the various sectors. There are four coal seams which are the most important: A Seam; B Seam, C upper and C lower or Eland, Alfred, Gus and Dundas, depending on which sector is being exploited. See a nearby (Kwa-Ngema) cross section.

Figure 18: Pictures of rocks found on site

8.1.4 Soil

A soil study was conducted by Singo Consulting (Pty) Ltd as attached in Appendices.

8.1.4.1 Soil classes of the project area

The soil classes map in Figure 24 below, shows that the mining Right area is largely covered by undifferentiated structureless soil which is Association of Classes 1 to 4.

5.1.4.2 Class 1 - 4 Unidentified structureless soils.

The unidentified, 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

The soils in the proposed area have a very low-level drainage this is evident because of the ponds and wetlands in the area. Their typical water table may be high and the land may be seasonally or permanently saturated with water.

- Erodibility

Erodibility is the inherent yielding or non-resistance of soils and rocks to erosion. The type of soil in the project area is not easily erodible so the degree of erodibility is low and in some portions its moderate. The soil in the area is covered by grasses and wetlands so this reduces the rate or degree of erodibility.

- Natural Fertility

Soil fertility refers to the ability of soil to sustain agricultural plant growth, i.e., to provide plant habitat and result in sustained and consistent yields of high quality. The soil, as a nature of them, contains some nutrients which is known as 'inherent fertility'. Among the plant nutrients, nitrogen, phosphorus, and potassium is essential for the normal growth and yield of crop. The proposed area has a low natural fertility soil. So the soil in the mining right area has the capacity to grow crops & trees. The villagers grow

nuts, maize and etc in summer seasons. This signifies a good potential of the land to support plants however, some portions have limitations that restrict the choice of plants. Some trees may find a hard time surviving in this area due to nutrients availability and soil moisture.

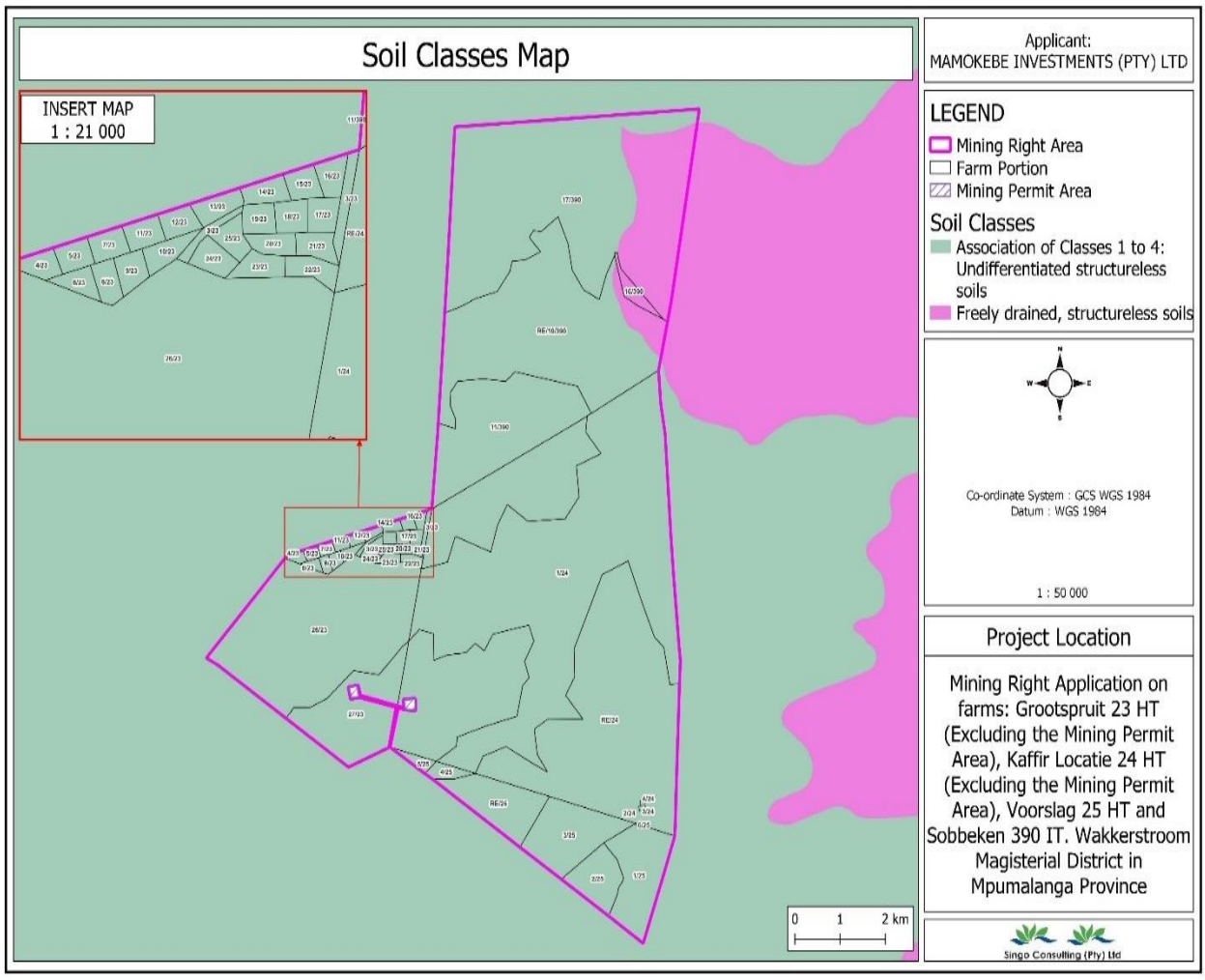


Figure 19: Soil classes map encountered

Figure 20: Soil type observed onsite (Site Visit, 2022)

9 CLIMATE

9.1 Regional climate

The study area is situated in the Mpumalanga Highveld Region, which is a summer rainfall region. The climate is temperate with warm, moist summers and cold, dry winters. Precipitation usually occurs in summer, as mist, rain and hail. Convectional thunderstorms are common and the source of most precipitation. Hail can be expected to occur about six days per year. The average annual rainfall is between 601 mm and 800 mm with 85 % of this falling in the high rainfall months (September-March). The usual highveld weather conditions prevail with warm summers and cold winters with the main temperature at around 13:00pm - 14:00pm in winter being about 17°C.

The highest mean daily maximum temperature of above 25°C occur between December and February. Average maximum temperatures in the winter months which is May to August vary between 16.9°C and 20.1°C. Sharp frosts are common in winter. In summer, average minimum temperatures do not drop below 12.7°C, in contrast to the June/July minimum of 0°C and 0.2°C respectively. An extreme maximum temperature of 34.7°C has occurred in January, whilst an extreme minimum of -12.4°C has been recorded in July. Frost can be expected from the beginning of May until mid-September, with an average of fifty-eight frost days a year.

The prevailing wind direction throughout the year is from the north-west, but storm winds (high velocity winds) generally blow from the south-east, with the strongest winds occurring in late winter and early spring. Maximum evaporation occurs in summer (October-January), due to high summer temperatures. The annual rain fall of the area in question is between 601-800 mm. See Figure 25 below.

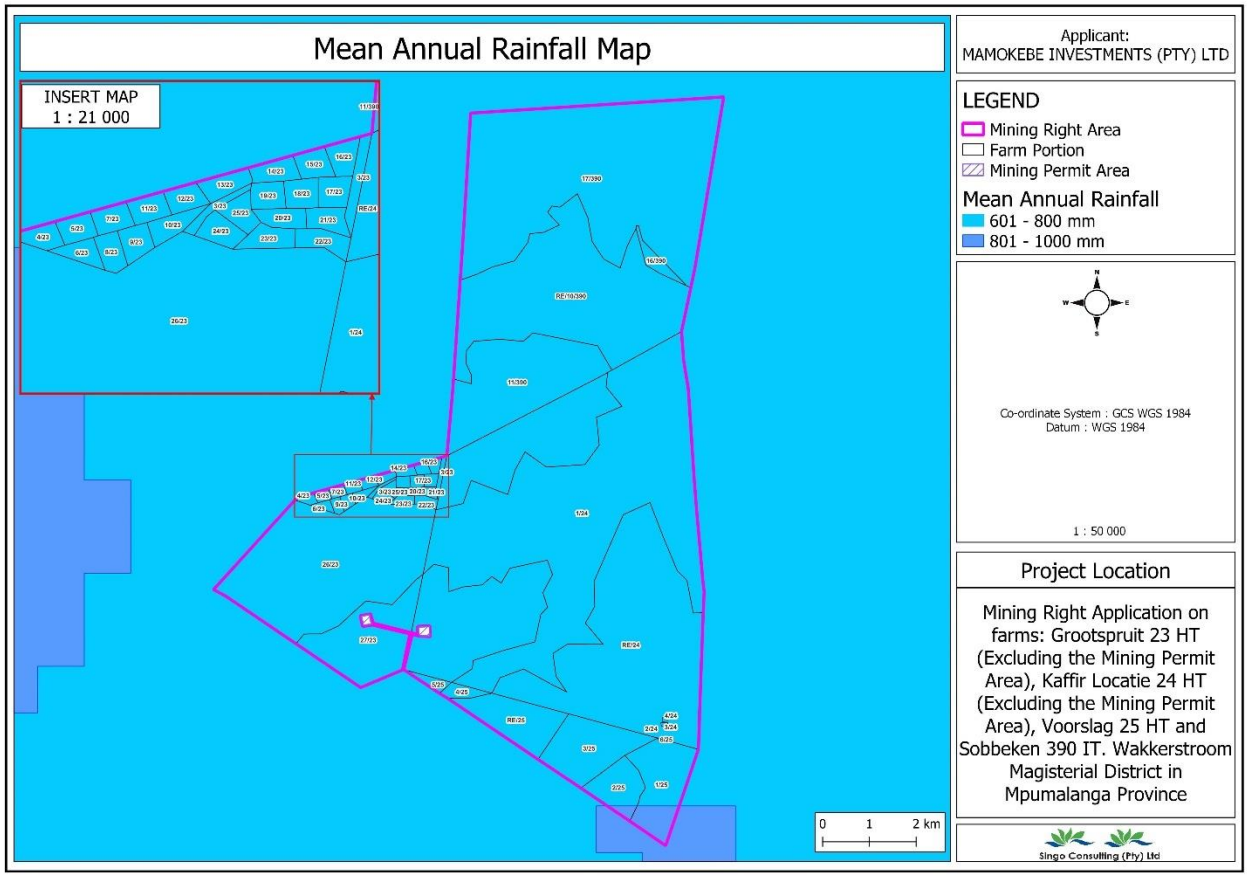


Figure 21: Rainfall in the area (Singo Consulting (Pty) Ltd, 2022)

9.2 Local climate

Looking at the climate, this area can be best described as a sub-humid area. The average maximum summer temperature is at its highest in January at 26.2^{0}C and the coldest in June at 19.4^{0}C. The chances of having frosts are rare around Piet Retief. Winters are cool to cold with an average minimum in June of 3.2^{0}C. Figure 22 below depicts the mean minimum annual temperature which ranges from -1.9˚C to 0˚C and 0.1 ˚C to -2 ˚C and 2.1-4^{0}C. The area receives summer rainfall with a mean annual precipitation of about 601-800 mm and 801-1000 mm. According to (Climate- data.org), Wakkerstroom is about 1773m above sea level.

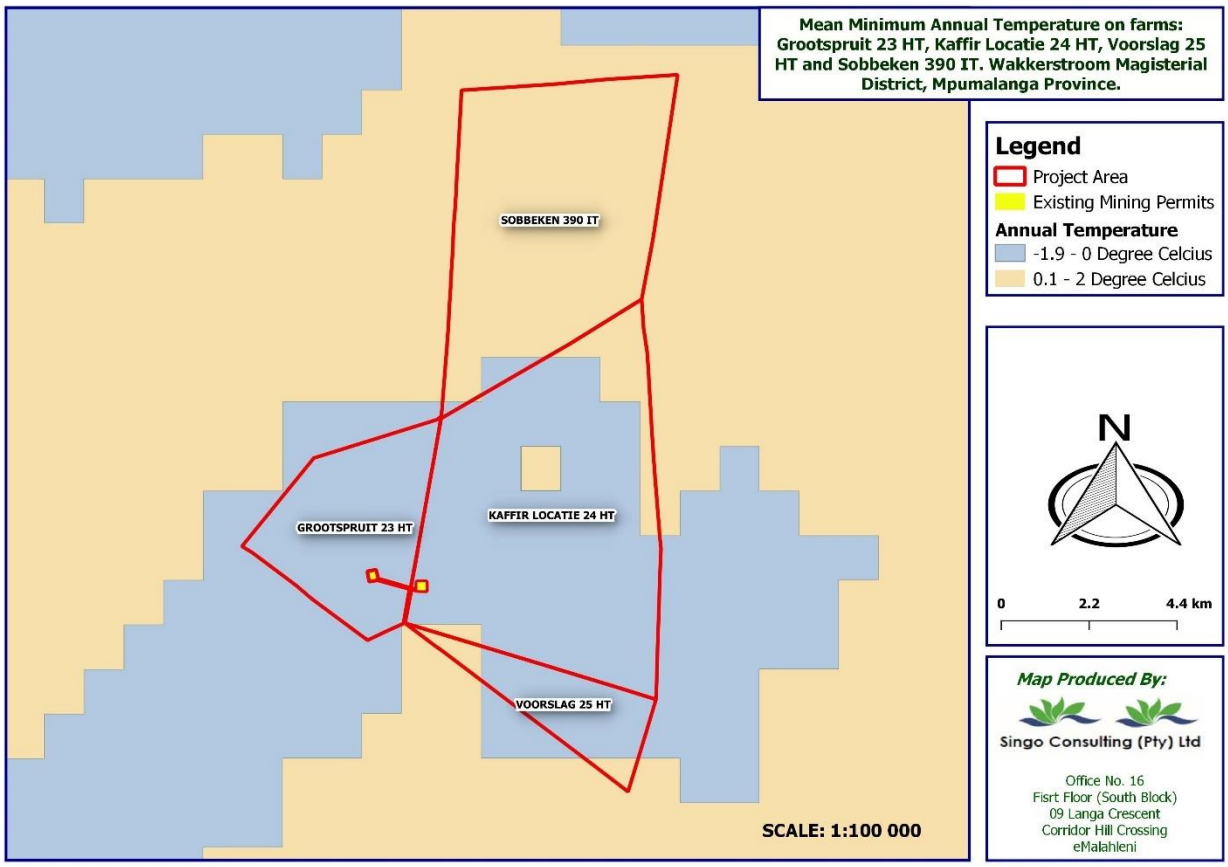


Figure 22:Mean Annual temperatures. (Singo Consulting (Pty) Ltd, 2022)

9.3 Local temperatures, rainfall and wind

- ❖ Temperature

Temperatures in the vicinity of the mine are warm to hot during summer and cold in the winter. Mean temperatures vary from 26^{0}C in the summer to 15^{0}C in the winter. Extreme conditions, with temperatures as high as 35^{0}C and as low as -10^{0}C, have been recorded. During April to September heavy mist often occurs in the low-lying areas and 120 to 150 days with frost may be experienced. The area normally receives about 614 mm of rain per year, with most rainfall occurring during summer. The region is the coldest during June when the mercury drops to 0.9°C on average during the night and overall, annual temperatures vary between 0.1 and 2 °C and -1.9 to 0°C. See Figure 27.

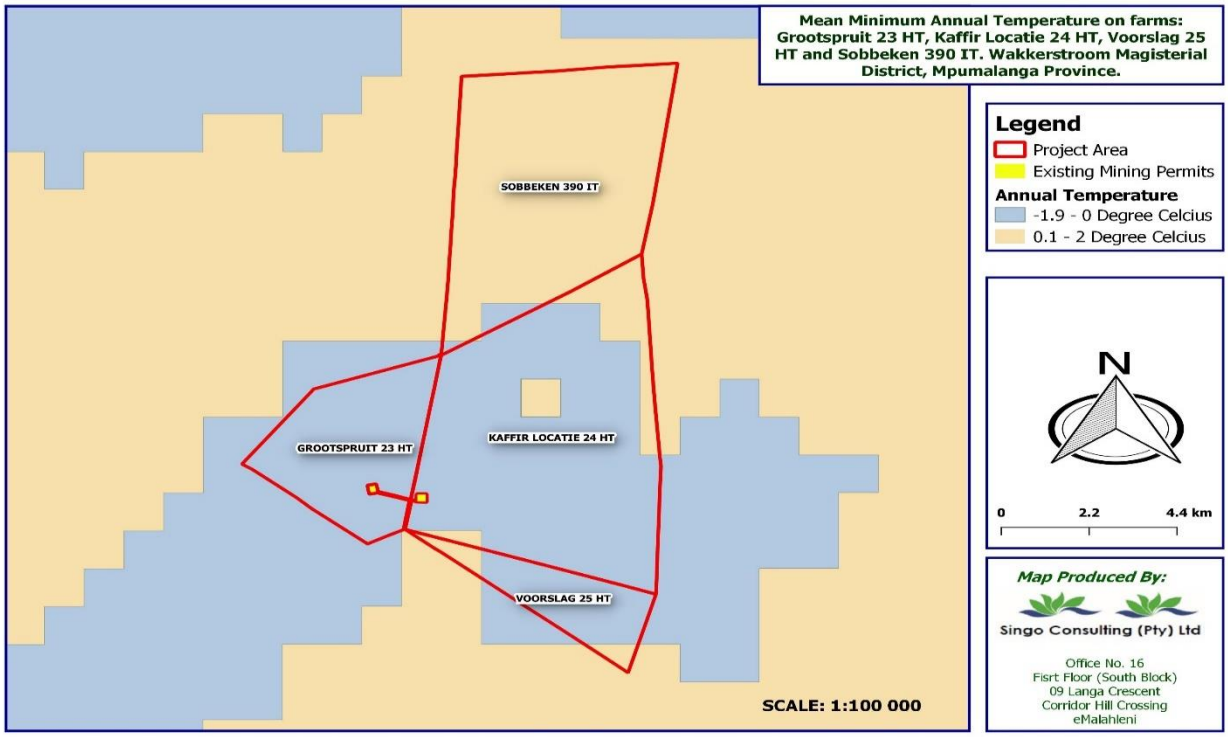


Figure 23: Annual temperature ranges

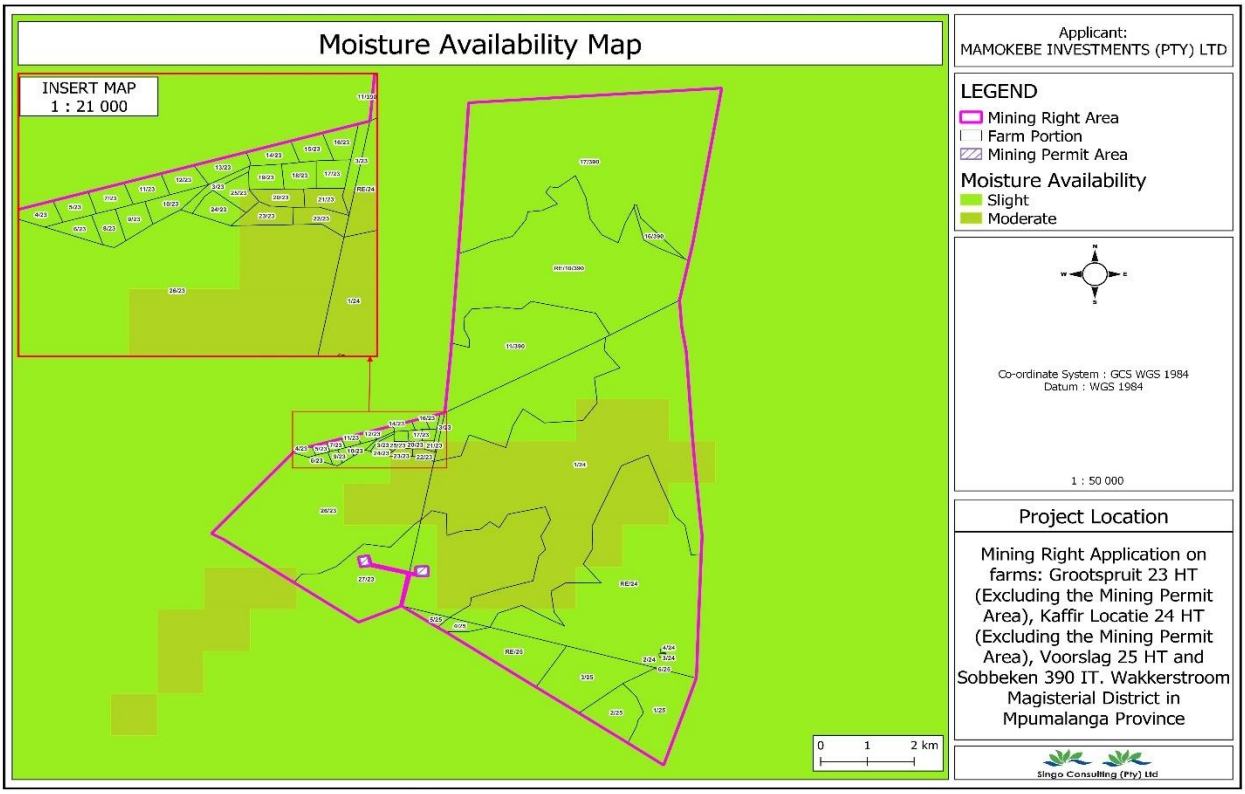


Figure 24 : Moisture content

❖ Wind

The mean monthly wind direction is northwest, and the mean monthly wind speed is approximately 4.4m/sec. The north-westerly winds continue to be more pronounced in the summer and during the autumn months the high energy north north-easterly and south-easterly winds increase in occurrence. In the winter a similar wind frequency distribution as that of autumn continues and in the spring months the energy of the wind decreases and the winds from the northerly quadrant are more pronounced (Golder, 2008).

Wind roses summarize the occurrence of winds at a specified location via representing their strength, direction and frequency. Calm conditions are defined as wind speeds of less than 1m/s which are represented as a percentage of the total winds in the centre circle. Each directional branch on a wind rose represents wind originating from that specific cardinal direction (16 cardinal directions). Each cardinal branch is divided into segments of different colours which represent different wind speed classes.

For the current wind roses, wind speed is represented in classes, 1 to 2 m/s in blue, 2 to 4 m/s in dark green, 4 to 6 m/s in light green and> 6 m/s in yellow. Each circle represents a percentage frequency of occurrence. Between 00:00 to 05:59, winds are predominantly from the north (15% of the time) and north north-east (13% of the time). During the morning (06:00 to 11:59), winds are predominantly from the north (15.5% of the time) and north-north-west (10.5% of the time). During the afternoon (12:00 to 17:59), winds are predominantly from the north-west (14.5% of the time) and north north-west (12% of the time). During the evening (18:00 – 23:59), winds are predominantly from the north (11.0% of the time) and north-north-east (10.75% of the time). During summer (DJF), winds are predominantly from the north (17.5% of the time) and north north-east (10.5% of the time).

During autumn (MAM), winds are predominantly from the east (10.5% of the time) and east-south-east (9.25% of the time). During winter (JJA), winds are predominantly from the south-east (13.75% of the time) and east-south-east (13.5% of the time). During spring (SON), winds are predominantly from the north (22.5% of the time) and north-north-east (13%). The average monthly wind speed is 10.26 m/s for the period 1993 - 2003. The maximum wind speed of 13.6 m/s was measured in October 1995 and the minimum wind speed of 8 m/s was experienced in June and July 2000.

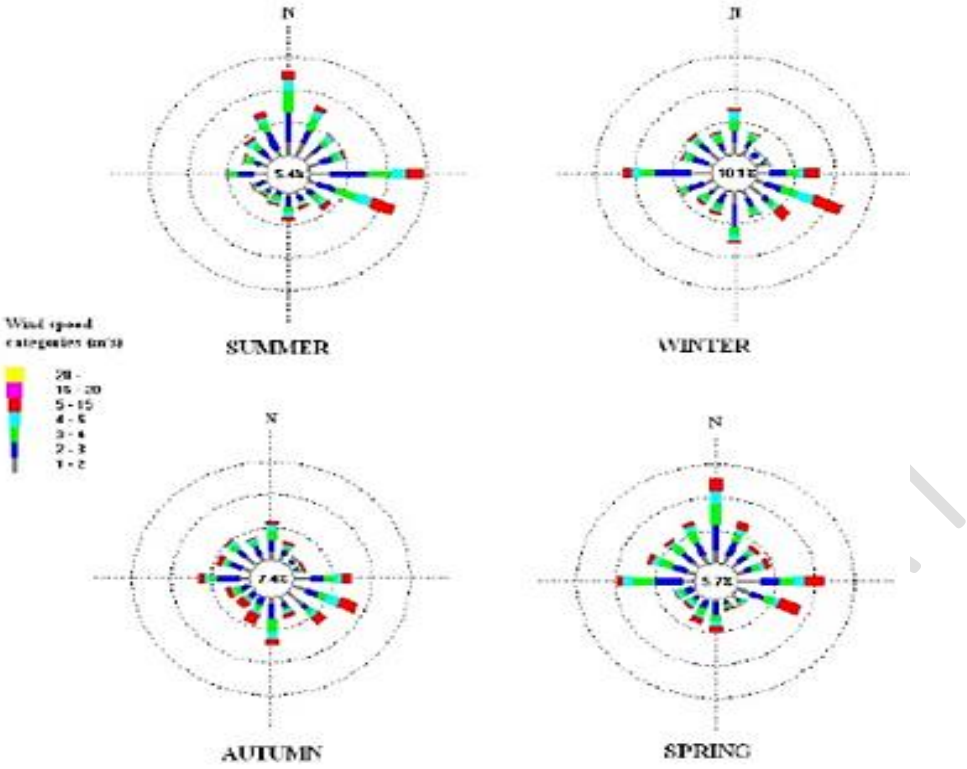


Figure 25: Wind characteristics of the areas

❖ Rainfall

Annual rainfall values range from 601 mm 800 mm with an average of approximately 754 mm per annum. Most precipitation occurs over the period November to January with an average of approximately ninety (90) rain days per annum. Rainfall over the period May to September is generally low or absent, with a noticeable increase in the months of October to April. Rainfall events in the region occur mainly in the form of thunderstorms and heavy showers.

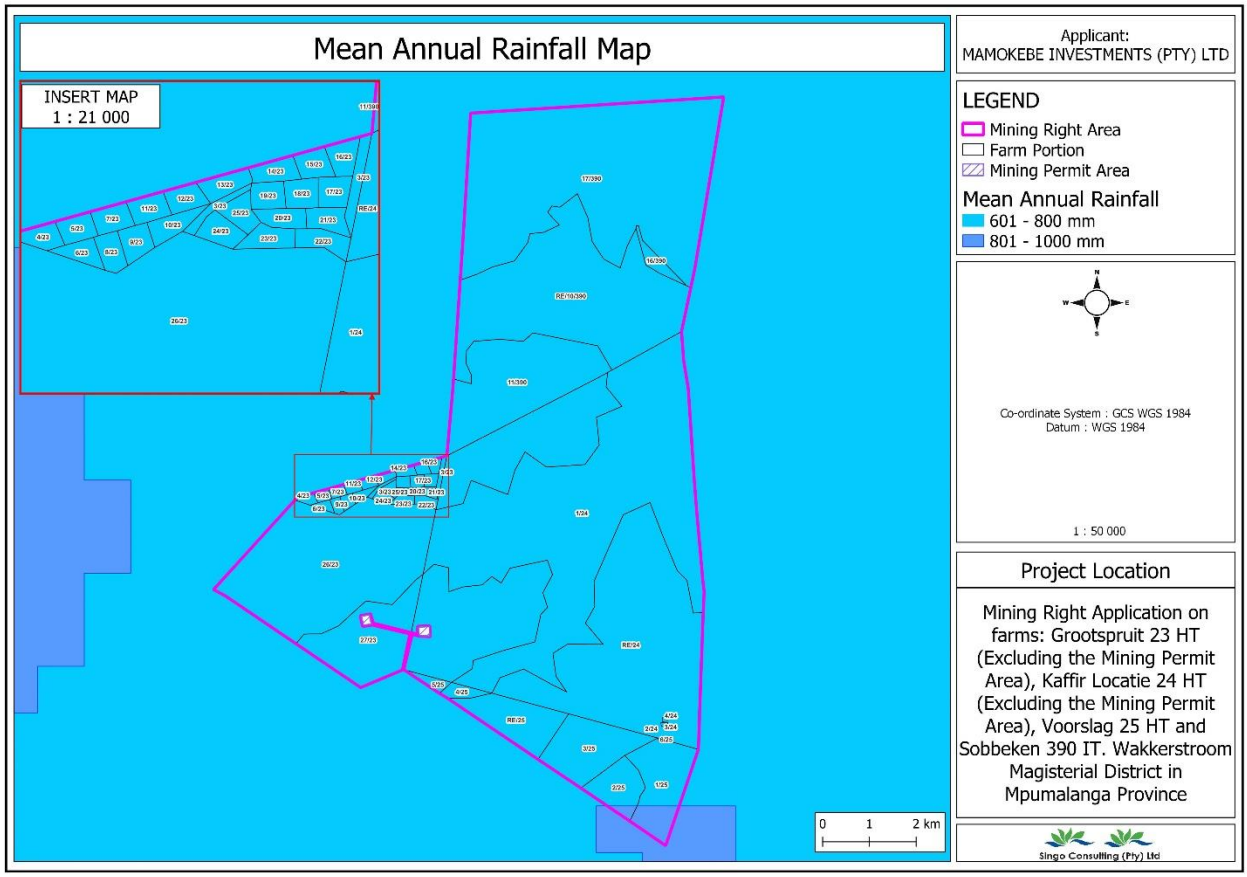


Figure 26: Average Monthly Rainfall

MONTH	AVERAGE NUMBER OF RAINY DAYS PER MONTH	AVERAGE RAINFALL PER MONTH (mm)
January	9.9	87.5
February	7.1	99.5
March	7.6	82.3
April	2.9	31.6
May	0.8	4.1
June	1.5	14.2
July	0.4	1.6
August	1.0	6.1
September	3.2	30.4
October	6.4	79.1
November	7.8	98.9
December	9.7	85.7

Figure 27: Mean Monthly Evaporation

10 TOPOGRAPHY

Topography ranges from 0 m to around 2.200 m in Mpumalanga Province, and this is according to the Department of Agriculture and Land Administration (Resource Details Report: Mpumalanga, 2005). The topology of the area is illustrated below by Figure below. A Topographic map is a map which indicates the scale, the natural features of the Earth's surface, as well as human features and corelation of features with respect to each other (Oxford Dictionary; 2020). Apart from the topography map showing landform features, rivers, and associated water resources, it also displays the height above sea level with the use of contour lines. The topography above the 24 HT (previously called Kaffir Locatie), some portion of Sobbeken 390 IT and Grootspruit 23HT of the mining right area is very gentle in elevation, this is seen by a long distance between the contour lines. This is representing the Heyshope dam since water usually gather in an area of the same or equal elevation (Gentle elevation). Then we see a rise in elevation when we go north of Sobbeken 390 IT and south of Voorslag 25 HT and the evidence behind it is the compactness of the contour lines.

In this project, topography is used to determine how soil can be conserved and how water will flow over the surface of the earth. Data from topography can help to conserve the environment, by understanding the contours of the land, it can be safe to stipulate how topsoil will be eroded and to what direction by wind or water. Knowing this can help us form mitigation or prevention measures to conserve the environment and also assist in water management in the area during the operation stages of the project.

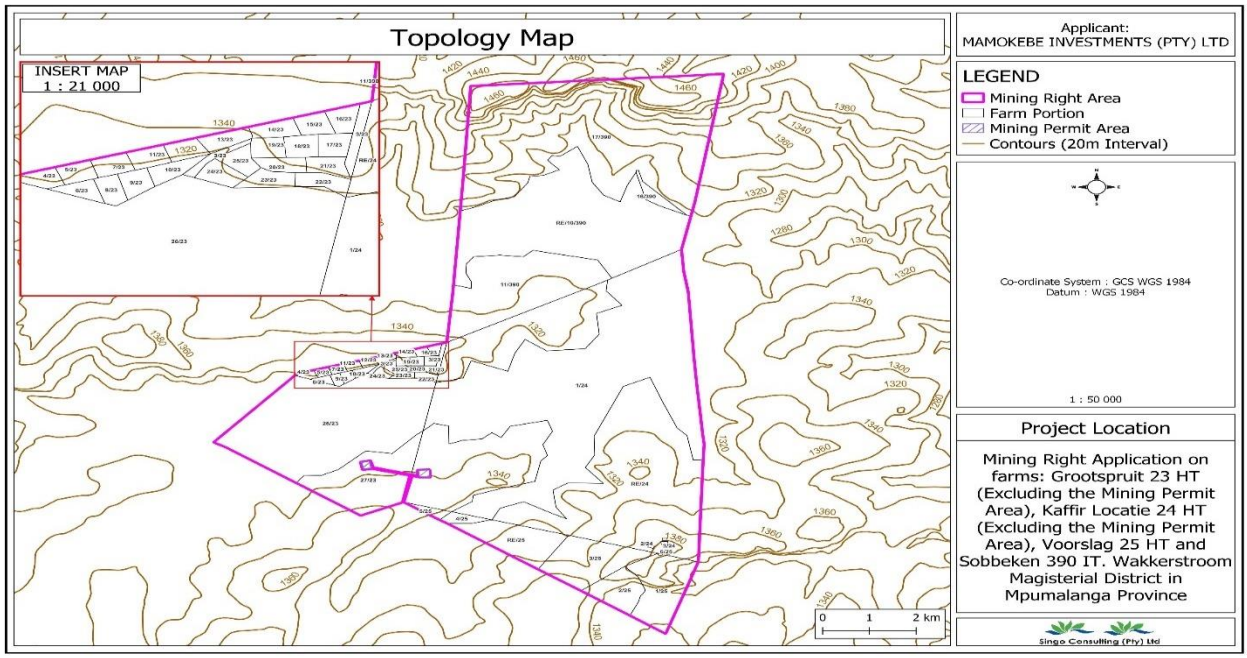


Figure 28: Area topology (Singo Consulting (Pty) Ltd, 2022)

11 AIR QUALITY

The ambient air quality assessment is based on available ambient air quality information identified in the literature review and data supplied by the DEA and the South African Weather Service (SAWS).Air quality in Mpumalanga is largely affected by a wide range of natural and anthropogenic sources of air pollution ranging from veld fires to industrial processes, agriculture, paper and pulp processing, vehicle use and domestic use of fossil fuels and biggest pollutants come from power generation and mining activities. Different pollutants are associated with each of the above activities, ranging from volatile organic compounds and heavy metals to dust and odours.

The project area is located in the Mpumalanga Highveld Priority Area, which has been declared as such by the Minister of Environment and Tourism in terms of Section 18 (1) and 57 (1) of the NEM:AQA. The area is situated near three power stations namely: Komati, Hendrina and Arnot and a mine called Kangra Coal Mine which are all situated in less than 100km from the mining right area. These three stations result a significant negative impact on air quality in the area and have specific air quality management actions rectifying the situation.

Ambient air quality in Mpumalanga is strongly influenced by regional atmospheric movements, as well as local climatic and meteorological conditions. The most important of these atmospheric movement routes are the direct transport towards the Indian Ocean and the recirculation over the sub-continents (Scholes, 2002). It is these climatic conditions and circulation movements that are responsible for the distribution and dispersion of air pollutants in Mpumalanga and between bordering provinces and countries.

12 NOISE

Measurements of the existing noise climate in accordance with the relevant SANS 10103:2008Code of practice within the Project area were made at 5 defined positions around
the site.
In summary the results of the noise baseline indicated that existing sources of noise in the
Project area are:

- Natural sounds of the bush or veld;
- Noise of existing mining activities near to the site; and
- Noise from roads (incl. domestic traffic as well as trucks carrying coal from the mines).

Noise and vibration are not monitored at the proposed site as it is not currently being mined, its currently used for agricultural activities. As with air quality, the surrounding mines and industries impact on noise levels from vehicular and mechanical equipment. The current ambient noise levels are generally comparable with the levels associated with farming activities. In the proposed coal mining area, the noise will be coming from vehicles moving to and from the site via the R543 road, site access local roads and other haul roads that will be constructed when the mine commerce. Other sounds will come from vibrations and through the use of technical equipment.

Figure 29: Sources of noise near the proposed mining area.

13 WATER RESOURCES

13.1 Drainage and Topography

Drainage

The hydrology surrounding the proposed area is of vital importance. In this context hydrology is all the surface waters appearing within and nearby the proposed project area, where a potential to be impacted upon by the project existence. The hydrology map, illustrates that the following water bodies exists within and nearby the project area:

- Channeled Valley Bottom wetlands
- Seep wetlands
- Non-perennial
- Perennial
- Depression
- Floodplain
- Dam

Channelled valley bottom wetlands are linear fluvial, net depositional valley bottom surfaces which have a straight channel with flow on a permanent, seasonal, or ephemeral/episodic basis (Rountree, Todd, Kleynhans, et al, 2007: iv). Seep wetlands re defined as wetlands that occur in area where the groundwater reaches the surface, Non-Perennial rivers are rivers that flow only in certain occasions, perennial rivers are rivers that flow all year round. Depression/ Pan wetlands are wetlands which can be identified of their edges or boundaries, these pans are usually small, often temporary and only contain water for short periods. They typically contain fresh to slightly saline water and they have been found to be important breeding sites for the near threatened bullfrog. They have been reported to be mainly covered by various sedges and grasses, i. Grass pans are usually overlooked and are seldom seen because of their non-perennial nature, while the appearance of the pan differs during wet and dry periods, and Floodplain is a feature which shows that an area is prone to flooding.

The hydrology of the study area shows the presence of water bodies, once identified the project before it commences, the designing of the area will be influenced by the nearby waterbodies. These identified water bodies also recharge groundwater in that area.

There will be procedures and guidelines put in place for this project to avoid the risk of water contamination through nearby wetlands, and the perennial river, such as ensuring strict management of waste material and buffering of 100 m. It will be advised on more mitigation measures to ensure the waterbodies as seen on the hydrology map are not contaminated. As shown in map, a 100m buffer will be applied around the water bodies present within the mining right area.

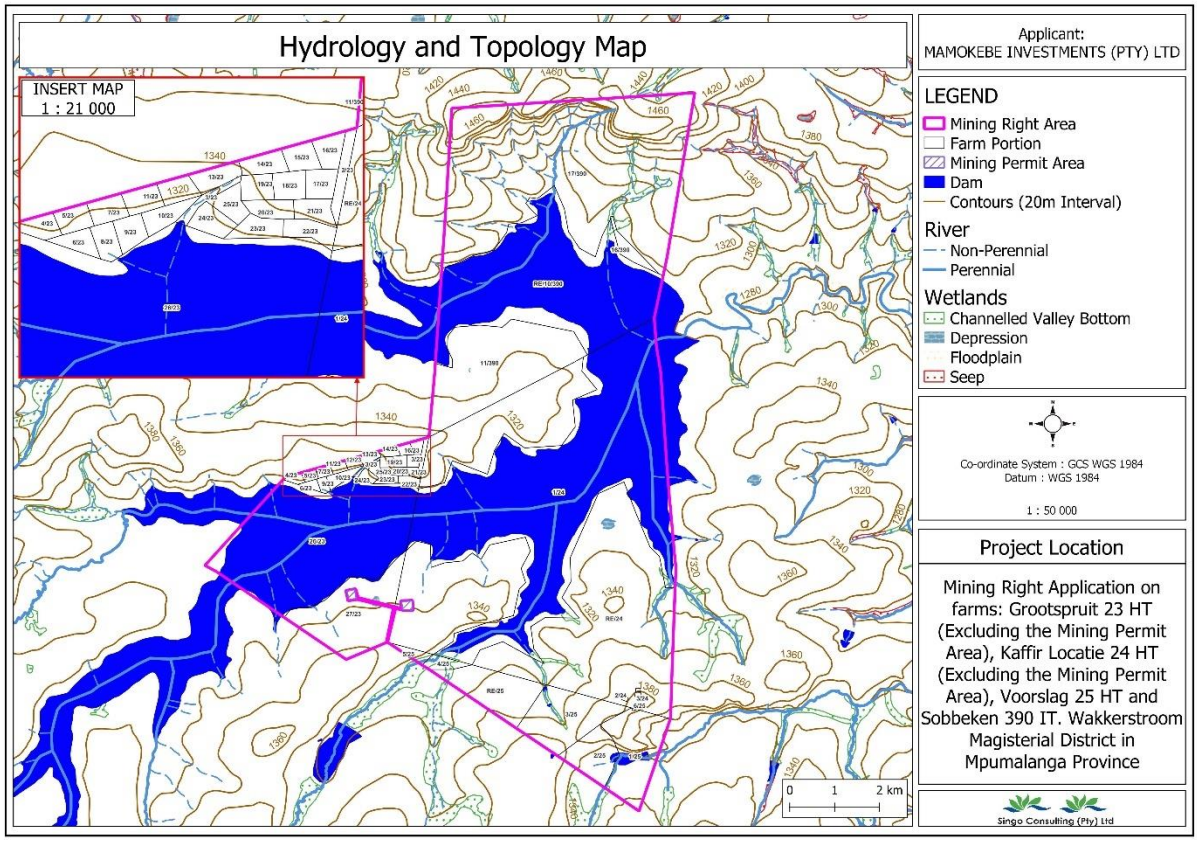


Figure 30: Drainage map with Buffer for the study area

Figure 31: Dam (A), Grass Pan (B), Non-Perennial River (C), Tap for domestic use (D)

Figure 31 above shows the observed waterbodies on site.

The survey area falls within Heyshope catchment. It falls within the B12A quaternary catchment. The area is enclosed with a lot of depressions within the mining area. The DWS has designated Present Ecological State (PES), Ecological Importance (EI) and Ecological Sensitivity (ES) for all the catchment areas nationally.

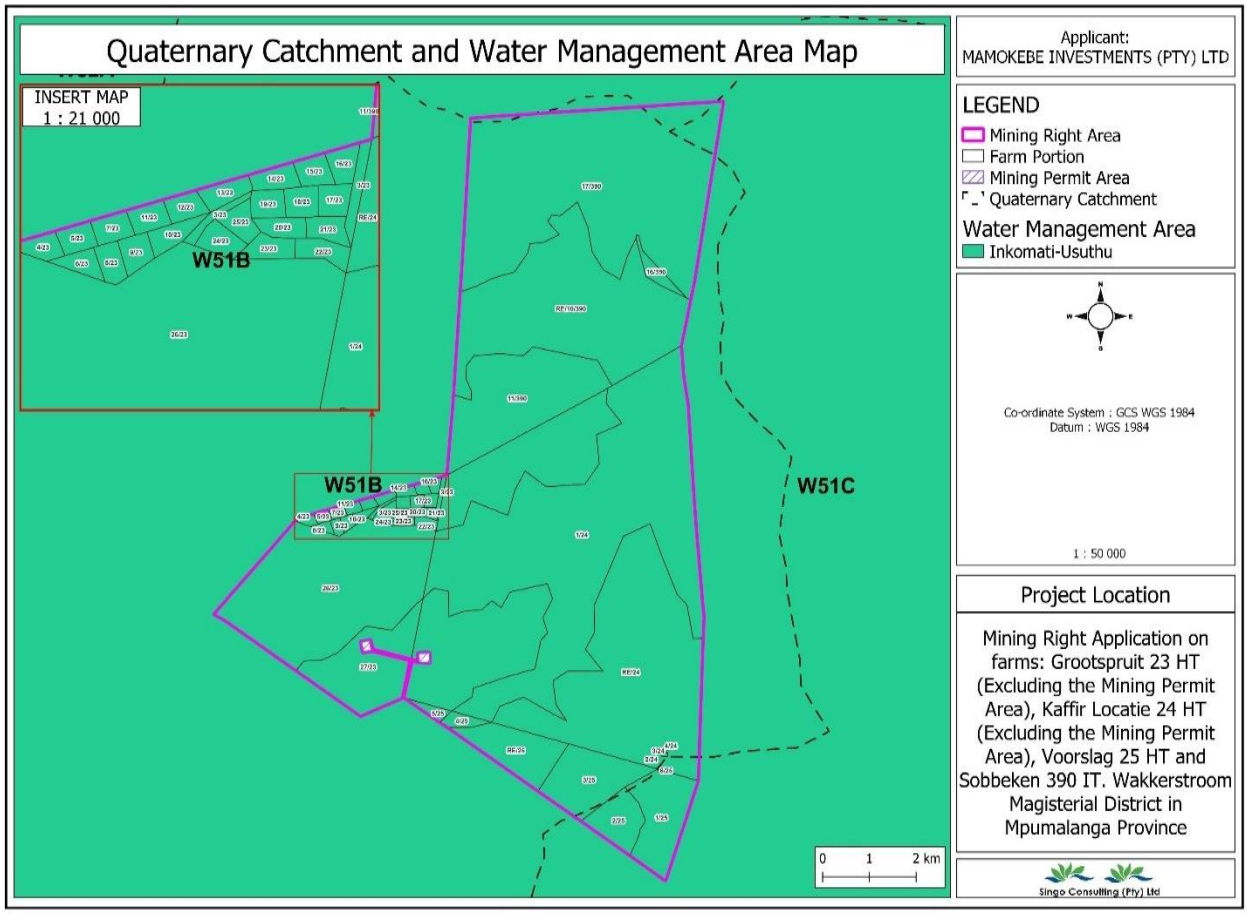


Figure 32: Water Management for Project area. (Quintenary Catchment B12A)

13.2 Hydrocensus

Hydrocensus was conducted on the 25th of May 2022 using hand GPS to determine the longitudinal, latitude and elevation for each borehole that was being observed. After recording the GPS coordinates, the measuring tape was used in taking all collar height measurements of the boreholes. The level meter together with a measuring tape in order to get the water level. The Hydrocensus main objective is to record the groundwater data available i.e., counting the number of boreholes if present, recording their names, conditions, coordinates as well as measuring the water levels. This helps to identify the baseline groundwater use and users within the study area. A detailed Hydrocensus will be conducted within the project area to obtain a representative population of the boreholes in the area. During the Hydrocensus, all available details of boreholes, conditions and water samples will be collected and recorded. A study within the mining right area and within 2km out of the area. Surface water bodies like wetlands, pans and rivers were also recorded during the hydrocensus activity. These include:

- Borehole locality

- Owner and property details
- Borehole depth
- Rest water level
- Borehole usage
- Borehole status, drilling date and equipment
- Groundwater abstraction rates and
- Electrical conductivity, pH and groundwater sample details.

Singo Consulting will hire a specialist to do a detailed a study in the EIA process.

Monitoring Boreholes will be sited before the commencement of mining processes. These boreholes will be for monitoring of groundwater contamination migration. Various tools will be used in collecting the data such as TLC, hand GPS, measuring tape and a bailer.

The pictures below illustrate proof of the field work conducted on site:

Figure 33: Wetland and Stream sampling in and outside of the mining right area

❖ Groundwater Usage

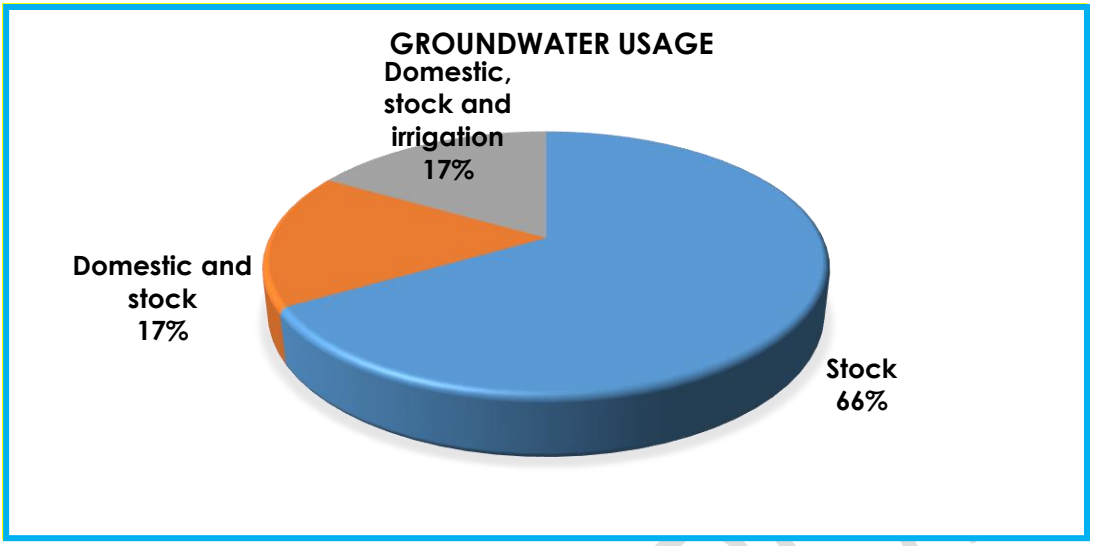


Figure 34: Groundwater usage

❖ Water Balance

✓ Groundwater Sampling

A Piper and Durov diagrams will be used to graphically depict the overall composition of the groundwater in the project area based on its major cation and anion composition. To present information on the plots, concentrations in milligrams per litre for major anions and cations are converted to milli-equivalents per litre and then plotted in the lower ternary diagrams to show the percentage contribution of each major ion; one for anions and one for cations. The locations of each sample in the anion and cation ternary fields are then projected into the plots. Waters that lie in similar locations in the plots are interpreted to be of the same origin and general composition. The groundwater concentration of the area is presented on the diagrams to get the water type.

Base Flow

Base flow is a measure of the volume of groundwater discharged into a river or wetland, but it is recognised that groundwater contributes to the base flow component of river flow. The base flow results or measurements will be made available after the specialist has completed the hydrocensus study.

- ✓ Dewatering of opencast mining areas

Dewatering of aquifers surrounding the opencast areas will occur as a result of groundwater flow under the influence of gravity to the bottom of the pit. The radius of influence from the pit areas is calculated as a function of the hydraulic conductivity (typically 0.1m/d in the coal seams (Hodgson & Krantz, 1998), storativity of the weathered aquifer (0.01), the depth of the pit (rather drawdown that will be achieved during life of mine) and the time that dewatering will take place.

Figure 35: Groundwater is used for cattle feeding, agriculture and other domestic uses.

Figure 36: Crop Farming in the Mining Right Area.

13.3 Acid mine drainage generation capacity

Acid mine drainage (AMD) poses a serious threat at mines, especially coal mines where there is an abundance of sulphide minerals. AMD is expected to occur due to the extraction of sulphide ores like chalcopyrite, pyrite or arsenopyrite ores. As such, AMD studies must be included as one of the impacts to be mitigated in the mining area. The presence of AMD in a mining area is indicated by a drop in pH. The following equations show the process of AMD in four steps. This process is self-propagating until the ferric iron or pyrite is depleted. Generally, when pyrite combines with oxygen and water, AMD forms. If AMD gets into surface waterways, the acidity and metal content can produce significant environmental problems over large distances. Once AMD reaches surface water, the acidity may cause significant environmental problems over long distances and destroy the aquatic life.

1. Oxidation of Polysulfide to sulphate by O2

   $2FeS2 + 7O2 + 2H2O \rightarrow 2Fe2+ + 4SO42- + H+$

2. Oxidation of Fe2+ (ferrousiron) to Fe3+ (ferriciron) by O2

   $4Fe2+ + O2 + 4H+ \rightarrow 4Fe3+ + 2H2O$

3. Hydrolysis of iron (ferriciron→ferrichyfroxide, “yellowboy”)

   $4Fe3+ + 12H2O \rightarrow 4Fe(OH)3 + 12H+$

4. Oxidation of polysulfide to sulphate by Fe3+ at low pH

   $FeS2 + 14Fe3+ + 8H2O \rightarrow 15Fe2+ + 16H+$

Total: $FeS2 + 15/4\ O2 + 7/2H2O \rightarrow 2Fe(OH)3 + 2SO42- + 4H+$

AMD can be treated in various ways, including:

- An increase in pH or raising alkalinity. This can be achieved by adding lime or other alkaline materials to neutralise the acidity (like $NaCO_3$ or NaCl).
- Removing metals like iron, zinc and aluminium from water.
- Conducting passive (limestone leach beds) and active (treatment plants) AMD treatments.

The study area falls under the Karoo Basement and is fractured and influenced by dykes. For effective borehole yields, the boreholes must target the fracture zones in this area.

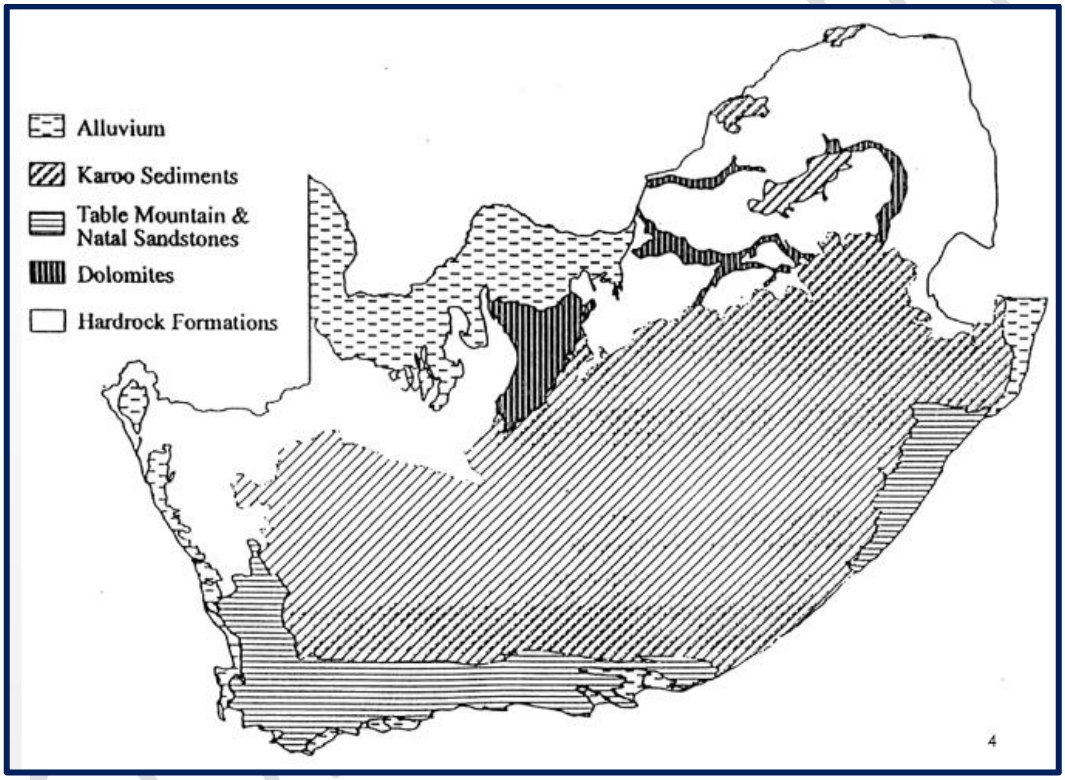


Figure 37: Aquifers of South Africa

13.4 Geohydrology

13.4.1 Regional Geohydrology

The natural geohydrological system within the Witbank Coalfield consists of three superimposed aquifers namely an upper weathered aquifer, a fractured Karoo aquifer and a fractured pre-Karoo aquifer (Hodgson & Krantz, 1998). The upper weathered aquifer consists of material weathered in situ and

transported as part of the erosion process. The depth to weathering is generally between 1m and 15m from surface and the water level varies between 5m and 10m below ground level (mbgl). The flow mechanism within the weathered aquifer is porous flow (primary aquifer type). The water quality is generally good due to years of dynamic groundwater flow resulting in the leaching of soluble salts.

The fractured Karoo aquifer consists of the various lithologies of siltstone, shale, sandstone and the coal seams. The pores of the geological units are generally well cemented, and the principle flow mechanism is fractured flow along secondary structures e.g. faults, bedding plane fractures etc. The intrusion of the fractured aquifer by dolerite dykes and sills has led to the formation of preferential flow paths along the contacts of these lithologies due to the development of cooling joints. The intrusions of dikes crush the lithologies on which they intrude through, forming cracks where water can flow through.

The fractured pre-Karoo aquifer is separated from the overlying fractured Karoo aquifer by Dwyka tillites which act as an aquiclude where present. The flow mechanism is fracture flow as can be expected from the crystalline nature of the granite rocks. The water quality is generally characterized by high fluoride levels which restricts exploitation of this aquifer in combination with the general low yields, deep drilling and the low recharge (Grobbelaar et al, 2004). Mining of the coal seams has resulted in the establishment of an artificial aquifer system which generally dominates the groundwater flow on a local and regional scale. Below is a summary of the geohydrological system.

5.4.1.1 Karoo aquifers and aquiclude

a. Shallow weathered zone aquifers (Overburden/weathered)

b. Fractured aquifers

I. Upper fractured aquifer

II. Dolerite sill (aquiclude)

III. Deep fractured aquifer

c. Coal mine artificial aquifer

5.4.1.2 Shallow weathered Karoo aquifer (unconfined)

Overburden/Weathered Zone Aquifer

- The weathered zone of the Karoo sediments hosts the unconfined or semi-confined shallow weathered Karoo aquifer. Water levels are often shallow, and the water quality is good due to direct rainfall recharge and dynamic groundwater flow through the unconfined aquifer in weathered sediments, which makes it also easily exposed to contamination. Water intersections in the weathered aquifer is mostly encountered above or at the interface to fresh, where the vertical infiltration of water is typically limited by impermeable layers of weathering products and capillary forces, with subsequent lateral movement following topographical gradients.
- Localised perched aquifers may occur on clay layers or lenses at shallower depth (soil zone) but are due to their localised and detached nature of no further interest in the context of the present study.
- Alluvial deposits occur in most valley bottoms associated with surface water courses, but their regional coverage is little. These unconsolidated alluvial sediments consist of of clay, sand, gravel and boulder sized grains.

Upper fractured aquifer unconfined to semi-confined

- The weathered aquifer is underlain by a deeper semi-confined to confined fractured aquifer in which fracture flow dominates. The fractured Karoo aquifer consists of the various lithologies of siltstone, shale, sandstone and the coal seams, where groundwater flow is governed by secondary porosities like faults, fractures, joints, bedding planes or other geological contacts, while the rock matrix itself is considered impermeable. Geological structures are generally better developed in competent rocks like sandstone, which subsequently show better water yields than the less competent silt or mudstones. Not all secondary structures are water bearing due to e.g compressional forces from the neo-tectonic stress field overburden closing the apertures.
- Although the Karoo aquifer supports domestic and stock water requirements in the area, their physical and hydraulic characteristics preclude large scale groundwater exploitation for e.g irrigation.
- The strike frequency analysis for the Karoo rocks indicates a predominant shallow groundwater occurrence, mostly in the first 50 meters below the water table (Woodford and Chevallier, 2002)

13.4.2 Local Geohydrology

Two distinct aquifer types exist which are shallow weathered Karoo aquifer (unconfined) and Upper fractured aquifer (unconfined to semi-confined) (less than 70 to 90mbgl).

1. Shallow weathered Karoo aquifer (unconfined)

✓ Overburden/Weathered Zone Aquifer

- The weathered zone of the Karoo sediments hosts the unconfined or semi-confined shallow weathered Karoo aquifer. Water levels are often shallow (few meters below ground level) and the water quality good due to direct rainfall recharge and dynamic groundwater flow through the unconfined aquifer in weathered sediments, which makes it also vulnerable to pollution.
- Water intersections in the weathered aquifer are mostly encountered above or at the interface to fresh, where the vertical infiltration of water is typically limited by impermeable layers of weathering products and capillary forces, with subsequent lateral movement following topographical gradients.
- Localized perched aquifers may occur on clay layers or lenses at shallower depth (soil zone) but are due to their localized and detached nature of no further interest in the context of the current study.
- Alluvial deposits occur in most valley bottoms associated with surface water courses, but their regional coverage is small. These unconsolidated alluvial sediments comprise of clay, sand, gravel, and boulder sized grains.

2. Fractured aquifer

✓ Upper fractured aquifer (unconfined to semi-confined) (less than 70 to 90mbgl)

- The weathered aquifer is underlain by a deeper semi-confined to confined fractured aquifer in which fracture flow dominates. The fractured Karoo aquifer consists of the various lithologies of siltstone, shale, sandstone and the coal seams, where groundwater flow is governed by secondary porosities like faults, fractures, joints, bedding planes or other geological contacts, while the rock matrix itself is considered impermeable.
- Geological structures are generally better developed in competent rocks like sandstone, which subsequently show better water yields than the less competent silt- or mudstones. Not all secondary structures are water bearing due to e.g compressional forces from the neo-tectonic stress field overburden closing the apertures.
- Although the Karoo aquifer supports domestic and stock water requirements in the area, their physical and hydraulic characteristics preclude large scale groundwater exploitation for e.g irrigation.

The strike frequency analysis for the Karoo rocks indicates a predominant shallow groundwater occurrence, mostly in the first 50 meters below the water table (Woodford and Chevallier, 2002)

The following aquifer description extracted from the previously stated references is relevant to the project area:

Figure 38: Aquifer description of the project area

Aspect	Description
The weathered aquifer	The Ecca sediments are weathered to depths between 5 and 12m below surface throughout the area. The upper aquifer is associated with this weathered zone and water is often found within a few meters below surface. This aquifer is recharged by rainfall. The percentage based on work in other parts of the country by Kirchner et al. (1991) and Bredenkamp (1995). It should, however, be emphasized that in a weathered system, such as the Ecca sediments, highly variable recharge values can be found from one area to the next. This is attributed to the composition of the weathered sediments, which range from coarse-grained sand to fine clay. Based on the hydrogeological information obtained from the boreholes drilled at Hendrina, the thickness of the weathered zone was approximated to 15m.
Fractured Ecca Aquifer	The pores within the Ecca sediments are well-cemented and do not allow any significant flow of water. All groundwater movement therefore occurs along secondary structures, such as fractures and joints in the sediments. These structures are better developed in competent rocks, such as sandstone; hence the better water-yielding properties of the latter rock type. It should, however, be emphasized that not all secondary structures are water bearing. Many of these structures are constricted because of compressional forces that act within the earth's crust.

Coal Seam Aquifer	Hodgson et al. (1998) states that of all the unweathered sediments in the Ecca, the coal seams often have the highest hydraulic conductivity. Since the aquifer permeability and storativity of the seam will also be enhanced by mine excavation, it has been simulated as a separate aquifer with an approximate permeability of 0.1m/d. This permeability is in the same order of magnitude estimated for the coal seams by Hodgson et al. (1998).

- ✓ WETLAND

Wetlands specialist will be hired to conduct a detailed study of the wetlands in the proposed area during the EIA process. The results will be made available. The total areas of wetlands will be recorded, the figure will be made and the information will be made available

There are plenty of ponds and wetlands in the Ngema Village. There are flowing streams that feed the dam which is approximately 2 km away from the Sobbeken part that covers the Ngema Community. There are wetlands within the project area. Therefore, the project area was found to be in line with the form of land and vegetation where Highveld grassland is the dominant terrestrial natural habitat and seeps, wetlands are present on the landscape's mid-to-lower slopes. This is generalized in Figure below where a typical change in soil and floral composition characterizes the landscape. The next section discusses the ecological conditions of the area.






Figure 39: Wetlands Identified In an around the project Area

14 TERRESTRIAL ECOLOGY

14.1 Regional vegetation

14.1.1 Overview of the biome type

Singo Consulting (Pty) ltd has appointed a specialist to conduct a thoroughgoing study for ecology, however as per the desktop study conducted in the premises of Singo consulting in reference to Mucina and Rutherford (2006) it was noted that the project area falls in a grassland biome which is called the North Eastern Mountain Grassland Biome. The grassland biome is the second largest biome in South Africa, covering 28.4% of the country or more than 360 000 km^2. The grassland biome is found in summer rainfall areas, from sea level to above 2,000 m. The grassland biome is rich in plants, with nearly 3,800 plant species recorded. Because fires are frequent, a few woody plants like trees are usually found in mountains, along the riverbanks and in rocky grounds. C4 grasses dominate the biome, except at the highest altitudes where C3 grasses are more prominent.

In the past, grasslands housed large herds of animals like the black wildebeest, blesbok and eland. Today, these animals mainly survive in nature reserves and on game farms. Grasslands are rich in birds, many of which eat seeds, e.g black korhaan, blue crane and helmeted guinea fowl. Nearly half of the original grassland biome has been ploughed to plant maize, sunflowers, sorghum and wheat. Grassland supports livestock farming, including cattle and sheep. Most of Gauteng and the Mpumalanga Highveld, which have been developed for mining, industry and urban development, forms part of the North Eastern Mountain Grassland biome.

The grassland biome has extremely high biodiversity, second only to the fynbos biome. Rare plants are often found in the grasslands, especially in the escarpment area. These rare species are often endangered, and mainly comprise endemic geophytes or dicotyledonous herbaceous plants. Very few grasses are rare or endangered. The scenic splendour of the escarpment region attracts many tourists.

14.1.2 Broad vegetation classification

The vegetation in the district consists of a great expanse of ancient grassland which is thought to date back well before the break-up of Earth's original land mass (Gondwanaland) into continents and oceans. The grassland is largely a product of the climate in the rolling hills, escarpments, and valleys of the high plateau of southeast of South Africa. Significantly, the grassland biome accounts for 16.5 percent of the

nation's total land area. Importantly, for both ecological functioning and economic development, the upland grassland is a great collector of rainwater for South Africa. The grasslands hold rainwater as ground water, or in the wetlands and seasonal pans. Water is then released slowly throughout the year, including the dry season. More specifically, the grassland biome which characterized much of the district largely consist of number of broad veld types constituting the grassland biome as well as other veld types occurring within the district, may be described as follows.

• The western corner of the district (in the region of Piet Retief) is characterized by North – Eastern sandy Highveld, Bankenveld and Turf Highveld.

• The central-western extents of the district from (Piet Retief to Volksrust) are dominated by Turf Highveld.

• The central extents (Ermelo to Wakkerstroom) are dominated by sandy Highveld, with an extensive area of sour veld occurring between Amersfort and Wakkerstroom.

• The Central-Eastern extents of the district (from as far north as Baadplaas and down to Piet Retief) are dominated by Sandy Highveld and Piet Retief Sour Veld. An extensive area of Sandveld occurs between Sheepmoor and Dirkiesdorp.

• The South-Eastern corner of the district is characterized by north Tall Grassveld.

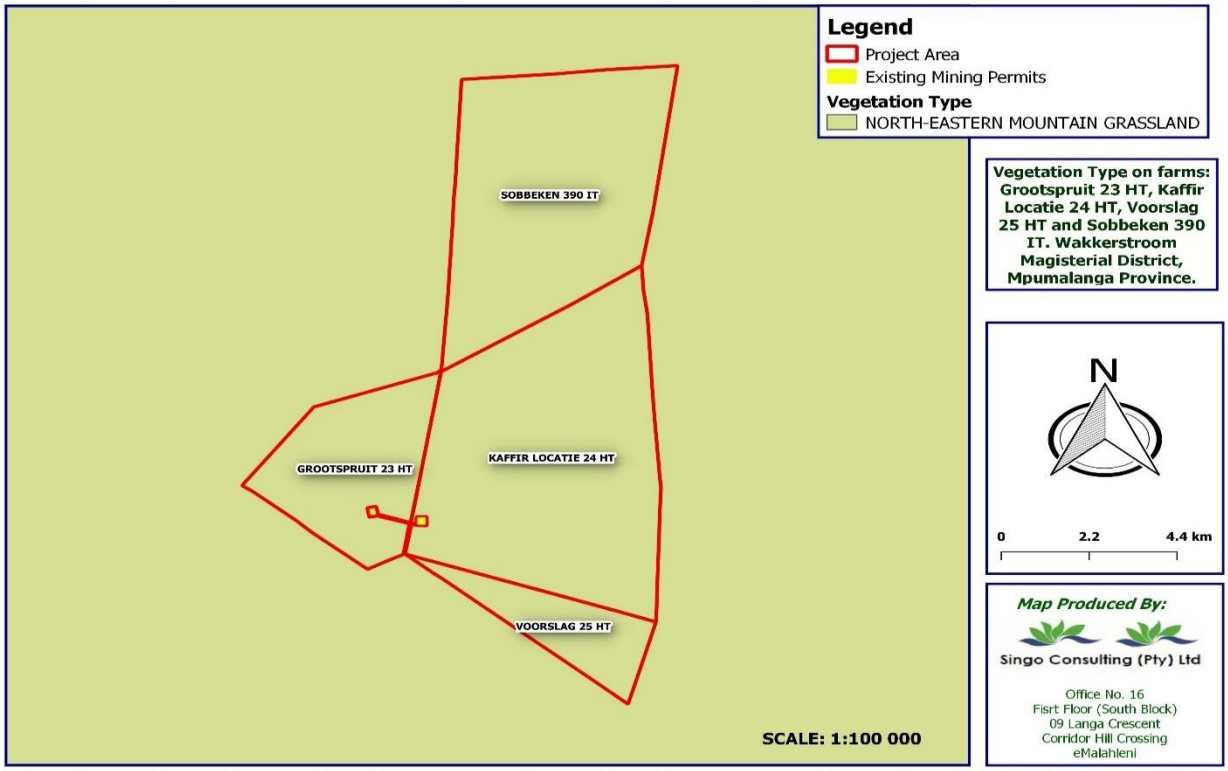


Figure 40: Broad vegetation classification for the site

14.2 Terrestrial threatened ecosystem

The South African National Biodiversity Institute (SANBI), in conjunction with the DEA, released a draft report in 2009 entitled *Threatened Ecosystems in South Africa: Descriptions and Maps*, to provide background information on the list of threatened ecosystems (SANBI, 2009). The purpose of this report was to present a detailed description of each of South Africa's ecosystems and to determine their status using a credible and practical set of criteria. The following criteria were used to determine the status of threatened ecosystems:

- Irreversible loss of natural habitat
- Ecosystem degradation and loss of integrity
- Limited extent and imminent threat
- Threatened plant species associations
- Threatened animal species associations
- Priority areas for meeting explicit biodiversity targets as defined in a systematic conservation plan

In terms of Section 52 (1) (a) of the NEM:BA, a new national list of ecosystems that are threatened and in need of protection was gazetted on 9 December 2012 (Government Notice 1002 (Driver et. al., 2004)). The list classified all threatened or protected ecosystems in South Africa in four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), or protected. The purpose of categorising these ecosystems is to prioritise conservation areas in order to reduce the rates of ecosystem and species extinction, and prevent further degradation and loss of structure, function, and composition of these ecosystems. It is estimated that 9.5% of South African ecosystems are threatened, with CR and EN ecosystems accounting for 2.7%, and VU ecosystems 6.8% of the land area. It is vital that Threatened Terrestrial Ecosystems inform proactive and reactive conservation and planning tools, such as Biodiversity Sector Plans, municipal Strategic Environmental Assessments (SEAs), Environmental Management Frameworks (EMFs), EIAs and other environmental applications (Mucina et al., 2006). According to data sourced from SANBI, the proposed project is situated in a VU ecosystem (Eastern Highveld Grassland).

The Wakkerstroom region (Maputo land – Pondo land region) is considered an area of sensitive vegetation and faunal habitats and is situated approximately 25km towards the east and southeast of the study area, (ENPAT, 2001). This area of sensitive vegetation and associated faunal communities is not considered to be threatened by the proposed development. The study area is situated with the African Grasslands/ Ekengela Initiative Transition Zone, rendering all areas of natural grassland as being sensitive (ENPAT, National Database, Biosphere).

14.3 Methodology and reporting

The information provided in this terrestrial biodiversity report is based on observations made during the field survey and a review of the available reports containing known and predicted biodiversity and wetland information on the study area. Various spatial data sets were analysed, and relevant information was extracted for the study area. The various approaches and aspects considered are detailed in the following.

14.3.1 General

A desktop survey utilising aerial images and photography was undertaken to assemble background information on the different features and vegetation types in the proposed project footprint. The site was then assessed in order to record the true floristic reflection of the study area.

14.3.2 Vegetation

The vegetation report was done on the mining permit (MP 30/5/1/3/2/ 11219 MP) of the applicant. The report was as follows: The PRECIS list of plants recorded in the quarter degree grid squares (2629BB) was obtained from SANBI. This list was consulted to verify the record of occurrence of the plant species seen on site. Since this area fall under the grassland biome, the land consists of forbs and grasses (Poaceae) but not fully including the cultivated areas. A desktop study of the habitats of the red-listed and orange-listed species known to occur in the area was conducted prior to site assessment. The vegetation types of Mucina & Rutherford (2012) were also used as reference, but where necessary communities are named according to the recommendations for a standardised South African syntaxonomic nomenclature system (Brown, L.R., Du Preez, P.J., Bezuidenhout, H., Bredenkamp, G.J., Mostert, T.H.C., and Collins, N.B. 2013). By combining the available literature, stratification of vegetation communities was possible. A full study will be undertaken on EIA Phase.

14.3.3 Fauna survey

It is hard to track mammals and reptiles due to the fact that they hide from people or either they are being secretive, nocturnal, hibernate (reptiles), migrate (birds) or prefer specific habitats, which makes sampling and identification difficult.

14.3.4 Mammals

Records of all mammal species recorded in the quarter degree grid squares were obtained from the Virtual Museum (VM) website of the Animal Demographic Unit of University of Cape Town prior to the site visits. The site assessment was conducted for mammal species diversity by direct and indirect methods, like mammal sightings, burrows, holes and verification by mammal book (Skinner and Chimimba, 2005). No trapping was conducted during the field survey. The only mammals observed were cows.

14.3.5 Sensitivity map

Following the site visit, an ecological sensitivity map of the site was generated by integrating the information collected on-site with the available biodiversity information available in the aforementioned literature and various spatial databases. The ecological sensitivity of the different units identified in the mapping procedure was rated according to the following scale:

- ***Low***. Units with a low sensitivity is likely to have a negligible impact on ecological processes and terrestrial biodiversity. This category is reserved for areas where the natural vegetation has already been transformed, usually for intensive agricultural purposes like cropping. Most types of development can proceed in these areas with little ecological impact.
- ***Medium***. Includes areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact (like erosion) is low. Development in these areas can proceed with relatively little ecological impact if appropriate mitigation measures are taken.
- ***High***. Includes areas of natural or transformed land where a high impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area. Development in these areas is highly undesirable and should only proceed with caution as it may not be possible to mitigate all impacts appropriately.
- ***Very high***. Includes critical and unique habitats that house rare/endangered species or perform critical ecological roles. These areas are no-go areas from a developmental perspective and should be avoided at all costs.

14.4 Impact assessment methodology

The significance of the impacts will be assessed using the following impact assessment guideline:

Table 10: Impact assessment

Nature of the impact		
Positive	+	Impact will be beneficial to the environment (a benefit).
Negative	-	Impact will not be beneficial to the environment (a cost).
Neutral	0	Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect.
Magnitude		
Minor	2	Negligible effects on biophysical or social functions / processes. Includes areas / environmental aspects which have already been altered significantly and have little to no conservation importance (negligible sensitivity*).
Low	4	Minimal effects on biophysical or social functions/processes. Includes areas/ environmental aspects which have been largely modified, and/or have a low

		conservation importance (low sensitivity*).
Moderate	6	Notable effects on biophysical or social functions/processes. Includes areas/ environmental aspects which have already been moderately modified and have a medium conservation importance (medium sensitivity*).
High	8	Considerable effects on biophysical or social functions/processes. Includes areas / environmental aspects which have been slightly modified and have a high conservation importance (high sensitivity*).
Very high	10	Severe effects on biophysical or social functions/processes. Includes areas/ environmental aspects which have not previously been impacted upon and are pristine, thus of very high conservation importance (very high sensitivity*).
Extent		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3-5 km of the site.
Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.
Duration		
Immediate	1	Effect occurs periodically throughout the life of the activity.
Short term	2	Effect lasts for a period 0 to 5 years.
Medium term	3	Effect continues for a period between 5 and 15 years.
Long term	4	Effect will cease after the operational life of the activity either because of natural process or by human intervention.
Permanent	5	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Probability of occurrence		
Improbable	1	Less than 30% chance of occurrence.

Low	2	Between 30 and 50% chance of occurrence.
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless or in spite of any mitigation measures.

Once the impact criteria have been ranked for each impact, the significance of the impacts will be calculated using the following formula:

Significance Points (SP) = (Magnitude + Duration + Extent) x Probability

The significance of the ecological impact is calculated by multiplying the severity rating with the probability rating. The maximum value that can be reached through this impact evaluation process is 100 SP (points). The significance for each impact is rated as High (SP≥60), Medium (SP=31-60) and Low (SP<30) significance (see

).

Table 11: Definition of significance rating

Significance of predicted NEGATIVE impacts		
Low	0-30	Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation and as such have a limited influence on the decision.
Medium	31-60	Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated.
High	61-100	Where the impact will definitely have an influence on the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation.
Significance of predicted POSITIVE impacts		
Low	0-30	Where the impact will have a relatively small positive effect on the environment.
Medium	31-60	Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment.
High	61-100	Where the positive impact will improve the environment relative to baseline conditions.

14.5 Assessment results

14.5.1 Habitant Found on Site

A large percentage of the project area has been transformed through agricultural activities. Almost 80% of the project area is currently used for agricultural purposes e.g maize farming. However, at least 20% of the project area is under natural grassland. These natural areas are potential habitat for rare and threatened species. There are also habitats for barrowing animals hence we saw small holes on land which signifies that there are barrowing animals that occupy the area.

Figure 41: Habitant Found on Site

14.5.2 Vegetation on site

Three vegetation communities were identified during the site assessment. They were recognised based on physiognomy, moisture regime and species composition and disturbance characteristics. These vegetation communities are:

- Cultivated/disturbed area
- Vegetation associated with watercourses (riparian and moist grassland)
- Natural (untransformed) grassland

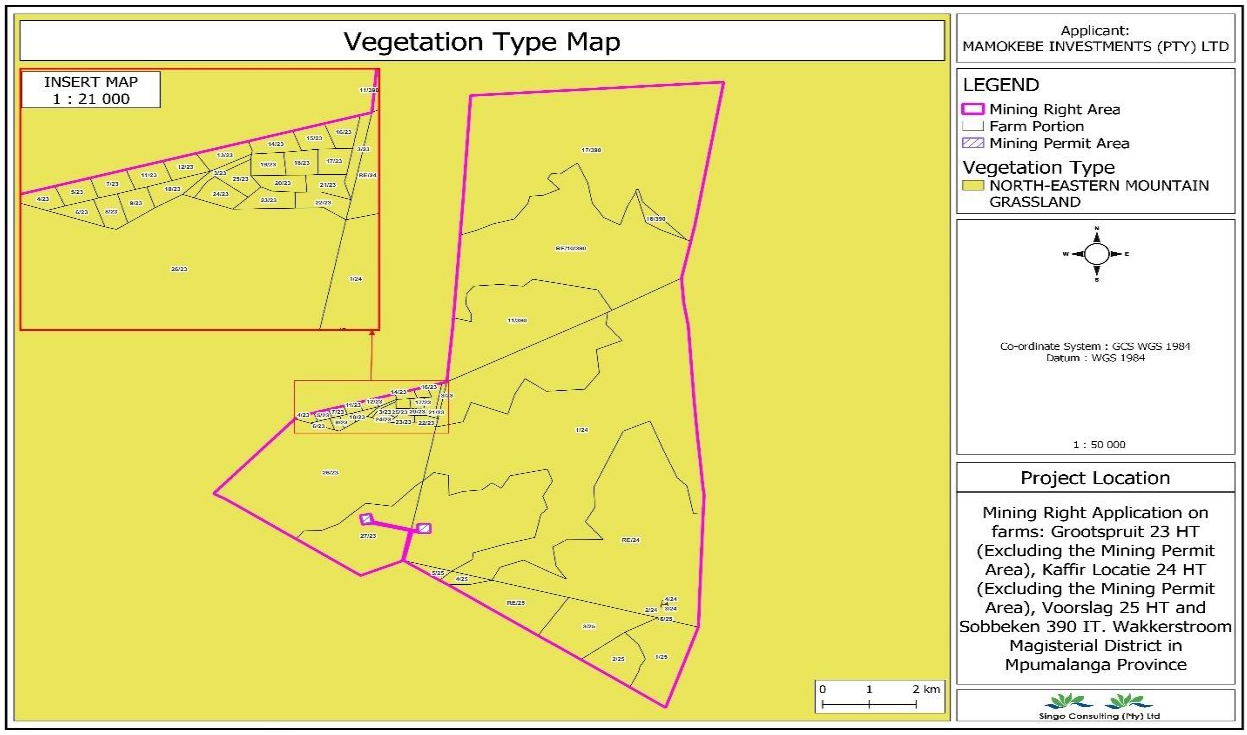


Figure 42: Site vegetation type

Figure 43: Vegetation pictures onsite

The characteristics of each vegetation community are discussed in the following sections:

14.5.2.1 Cultivated/disturbed area

These areas are cultivated or used for grazing by the local community cows, goats, sheep and horses. They are also used for farming/ agriculture. At the boundaries of this vegetation community is a mixture of invasive, exotic plants, as well as pioneer and sub-climax indigenous grass species. Amongst these, common grasses noted include

Figure 44: Grazing animals and crop farming on site

14.5.2.2 Red data/endemic species

The Threatened Plant Species Programme (TPS) is currently revising all threatened plant species assessments made by Craig Hilton-Taylor (1996), using IUCN Red Listing Criteria modified from Davis et al. (1986). According to the TPS interim Red Data list of South African plant taxa, there are over 201 Red Data listed species within Mpumalanga Province, of which 14 species are Critically Endangered (CE), 19 Endangered (EN) and 59 are Vulnerable (VU). Singo Consulting will hire a specialist to do this study during the EIA process

14.5.2.3 Vegetation associated with watercourses

A specialist will be hired to do a detailed study during the EIA process

Figure 45: Vegetation occurs along the wetland and drainage lines on site

Sensitivity aspects

- This vegetation unit in the study area has a high ecological functioning.
- The suitability of this community for red data/protected species is considered medium although no red data or protected species were recorded.
- The conservation importance of this community is considered medium to high. All the proposed buffer-zones as per the wetland assessment report should be considered to conserve this vegetation unit.

- Provides habitat for aquatic animals, as well as a water source for other animals.

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			

Table 12: General overview of the Sensitivity Aspects

14.5.2.4 Natural/untransformed grassland

This vegetation covers most of the land on site. Much of the natural habitat represented in the project area comprises untransformed grassland and occurs in areas where the grassland has never been disturbed. But there are species which appears or grow when the area has been disturbed before that were observed on site. A hired specialist will confirm the plant species in those areas.

Sensitivity aspects

- The open grassland has an ecological functioning of medium.
- The suitability of this community for red data/protected species is considered medium to high due to the presence of provincially protected plants.

Figure 46: Indication of the dry natural grassland still occurring on-site

14.5.3 Invasive alien plants

Declared weeds and invaders have the tendency to dominate or replace the herbaceous layer of natural ecosystems, transforming the structure, composition and function of natural ecosystems. Therefore, it is important that all these transformers be eradicated and controlled by means of an eradication and monitoring programme. Some invader plants may degrade ecosystems through superior competitive capabilities to exclude native plant species (Henderson, 2001).

According to the published Alien and Invasive Species regulations in terms of Section 97(1) of the NEM:BA, there are four categories of problem plants, namely:

- *Category 1a:* These plants are high-priority emerging species requiring compulsory control. All breeding, growing, moving and selling are banned.
- *Category 1b:* These plants are widespread invasive species controlled by a management programme.
- *Category 2*: These plants are invasive species controlled by area. Can be grown under permit conditions in demarcated areas. All breeding, growing, moving, and selling are banned without a permit.
- *Category 3*: These plants are ornamental and permitted on a property but may not be planted or sold.

List of the names of the alien species and the various NEM:BA categories that will be recorded in the study. Their specialist will be hired to do a study and the information will be made available

14.5.4 Description of the CBAs

Critical Biodiversity Areas (CBAs) have terrestrial and aquatic landscape features that are critical in retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007). These form the key output of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision-making tools.

The primary purpose of CBAs is to inform land-use planning and the land-use guidelines attached to CBAs' aim to promote sustainable development by avoiding loss or degradation of important natural habitat and landscapes in these areas and the landscape as a whole. CBAs can be used to inform protected area expansion and development plans. The use of CBAs here follows the definition laid out in the guideline for publishing bioregional plans (Anon, 2008):

- "Critical biodiversity areas (CBAs) are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses."
- "Ecological support areas (ESA's) are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas."

The guideline for bioregional plans defines three basic CBA categories based on three high-level land management objectives.

Table 13: Framework for linking spatial planning categories (CBAs) to land-use planning and decision-making guidelines based on high-level land biodiversity management objectives

CBA category	Land management objective
PA & CBA 1	Natural landscapes: • Ecosystems and species fully intact and undisturbed.

	• These are areas with high irreplaceability or low flexibility in terms of meeting biodiversity pattern targets. If the biodiversity features targeted in these areas are lost, targets will not be met. • These are landscapes that are at or past their limits of acceptable change.
CBA 2	Near-natural landscapes: • Ecosystems and species largely intact and undisturbed. • Areas with intermediate irreplaceability or some flexibility in terms of area required to meet biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising our ability to achieve targets. • These are landscapes that are approaching but have not passed their limits of acceptable change.
Ecological Support Areas (ESAs)	Functional landscapes: • Ecosystems moderately to significantly disturbed but still able to maintain basic functionality. • Individual species or other biodiversity indicators may be severely disturbed or reduced. • These are areas with low irreplaceability with respect to biodiversity pattern targets only.
Other Natural Areas (ONAs) and transformed Grassland	Production landscapes: manage land to optimise sustainable utilisation of natural resources.

According to the Mpumalanga conservation plan, the majority of the site is located in a disturbed area since cultivation is taking place on-site with the remainder of the site classified as a CBA. All-natural grassland, the rocky outcrop and vegetation associated with watercourses in the project area falls in CBAs according to the Mpumalanga Biodiversity Sector Plan (MBSP). These are the most sensitive habitats in the project area and represent areas where ecological impacts will be most significant. Sensitive areas will be buffered out and, as most of it is situated where coal is not present, these areas will be excluded to prevent negative ecological impacts. Terrestrial biodiversity assessments are expected to be performed

by MPTA during consultation process undertaken by Singo Consulting (Pty) Ltd. According to records, no mining activities should be performed on critical biodiversity areas. As mining is a land use that compromise the biodiversity objectives of a priority biodiversity conservation area and not permissible.

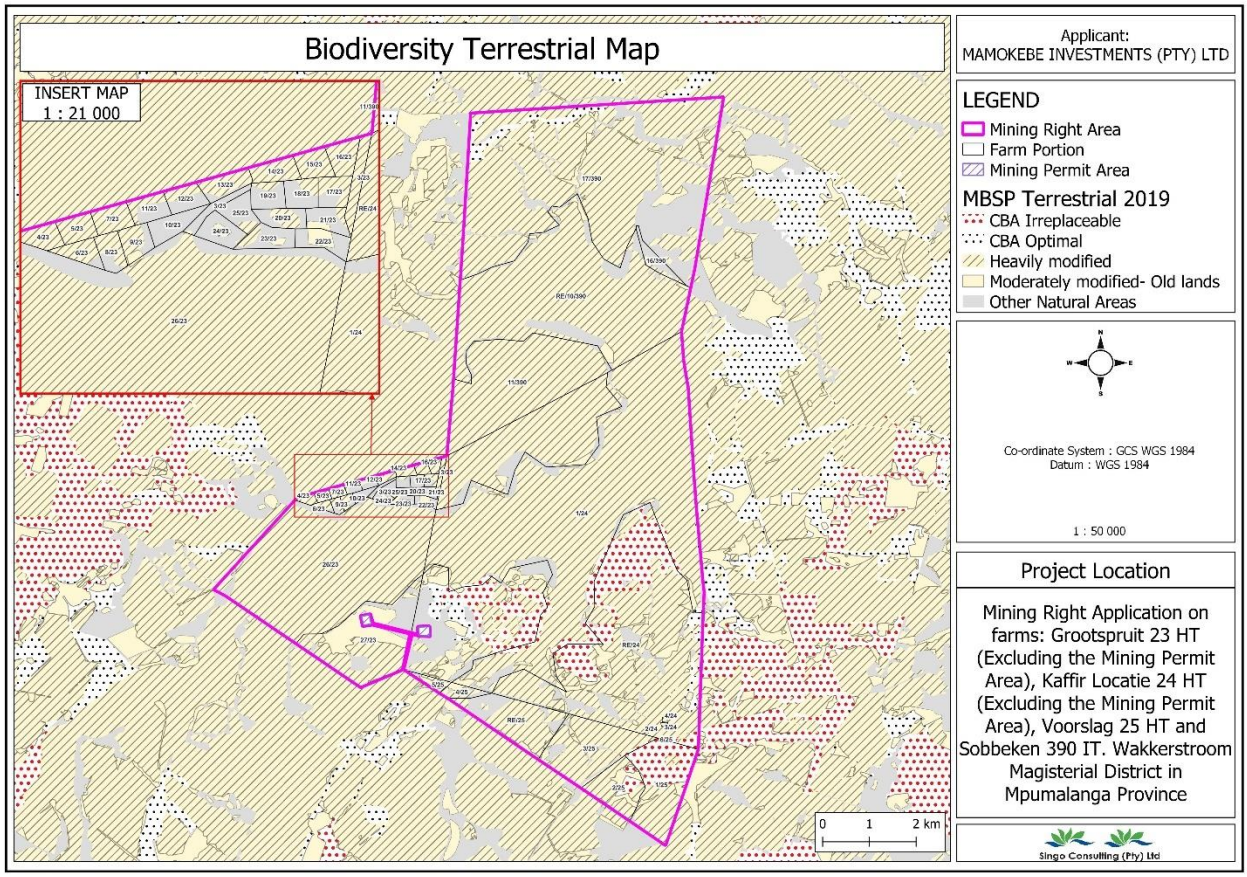


Figure 47: Terrestrial Biodiversity Sensitivity map

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

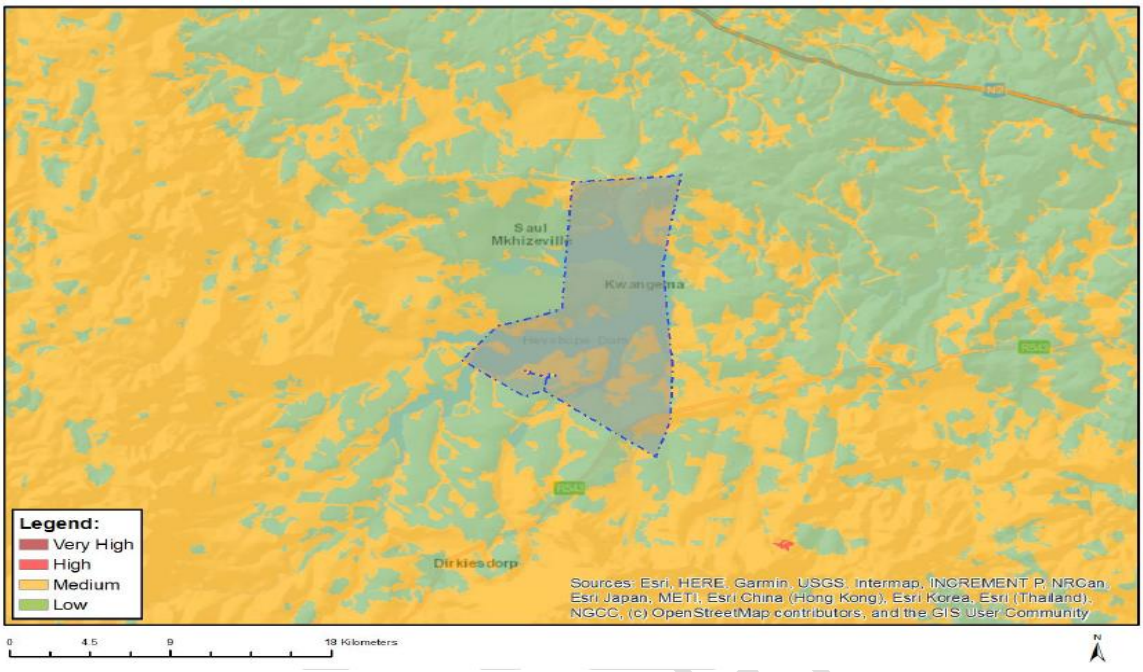


Figure 48: Plant Species Theme Sensitivity Map

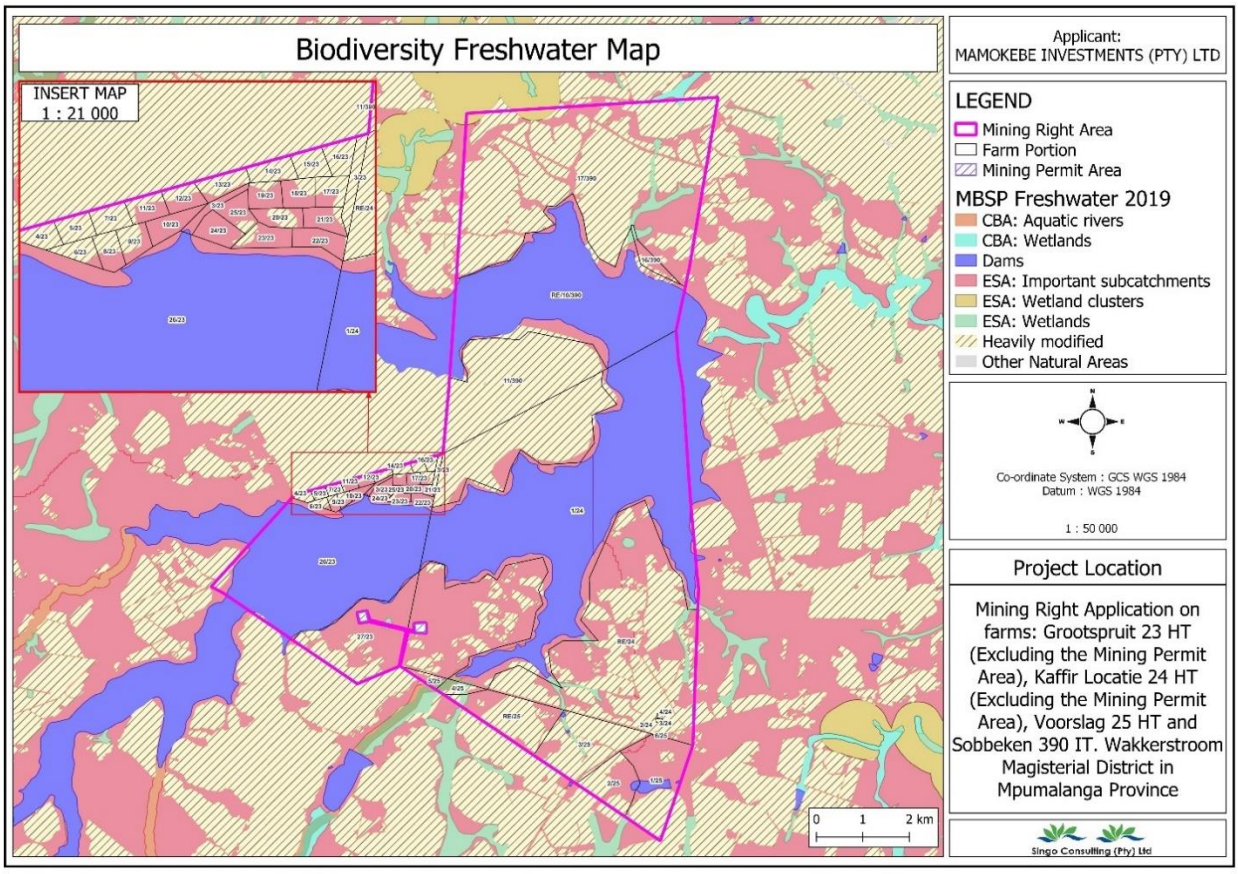


Figure 49: Aquatic Biodiversity Theme Sensitivity Maps

14.5.5 Mammals

This faunal survey focused mainly on the mammals and birds of the study area. The survey focused on the current status of threatened animal species occurring, or likely to occur in the study area, describing the available and sensitive habitats. Faunal data was observed on the site. Different habitats were explored to identify sensitive or endangered species. Mammal names are as used by Stuart and Stuart (1998), and Skinner and Chimimba (2005), and bird names are used as by Hockey et al. (2005).

The results of a desktop study are as follows:

- *Chrysospalax villosus, Crocidura maquassiensis, Hydrictis maculicollis, Ourebia ourebi ourebi,*

However the observed species on site are in the table below:

Table 14: Faunal species recorded during the site visit

Scientific name	Common name
Bos taurus	Cow
Capra aegagrus hircus	Goat
Ovis Aries	Sheep
Equus ferus caballus	Horses

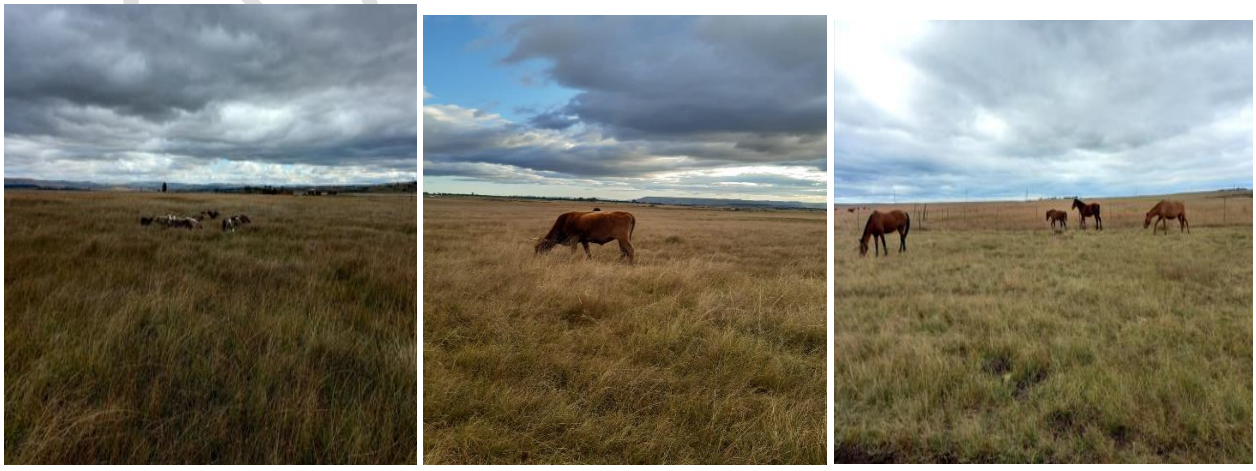


Figure 50: Grazing animals on site

14.5.6 Avi-fauna

Birds are good ecological indicators, since their presence or absence tends to represent conditions pertaining to the proper functioning of the ecosystem. Bird communities and ecological conditions are linked to land cover: as the land cover changes so do the types of birds in the area. The project area has the propensity to harbour red data bird species, but none were observed during the field surveys.

The desktop assessment indicates that about 136 bird species have been confirmed in the (Number of Quarter Degree Grid-Cells) QDGCs. The area considered during the desktop study is much larger than the area likely to be affected by the project. This approach is adopted to ensure that all species potentially occurring at the site, whether resident, nomadic, or migratory, are identified. Many avifaunal species are adaptable, as they are habitat generalists and can therefore accommodate a certain degree of habitat degradation and transformation (Harrison et al., 1997). Other species are extremely habitat-specific and rely on certain habitat units for breeding, hunting or foraging and roosting. It is the survival of these species that become threatened as they cannot adapt to changes to the habitat. Habitat-specific species are sensitive to environmental change, with destruction of habitat being the leading cause of species decline worldwide (Barnes, 2000).

It is widely accepted that vegetation structure, rather than the actual plant species, influences bird species' distribution and abundance (Harrison et al., 1997). The vegetation description used in the Bird Atlas does not focus on lists of plant species, but rather on factors relevant to bird distribution.

Desktop study show the following sensitive bird species in the area:

- *Aves-Balearica regulorum, Eupodotis senegalensis, Tyto capensis*, *Sagittarius serpentarius, Geronticus calvus* (High sensitivity species)
- *Stephanoaetus coronatus, Hydroprogne caspia, Balearica regulorum, Sagittarius serpentarius, Geronticus calvus, Eupodotis senegalensis, Tyto capensis, Neotis denhami* (Medium sensitivity species)

Full ecology study will be presented during the EIA phase.

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

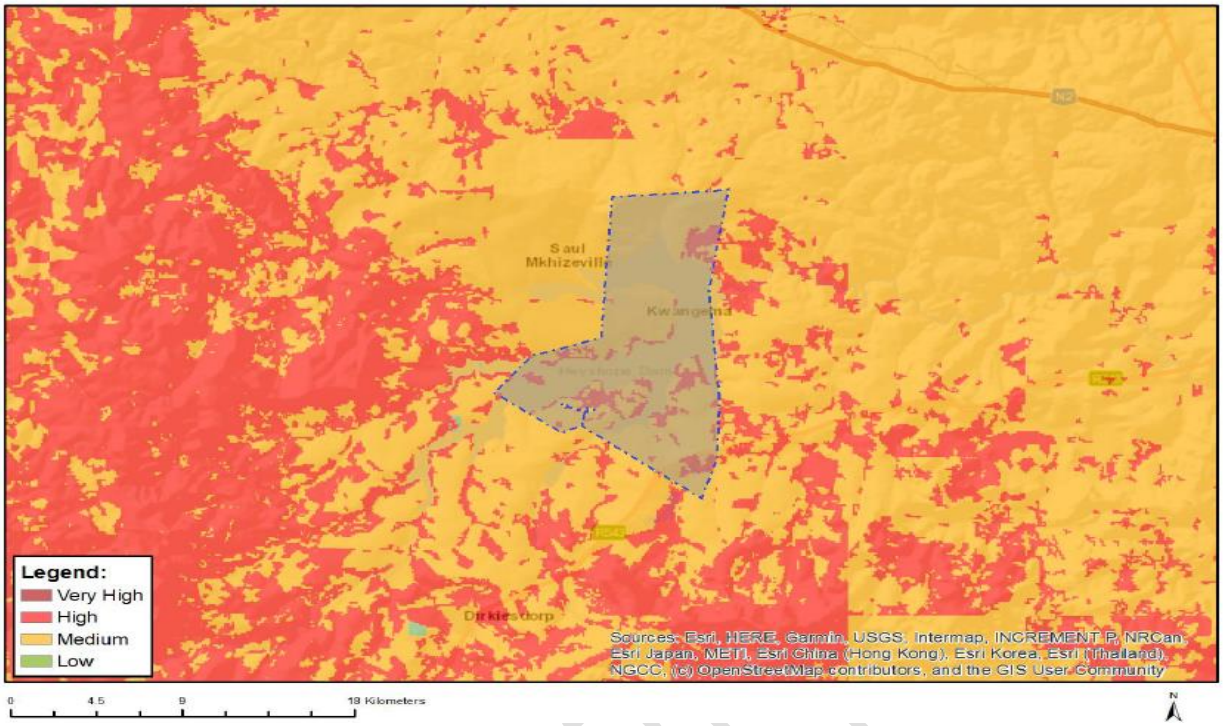


Figure 51: Animal Species Sensitivity map

15 SOILS, LAND USE AND LAND CAPABILITY

The mining right area falls under soil type or association with class 1 to 4, namely undifferentiated structureless soil as stated in the soil classification map. Soils or lands with low to poor potential will be considered on the project and soils with high potential for agricultural activities will be preserved in this case the soil will be stockpiled. The soil has favourable physical properties and it also has low base status, restricted soil depth, excessive or imperfect drainage, high erodibility. The dominating land-use on-site is farming, grazing and agriculture. The land is capable for agricultural activities. The villagers have small pits where they throw cans and some portions are used as burial sites. A desktop study was done on the 23 May 2022 but Singo Consulting will hire a specialists to conduct a full detailed soil study, hydropedology studies during the EIA process.

Below are the results seen from the desktop study and site assessment:

Figure 52: On-site land uses

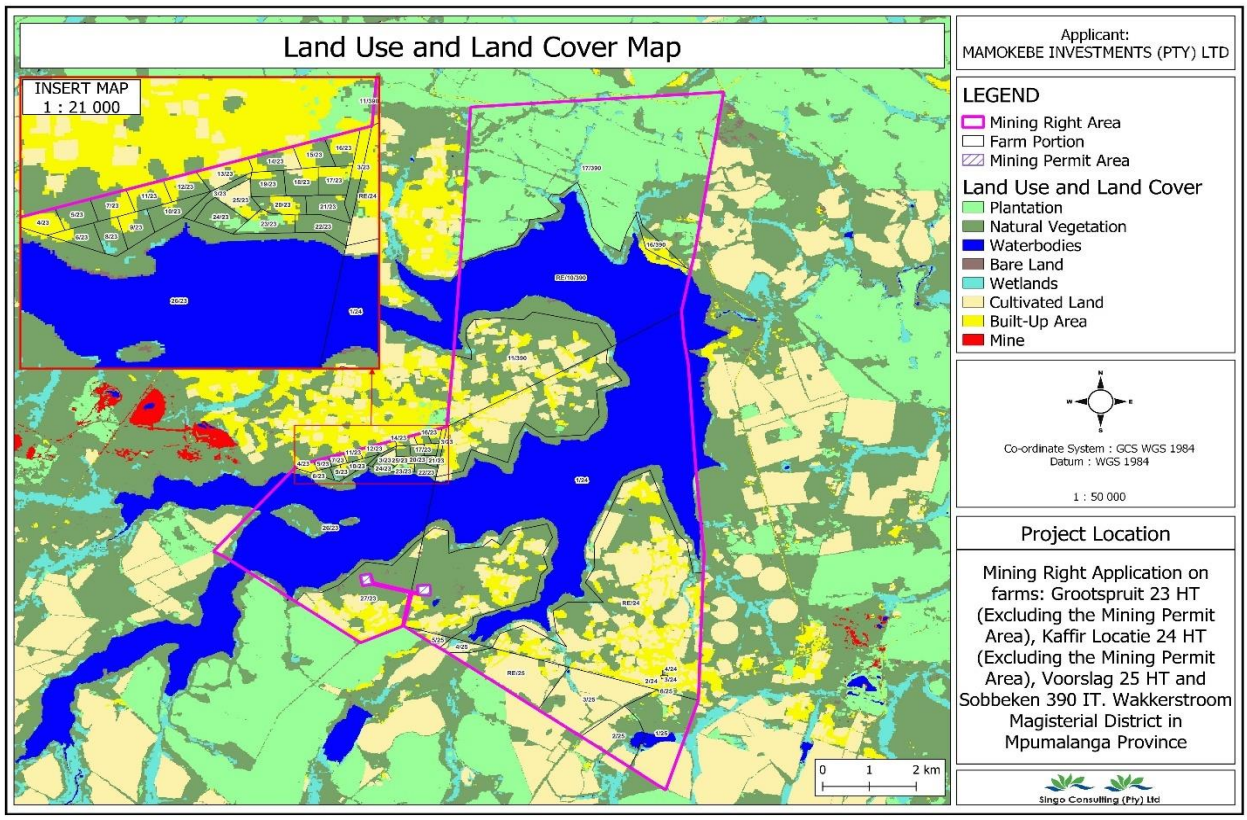


Figure 53: Land use & Land cover map

The map above shows that the project area is located in a cultivated and natural vegetation land. However, there are water bodies like ponds and wetlands within the mining right area. The soil is fertile, and the mine will eventually have an impact on these soils. It is recommended that these soils get stockpiled in a proper manner so that they will be useful for rehabilitation. The rehabilitation study and detailed soil study will be conducted for this proposed project and rehabilitation alternatives/measures will be outlined in detail during the EIA phase.

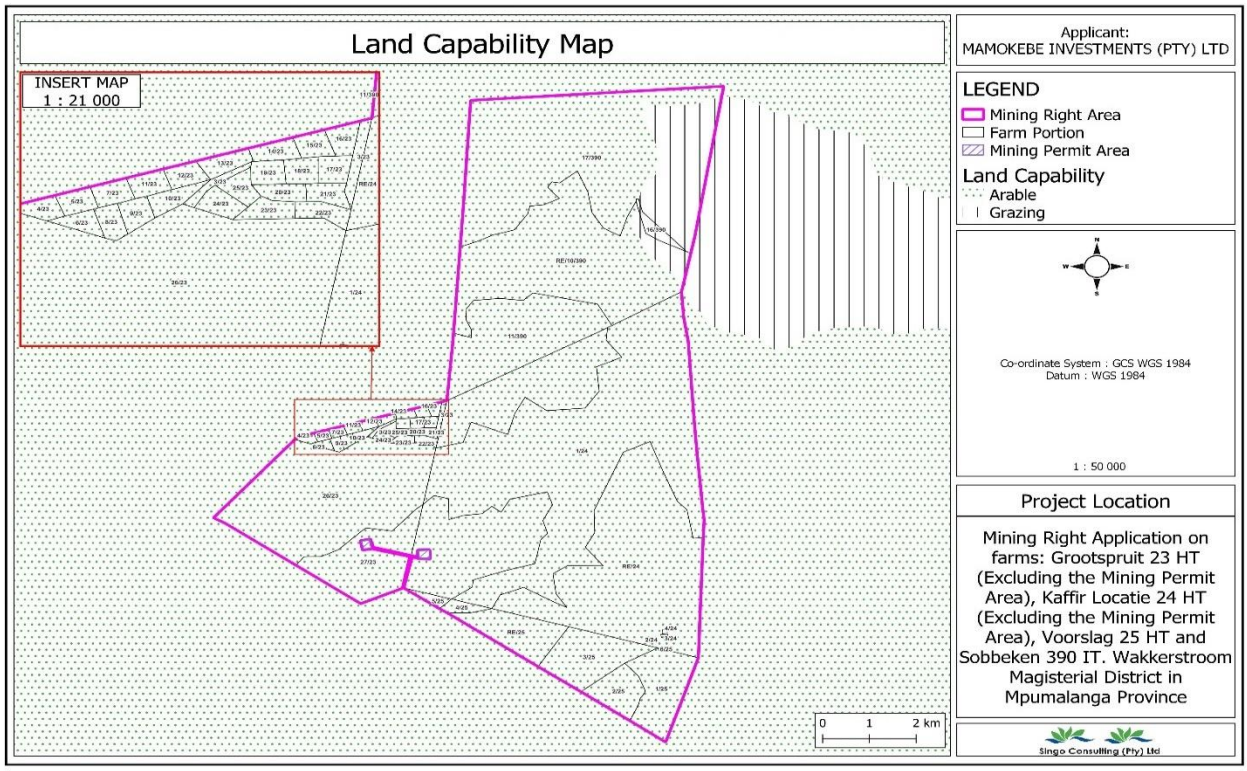


Figure 54: Land capacity of the project area

Soil Classes	Land Capability
Class 1	Has few limitations that restrict its use; it may be used safely and profitably. Suitable land with negligible limitations and is highly productive requiring only simple management practices. When it used for crops it need ordinary management practice to maintain productivity. They are easily worked and are also fairly well supplied with plant nutrients or are highly responsive to inputs of fertilizer.
Class 2	Has some limitations that reduce the choice of plants or require moderate conservation practice. Suitable land with minor limitations which either reduce production or require more than simple management practices to sustain the use. Slight to moderate salinity or sodicity, easily corrected, but likely to persist is taken to imply that strong subsoil acidity, costly to correct and likely to reappear, would disqualify land from Class II.

Class 3	Has severe limitations that reduce the choice of plants or require special conservation practices. Suitable land with moderate limitations which is moderately suited to a proposed use, but which requires significant inputs to ensure sustainable use.
Class 4	Has very severe limitations that restrict the choice of plants, require very careful management. Marginal land with severe limitations which make it doubtful whether the inputs required to achieve and maintain production outweigh the benefits in the long term.
Class 5	Land in this class has little or no erosion hazard but have other limitations impractical to remove that limit its use largely to pasture, range, woodland or wildlife food and cover. These limitations restrict the kind of plants that can be grown and prevent normal tillage of cultivated crops. Pastures can be improved and benefits from proper management can be expected.
Undifferentiated structureless soil of classes 1-4	This type of soil is characterised by sand, red soil which is less productivity due to dominating of sand soils have severe limitations that reduce the choice of plants or that require special conservation practices, soils and miscellaneous areas have limitations that preclude commercial plant production and restrict their use to recreational purposes, wildlife habitat, or esthetic purposes.

Potential Impacts on soil in all the mining stages are written in detail bellow:

❖ Construction Phase

During the construction phase of the above listed activities, the work carried out will mainly be the construction of the fuel storage depot, beneficiation plants and associated infrastructure, new roads and preparation of stock yard and stockpiles.

This will entail the clearing of areas and the disturbance of the topsoil through excavations as well as the construction of a soil stockpile. The topography and natural drainage lines may also be disturbed. The overall impact will be loss of topsoil as a result of erosion and possible contamination of the soil by coal dust, fuel, and oils (hydrocarbons) as a result of general construction activities. Soil compaction caused by heavy vehicles and machinery may also be a problem.

Construction activities will change the land use to mining, beneficiation plants and associated infrastructure, conveyors, power line, new roads and preparation of stock yard and stockpile sites, there will be no substantial change to the land use within these areas. Areas that have been categorized as cultivation land use will change and will be unsuitable for any further farming during the life of the project.

❖ Operational Phase

Soil erosion through wind and storm water run-off and soil pollution by means of hydrocarbon contamination and potentially coal dust may be encountered during the operational phase. Water runoff from roads and plant areas must be controlled and managed by means of proper storm water management facilities in order to prevent soil erosion. Diesel and oil spills are common at mine sites due to the large volumes of diesel and oil consumed by construction vehicles. Pollution may however be localized. Small pockets of localized pollution may be cleared up easily using commercially available hydrocarbon emergency clean-up kits.

An additional impact that could occur is when soils are stripped and stockpiled as the natural sequence of the soil horizons is lost when stripping and stockpiling is undertaken. An associated impact could be compaction of soil stockpiles, if they are repeatedly driven over, which would result in compaction of soil stockpiles if the appropriate dumping techniques are not adopted. This can be mitigated against by demarcating soil stockpiles and minimize or prevent driving over stockpiles should be avoided were possible to avoid compaction. End tipping as a method of creating stockpiles can be adopted to avoid unnecessary compaction.

❖ Decommissioning Phase

Mining infrastructure must be removed during the deconstruction phase. All foundation excavations must be backfilled and then covered with subsoil material and topsoil on the top layer, fertilized and re-vegetated. Backfilling of soil will impact on the land capability by restoring the land capability because vegetation can be supported and therefore returned to grazing. As open cast mining progresses and enough space is available concurrent rehabilitation should be undertaken, this would include backfilling, contouring, re-vegetation of impacted areas and this would typically be done during the operational phase, as concurrent rehabilitation, and during the decommissioning phase

16 HERITAGE STUDY

16.1 Historical background

Singo consulting (Pty) Ltd has appointed a specialist to conduct heritage study for the proposed mining right area and the results of the study are awaiting. According to a desktop study, historical sites, including farming and mining sites, occur in the study area. The farming-related sites usually consist of farmsteads and farm cemeteries, either belonging to the landowners or their labourers. A detailed study will be prepared and made available during the EIA process

The Late Iron Age Nguni communities engaged in the Indian Ocean Trade, exporting ivory and importing consumables like cloth and glass beads. The exporting point was Delagoa. This brought the Nguni-speaking community in touch with the Indo-Asian and first Europeans (Portuguese). With the arrival of the Dutch and the English traders who opened Delagoa Bay to more trade, the Nguni started engaging in extensive trade with the international traders (Huffman 2007). From the late 1700s, trade in meat to passing ships had increased substantially and by 1800 the meat trade is estimated to have surpassed the ivory trade. At the same time, the population was booming following the increased food production that introduced maize, which became the staple food. Naturally, there were signs that population groups had to compete for resources, especially along the eastern coastal regions. The KwaZulu-Natal coastal region has a special place in the history of the region and country at large.

This time was known as the Mfecane (wandering hordes) period, which came with tremendous insecurity and military stress, which eventually affected the entire Southern Africa, including modern-day Mpumalanga. Around the 1830s, the region witnessed the massive movements associated with the Mfecane. The causes and consequences of the Mfecane are well-documented elsewhere (e.g Hamilton 1995; Cobbing 1988). In this context, new African kingdoms emerged, such as the Zulu Kingdom under Shaka in the second quarter of the 1800s AD. Military pressure from Zululand spilled onto the highveld by 1821 and various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. During the Difaquane, they fled to the south from the Ndebele of Mzilikazi, who established several settlement complexes in the Eastern Bankveld between Pretoria and Witbank (Bergh 1999: 10-11; 109).

Ethnographical and linguistic studies by early researchers like Ziervogel, Theal and Van Warmelo shed light on the cultural groups that have been living in the area since ca 1600. Historic and academic sources by Küsel and Bergh and Makhura and Webb were consulted.

16.2 SAHRIS database and impact assessment reports in the proposed project area

Several archaeological and heritage studies were conducted in the broader project area and its vicinity since 2002; these studies investigated the nature and heritage of the area. Heritage Impact Assessments (HIA) were conducted in the Ermelo area, with Van Wyk Rowe (2014) conducting an impact assessment of Portion 2 of farm Langverwacht 293 in Ermelo.

This HIA discovered unmarked graves which Joseph Madonsela, a worker at the farm, pointed out to the archaeologist (this proves the importance of consultations when conducting fieldwork). No other archaeological sites were recorded in the study area. Roodt (2012) conducted an impact assessment for the proposed Overvaal coal mining in farms Vlakfontein 266 IT, Weltevreden 289 IT, Mooiplaats 290 IT, Adrianople 296IT and Buhrmansvallei 297 IT in Ermelo. The assessment discovered features associated with historic farming activities. Celliers (2013) conducted a phase 1 impact assessment on portion 22 of the farm Witpunt 267 IT in Ermelo. The survey yielded graves and farm worker dwellings, but no archaeological material was recorded.

G and Heritage Consultants (2011) conducted a study for the proposed extension of the Camden Ash Disposal facilities in Ermelo. The study recorded graves in the study area, but no archaeological signatures were detected. Another consultant, Digby Wells Environmental (2013), conducted surveys in a number of farm portions for the proposed Kusipongo Resource Mining Project in Ermelo. The study recorded graves, as well as stone walls that were deemed of very low significance. Jaco van der Walt (2014) conducted a study at Highveld Haven filling station close to Ermelo. No archaeological sites were detected, but a cemetery was recorded.

16.3 Intangible heritage

As defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003), intangible heritage includes oral traditions, knowledge and practices concerning nature, traditional craftsmanship and rituals and festive events, as well as the instruments, objects, artefacts and cultural spaces associated with group(s) of people. Thus, intangible heritage is better defined and understood by the particular group of people that uphold it. In the present study area, very little intangible heritage is anticipated on the development footprint because most historical knowledge does not suggest a relationship with the study area, even though many places in the general area do have intangible heritage.

16.4 Results of the field study

Impacts to archaeological sites are generally direct, physical disturbances of the archaeological remains and their contexts. It is important to note that the heritage and scientific potential of an archaeological site depends on its geological and spatial context. This means that even though, e.g a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position. Severe impacts are likely to occur during clearance, construction of access roads and other amenities for the mine, as well as foundation laying of buildings. Indirect impacts may occur during movement of mining equipment and vehicles. The excavation and clearance of topsoil will result in the relocation or destruction of all existing surface heritage material.

The clearing of access roads will impact material that lies buried beneath the surface. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to mining. Due to the localised nature of archaeological resources, individual archaeological sites could be missed during the survey, although the probability of this is very low in the proposed mining right application sites.

Archaeological sites and unmarked graves may be buried beneath the surface and only be exposed during mining. The purpose of the AIA is to assess the sensitivity of the mining right application area in terms of archaeology and heritage as well as to avoid or reduce the potential impacts of the proposed mining development by means of mitigation measures. The study conducted for the site in question found that the impacts to archaeological resources will be negligible since the site has previously been cleared for corn fields and associated infrastructure, like irrigation infrastructure and farm roads. The following section presents the results of the field survey.

16.4.1 Archaeological heritage sites

Previous Phase 1 AIA and HIA studies conducted around the project area (e.g Mlilo 2019) highlight the potential for recovering LIA sites, especially in the Carolina area, which has potential to yield significant archaeological and cultural heritage resources. However, the proposed mining right application site did not yield any confirmable archaeological sites or material. Some sections of the affected landscape are heavily degraded from previous and current land use, including agriculture and associated infrastructure.

The proposed mining right site is located in a heavily disturbed landscape characterised by approximately 85% of the land being ploughed and 15% or less being used for livestock grazing, with few patches of thick bushes, farm tracks, power lines, farm dwellings and farm worker dwellings. This limited the chances of

encountering significant *in situ* archaeological sites to be preserved. As such, the proposed mining development will be an additional development in the project area. It is the considered opinion of the authors that the chances of recovering significant archaeological materials has seriously been compromised and limited due to destructive land use patterns, like deep ploughing, road works and farm infrastructure, as well as dwellings that exist on the project area.

Based on the field study results and observations, the authors conclude that the receiving environment for the proposed mining development has a low to medium potential to yield of previously unidentified archaeological sites during subsurface excavations and construction work associated with the proposed mining development. In addition, the proposed mining development will not alter the entire land applied for this mining right. It should be noted that the lack of confirmable archaeological sites should rather be seen as a lack of research in the area and not as an indication that such features do not occur.

16.4.2 Burial grounds, graves and farm steads

Human remains and burials are commonly found close to archaeological and historical sites; they may be found in abandoned and neglected burial sites or occur sporadically anywhere as a result of prehistoric activity, 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 at the surface. Archaeological and historical burials are usually identified when they are exposed through erosion and earth-moving activities or infrastructure developments like powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.

The field survey recorded a cemetery closer to the boundary of portion 11. The site in portion 08 is associated with an existing historical farm stead. The burial site is located closer to the proposed mining right application site (see Figure 51 and 52). The cemetery is fenced with some graves well-secured by a sandstone block wall and others not well secured, however all have a mark of remembrance for the families. The farmhouse is vernacular architecturally done. The cemetery area (Land) was donated by Mr John Lloyd who is the landowner of the farm in question and the cemetery now belongs to the Community of Kwa-Zamokuhle.

The images displayed in the following figure are:

- Burial site.
- Fence of the Cemetery.

Table 15: Graves and farm steads encountered.

17 SOCIAL ASPECTS

The study area is located in Mkhondo Local Municipality within Wakkerstroom District Municipality, Mpumalanga. The demographics, households, economics, education and service delivery aspects are further discussed in the below to provide a background of the area and initial insights for the socio-economic assessment that will be done and be presented in the EIA phase. The information was obtained from Statistics South Africa (Census, 2011), Municipal Integrated Development Plan (IDP) and Wazimap.

According to Stats SA (2016) the number of persons between the ages of 0 to 21 years, without parents has decreased from 7112 in 2011 to 4602 in 2016.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 located in close proximity to traditional areas or informal settlements. Settlements with the highest education levels are eMkhondo, Iswepe and Amsterdam (UP Enterprise, 2016).

Mkhondo Local Municipality has a HDI of 0,53 which falls within the United Nations 'Low Human Development Category'. Mkhondo local Municipality ranks very low compared to other local municipalities in Mpumalanga Province. The number of people that are unemployed has declined. It is noteworthy that settlements with high unemployment rates are Saul Mkhizeville, KwaNgema Tribal Trust and Dirkiesdorp. 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 %). The number of persons using walking sticks or wheelchairs (171 981) ranked the highest in 2016.

❖ Introduction

Critical the development of the 2017-22 IDP was to first understand the current Mkhondo Municipality's population, its relevant demographics as well as the anticipated trends in development for the 2017-2022 financial year.

❖ Population Profile

Statistical Premise The data used in this review of the analysis phase of the IDP was obtained from Statistics South Africa, the Municipal Demarcation Board.

❖ Population Size

It is imperative to note that population growth statistics was taken into consideration throughout the IDP planning processes of the municipality. Specific reference is made to the latest 2016 Community Survey in comparison to the Census 1996, 2001, 2007 Community Survey and 2011 Census in order to see the trend. The 2016 Community Survey is also captured by Wazimap.

Mkhondo Local Municipality's population has increased from 171 982 in 2011 to 189 036 in 2016.The population growth rate between 2011 and 2016 is 2.0. Mkhondo Local Municipality is mostly dominated by African black people, followed by white people, coloured and Indian or Asian in 2016. The number of rural and urban dwellers remained constant from 2011 to 2016.

Ward Number	Villages/Town	Census 1996	Census 2001	Census 2011
Ward 1	Saul Mkhizeville (Mkhize Village,New Stand)	6,345	4754	10 133
Ward 2	Saul Mkhizeville (Mabilisa,Masihambisane)	11,824	8088	16 446
Ward 3	Dirkiesdorp/KwaNgema South	7,878	15925	13 006
Ward 4	Iswepe	6,090	10 343	5862
Ward 5	KwaThandeka, Winnie Mandela	6,032	9501	12 188
Ward 6	Rustplaas	6,003	9759	8277
Ward 7	eMkhondo Town	6,853	12 303	6083
Ward 8	Maphepheni/Ajax	8,690	12262	9096
Ward 9	Moolman/Sulphur Springs	8,431	14 475	14 030
Ward 10	Thandakukhanya (Kempville, Retiefville & S'godiphola)	4,189	4754	6752
Ward 11	Thandakukhanya(Eziphunzini,Marabastad,Magadeni,Sbetha)	4,362	2849	12 321
Ward 12	Thandakukhanya(Long homes,Mafred ,Sbetha, Richardsbay)	5,660	4699	6384
Ward 13	Thandakukhanya(Sbetha, Part Eziphunzini,Part Mangosuthu,Zone 5,Part of Phosa village)	4,468	4634	7451
Ward 14	Harmony Park(Mangosuthu)	3,009	10 997	9395
Ward 15	ENtombe	10,411	17 544	8454
Ward 16	Mangosuthu/Phola Park			5 700
Ward 17	Ezinkonjaneni/Phoswa Village			6884
Ward 18	Saul Mkhizeville (Esibovini,Masihambisane east)			3404
Ward 19	Amsterdam, Thokozani			10120
Total (Mkhondo Local Municipality)		106 248	142 884	171 982

Table 16: Population size of Mkhondo Local Municipality (Source: Mkhondo 1996 – 2011 Final IDP)

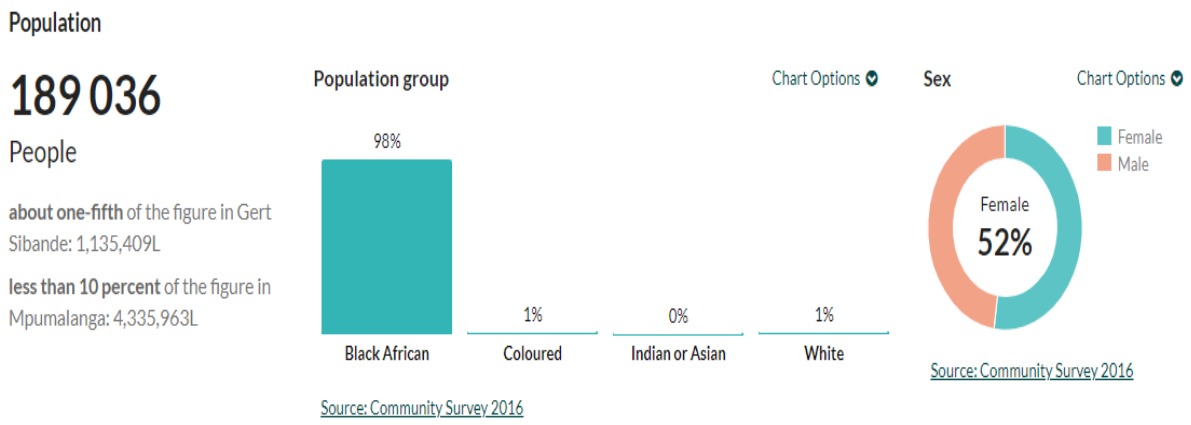
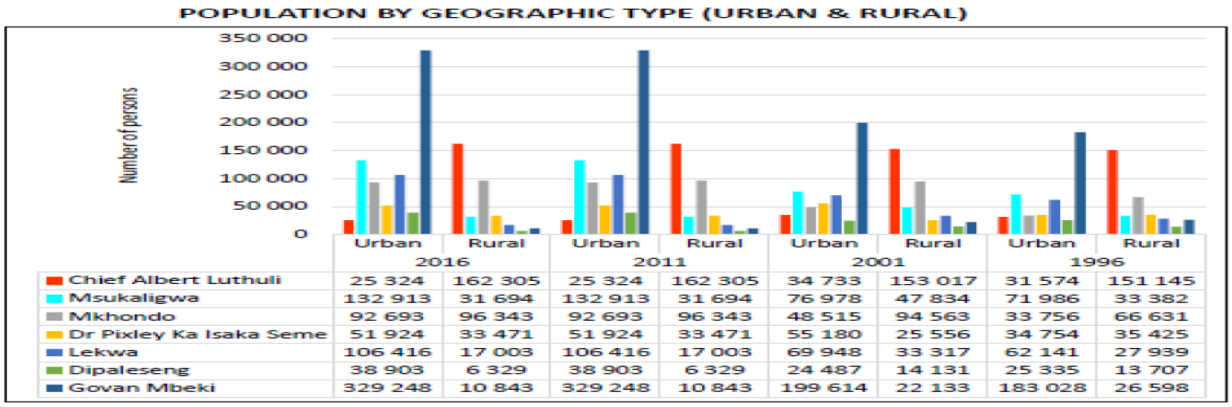


Figure 55: 2016 Population size (Source: Wazimap 2016)



	2016 Urban	2016 Rural	2011 Urban	2011 Rural	2001 Urban	2001 Rural	1996 Urban	1996 Rural
Chief Albert Luthuli	25 324	162 305	25 324	162 305	34 733	153 017	31 574	151 145
Msukaligwa	132 913	31 694	132 913	31 694	76 978	47 834	71 986	33 382
Mkhondo	92 693	96 343	92 693	96 343	48 515	94 563	33 756	66 631
Dr Pixley Ka Isaka Seme	51 924	33 471	51 924	33 471	55 180	25 556	34 754	35 425
Lekwa	106 416	17 003	106 416	17 003	69 948	33 317	62 141	27 939
Dipaleseng	38 903	6 329	38 903	6 329	24 487	14 131	25 335	13 707
Govan Mbeki	329 248	10 843	329 248	10 843	199 614	22 133	183 028	26 598

Figure 56: Rural and Urban population stats (Source: Wazimap)

17.1 Population Distribution

Population distribution is the arrangement or spread of people living in a given area according to variables such as age, race, or sex. The graph below shows population distribution in different municipalities.

According to Stats SA (2016) the population of Mpumalanga Province as a whole 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. Govan Mbeki Local Municipality had the most increase in the number of people between 2011 and 2016.

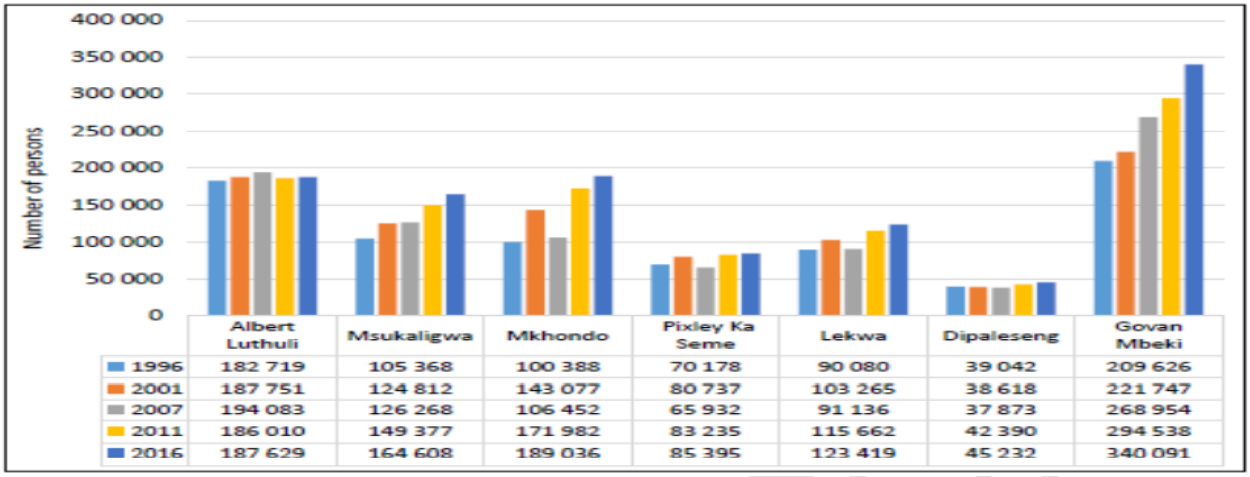


Figure 57: Population distribution graph around Mpumalanga Municipality (Source: 2016 IDP)

❖ Race

The population in Mkhondo Local Municipality is predominantly Black African, White, Coloured and Indian/Asian. White and Indian/Asian racial groups have seen a decline from 2011 to 2016 (Stats SA, 20160

RACE	1996	2001	2011	2016
Black African	91 554	136 523	162 322	185 025
Coloured	502	587	894	1232
Indian/Asian	1063	773	1417	670
White	6750	5195	6447	1880

Sources: STATS SA 2016

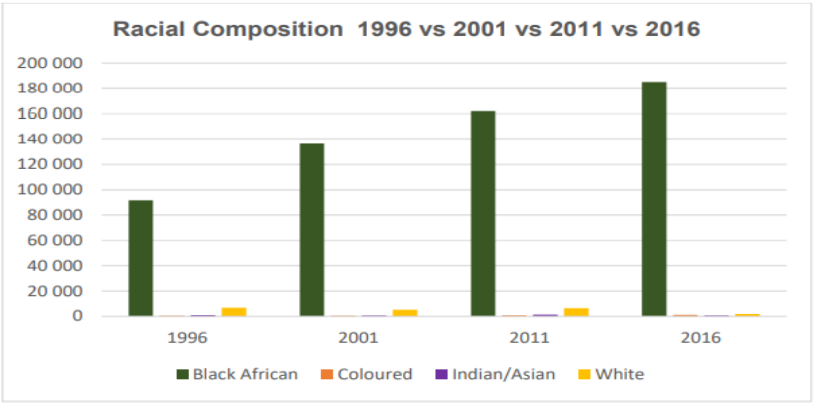


Figure 58: (A & B) Population Group 1996, 2001, 2011 & 2016 (Source: Mkhondo Municipality 2011 – 2016 Final IDP

❖ Sex Ratio

	1996	2001	2007	2011	2016
NO. OF MALES PER 100 FEMALES	94	90	86	92	91

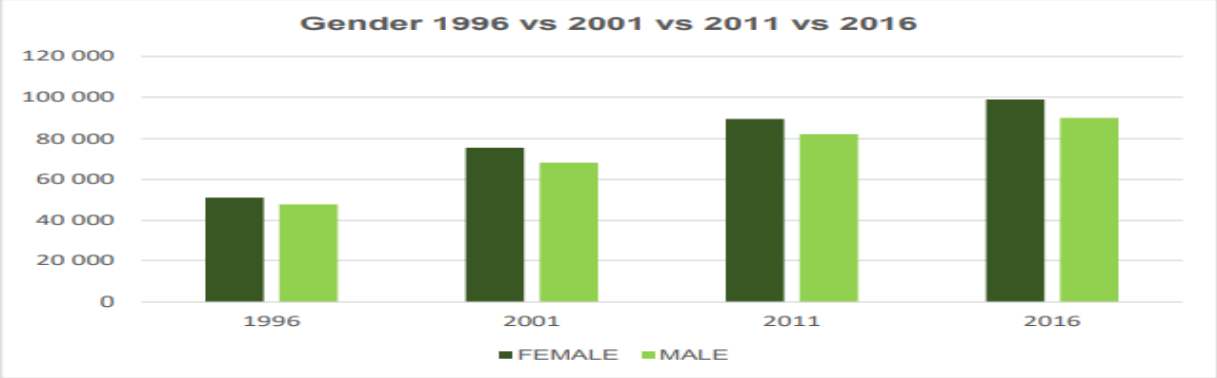


Figure 59: (A & B) Sex ratio 1996, 2001, 2011 and 2016 (Source: Mkhondo Municipality 2011 – 2016 Final IDP)

❖ Age

It is noteworthy that there are more women (52%) than men (48 %) in Mkhondo. There is an increase in all age groups.

	2016		2011	
AGE	Male	Female	Male	Female
0 – 4	11703	11616	10949	10737
5 – 9	10297	10423	10423	10657
10 – 14	10476	10956	10113	10043
15 – 19	10424	10845	9980	9946
20 – 24	9311	9641	8452	9006
25 – 29	8706	9829	7192	7371

	2016		2011	
30 – 34	6059	6943	5145	5406
35 – 39	4952	5411	4562	5079
40 – 44	4156	4687	3822	4350
45 – 49	3742	4449	3093	4180
50 – 54	2775	3566	2449	3343
55 – 59	2390	3048	2060	2768
60 – 64	2208	1990	1512	2064
65 – 69	1205	1847	905	1552
70 – 74	791	1511	741	1368
75 – 79	479	1089	362	743
80 – 84	126	444	273	665
85+	378	562	232	439
Total	90178	98858	82265	89717

Table 17: Distribution of Population by Age and Sex in 2022.

- Educational Attainment

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 located in close proximity to traditional areas or informal settlements. Settlements with the highest education levels are Mkhondo, Iswepe and Amsterdam (UP Enterprise, 2016).

In Mkhondo Local Municipality the number of people with education levels higher than grade 12, grade 12 and grade 7 qualification attainment has been increasing from 1996 to 2016. The number of the people with no schooling has been fluctuating since 1996 to 2016.

Municipality	Grade 12 Pass Rate			Admission to B degree
	2011	2015	2016	
Mkhondo	55.2%	66.9%	66.1%	24.7%

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	

Table 18: (A & B) Highest Educational attainment (20+ years) (IDP)

17.2 Socio Economic Analysis

The socio-economic analysis is specifically aimed at spatial related matters i.e employment, income and economic profile. This analysis is based on a municipal level to give a broader overview of the Municipality.

Mkhondo Local Municipality's population has increased from 171 982 in 2011 to 189 036 in 2016.The population growth rate between 2011 and 2016 is 2.0. The number of people residing in 'urban 'Mkhondo and 'rural' Mkhondo has remained the same between 2011 and 2016, with 96 693 people in urban areas and 96343 in rural areas. Mkhondo Local Municipality is mostly dominated by African black people, followed by coloured people, Indian or Asian and white people from 1996 to 2016.It is noteworthy that in 2016 most of the immigrants in Mkhondo were recorded as from Swaziland (1823 people) followed by Zimbabwe (120 people); Mozambique (116 people) and Lesotho (45 people). The emigrants to neighbouring countries in 2016 are mostly to Swaziland (111) followed by Mozambique (30).

According to Stats SA (2016) the number of persons between the ages of 0 to 21 years, without parents has de-creased from 7112 in 2011 to 4602 in 2016.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 located in close proximity to traditional areas or informal settlements. Settlements with the highest education levels are Mkhondo, Iswepe and Amsterdam (UP Enterprise, 2016).

Mkhondo Local Municipality has a HDI of 0,53 which falls within the United Nations 'Low Human Development Category'. Mkhondo local Municipality ranks very low compared to other local municipalities in Mpumalanga Province. The number of people that are unemployed has declined. It is noteworthy that settlements with high unemployment rates are Saul Mkhizeville, KwaNgema Tribal Trust and Dirkiesdorp. 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 %). The number of persons using walking sticks or wheelchairs (171 981) ranked the highest in 2016.

17.2.1 Poverty and Inequality

In the last ten years the municipality has made huge investments in infrastructure and housing development as a result of that, poverty and inequality has been decreasing steadily. However, the current rate of unemployment and poverty are key factors contributing to high inequality levels.

Local Municipal Area	**Poverty rate (lower bound) 2011**	**Poverty rate (lower bound) 2015**	**Trend 2011-2015**	**Poverty numbers (lower bound) 2015**
Mkhondo	50.2%	51.0%		92 577
POVERTY HEADCOUNT				
Local Municipal Area	**Multi-dimensionally poor households**		**Trend**	
	2011	2016		
Mkhondo	15.8%	11.9%		

Table 19: Poverty in Mkhondo Municipality 2011, 2015 and 2016

Poverty headcount (proportion of households that are considered to be multidimensional poor households in a defined area) in general improved – best figure in Govan Mbeki (3.9%) and worst figure in Mkhondo (11.9%) – figures of more than 10% also in Emalahleni, Dr Pixley Ka Isaka Seme, Chief Albert Luthuli and Dr JS Moroka.

17.2.2 Human Development Index

Human Development Index (HDI) is defined as a standard measure of determining whether an area is underdeveloped, developing and developed. According to the IDP 2016 report, the HDI of the municipality was 0.53 in 2016. The predetermined life expectancy in South Africa is 65 and as a result that confirms the decline of the population group between the ages 65 and 85+ as depicted in the pyramid. On the other hand, the high death rate within these population groups could be attributed to the top ten leading causes of death as listed by the STATS SA 2011, namely, influenza and pneumonia, other external causes of accidental injury, Tuberculosis, Intestinal infectious diseases, other forms of heart disease, Cerebrovascular diseases, Ischaemic heart diseases, Chronic lower respiratory diseases, Human immunodeficiency virus [HIV] disease, Diabetes mellitus.

❖ Employment

Unemployment rate increase from 1996 to 2001 but in 2011 the rate dropped till 2016, it may be caused by increased in mine constructions and other developments. Employment rate has been increasing from 1996 and it may be caused by the start of democracy in SA.

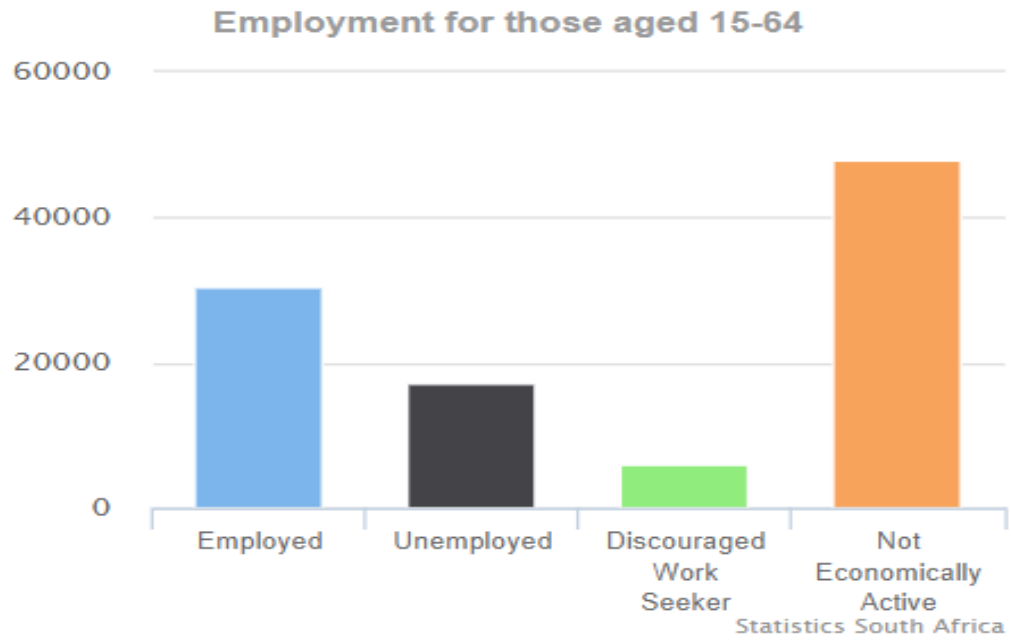


Figure 60: Percentage of employment with relation to unemployment

UNEMPLOYMENT RATE	1996	2001	2011	Unemployment rate 2011 (%)	Unemployment rate 2016 (%)
Employed	21 550	24 216	30510		
Unemployed	10 524	20 476	17 123	33.3 %	29.3%

Table 20: Percentage of Employment

❖ Household income

According to Census 2011, the household income stats are elaborated with the table and figure below:

Income	Percentage
None income	15,1%
R1 - R4,800	5,4%
R4,801 - R9,600	10,4%
R9,601 - R19,600	22,2%
R19,601 - R38,200	21,6%
R38,201 - R76,4000	11,8%
R76,401 - R153,800	6,6%
R153,801 - R307,600	4,2%
R307,601 - R614,400	2,1%
R614,001 - R1,228,800	0,4%
R1,228,801 - R2,457,600	0,2%
R2,457,601+	0,1%

Figure 61: Household Income data of Mkhondo Municipality, (Source: Stats SA 2011)

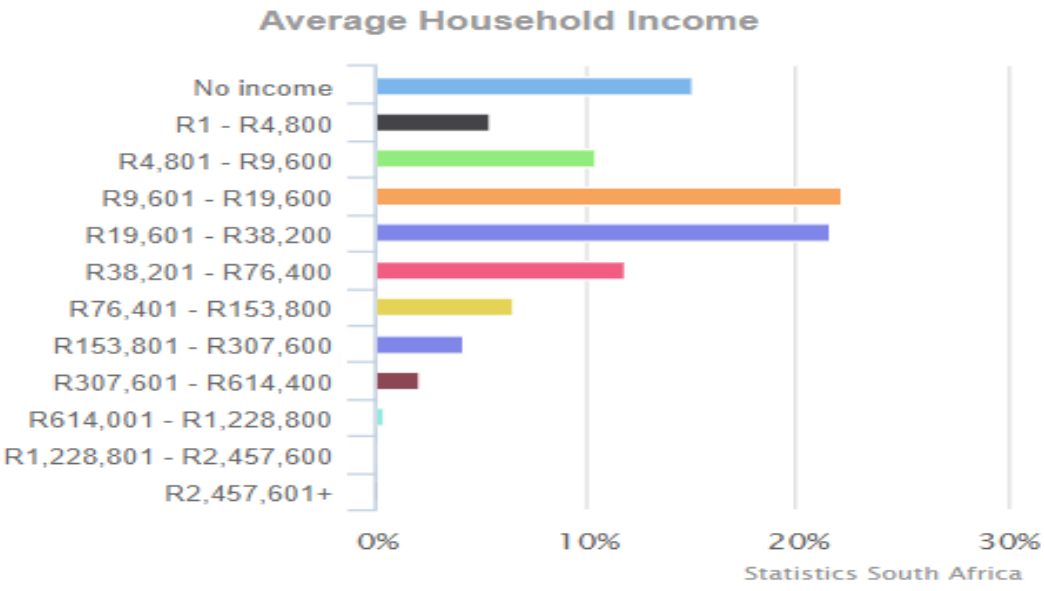


Figure 62: Household Income of Mkhondo Municipality, (Source: Stats SA 2011)

- Health

The municipality has been investing in the health of the community from 2017 till now. This is the illustration table of the record of development undertaken in Mkhondo Municipality.

Project/Programme Name/Description	Project Beneficiary/Ward/Location	2017/18 Target	2017/18 Budget Allocation (Annual) R`000	2018/19 Target	2019/20 Target	Total Project Cost R`000
Thandukhanya Community Health Centre (Construction of new Community Health Centre and accomodation units)(Phase 2)	Mkhondo	35% construction	7 947	75% construction	100% construction	21 600

Table 21: Health improvement plan (IDP 2017 – 2020)

17.2.3 Household (HH) Profile and Services

✓ Number of households

The constitution of South Africa states that all municipalities must construct and maintain a range of infrastructure that facilitates local economic activity and creates an enabling environment for economic growth. The following infrastructure categories are amongst the key within the municipality, water and sanitation, waste and electricity. The municipality provide services at household level rather than individual level. The number of households in Mkhondo Local Municipality increased from 37 433 in 2011 to 45 597 households (over 8 000 households increase) in 2016.

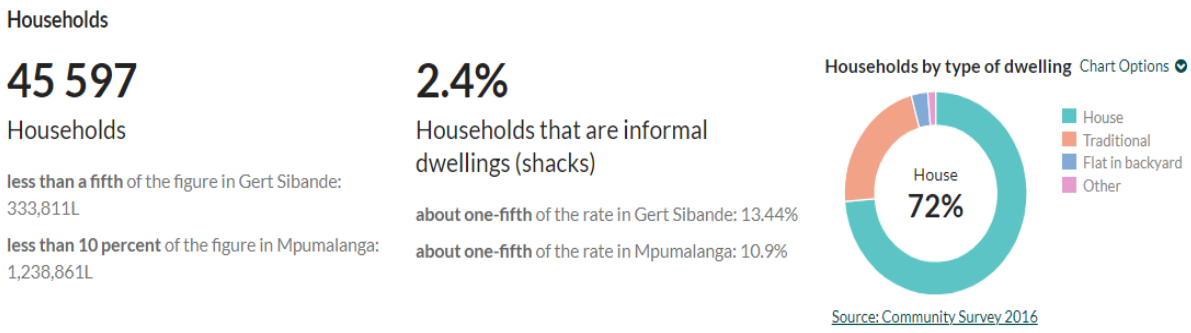


Figure 63: Number of Households in Mkhondo Municipality 2016. (Source: Wazimap 2016)

✓ Access to Household Services

Steve Tshwete Local Municipality has made great strides in providing this basic service to its communities. The table below reflect the progress made:

Table 22: Households with Access to Services 2011 and 2016

BASIC SERVICES	2011	2016
% of households with flush or chemical toilets	86.8%	81.9%
% of households with connection to piped (tap) water: on site & off site	98.2%	85.4%
% of households with electricity for lighting	90.8%	90.1%
% of households with weekly municipal refuse removal	84.7%	85%

Source: Stats SA Community Profiles (2011 & 2016)

17.2.4 Water and sanitation

The Sanitation services substantially differ throughout the areas. A number of newer urban areas have access to full sanitation (56%) e.g., eMkhondo, eThandakukhanya and Amsterdam ext. 2 and 3, while the older urban areas still rely on septic tanks. A large percentage of the population (41%) (Urban and rural) in the municipal area still rely on pit latrines (VIP Toilets), while 3% have no access to sanitation in their households. The latter figures indicate possible environmental pollution problems and increased health risks. It is clear that sanitation services still need to be upgraded in other wards excluding ward 7 and ward 12 which has 100% sanitation. The municipality has upgraded the Mkhondo WWTW from 4ML/d to 10ML/d to cater for the ever-growing households and to improve on the quality of the effluent and Green Drop status as per legislative requirement.

	2011	2016
Pit Latrine toilet with/without ventilation	13 961	17 168
Flush toilet connected to sewerage system/septic tank/ Conservancy tank	15 763	20 33

Table 23: Sanitation Stats (Source: IDP Final 2016)

Mkhondo municipality have 83% direct access to portable and reticulated water either in-house or on site. The remaining 17% of the population obtain water from streams, rivers and boreholes. The municipality took an initiative to reticulate water to all its villages through internal funding and utilisation of the plumbers trained through MRTT, PHEZUKOMKHONDO and internal Plumbers; however, it is still a challenge for the municipality to provide access to portable water for all its residents due to financial constraints. The municipality is in a process of addressing the water provision backlog and sanitation services backlog in order to prevent environmental and health risks. Currently the municipality is

abstracting 30%, which is above the licensed amount and are currently installing bulk water meters to quantify the approximate water consumption before the final application is made to Department of Water and Sanitation.

2011		2016	
Inside dwelling	11556	Inside dwelling	11556
Inside the yard	10371	Inside the yard	10371
Access point outside the yard	7467	Access point outside the yard	7467
No access to piped water	8039	No access to piped water	8039

Source: Stats SA

Table 24: Water Provision

17.2.5 Electricity

Approximately 72% of households in urban areas obtain electricity from the MLM; the remainder of 28% of the urban areas rely on candles for lighting and paraffin, gas and other sources for energy. ESKOM supplies electricity to the rural areas. The municipal areas with the largest concentrations of service backlogs are recorded around Mkhondo/ Amsterdam/Kwa Thandeka, and Driefontein/KwaNgema. The main sub station's capacity is 20MVA and currently we are operating at 18MVA in summer and 22 MVA in winter, development is affected as we cannot connect new sites including business; We are presently planning for the upgrade of our main substation to 40 MVA and Department of Energy approved funding for pre-engineering for the upgrade. Challenges affecting us include the CPA Policy, Landowners, Private Lands Municipal Allocation, informal settlement and limited industrial expansions.

Electricity	2011	2016
No access to electricity	12 282	10 133
Access to Electricity	24 996	35 51

Table 25: Electricity stats in Mkhondo Municipal

17.2.6 Refuse Removal

The department of community services ensures that waste services is being rendered to the community of Mkhondo, ensuring that waste is collected on household once per week in a section, the CBD is cleaned daily during the day and at night, refuse mass containers are placed and collected from business and strategic places within the municipal area and also ensuring that the landfill site is being operated

according to the minimum requirement standards. There are however areas within the municipality that have no access to the service yet, plans are there to address this challenge.

Type	2011	2016
Removed by local authority	14 453	30 757
Own refuse dump		
No rubbish disposal	6 866	7121

Table 26: Refuse removal table

17.2.7 Effect of the project on demographic statistics

The proposed Mamokebe Investments coal mine will have an effect on these statistics in both negative and positive ways. For example, the project will give the local people long term jobs (thus employment increase) and by this the household income of the local area will increase. This can lead to an increase in the number of households within the Mkhondo Local Municipality and other adjacent municipalities. But the negative part can be due to the fact that when the mining right comes into action, most of the houses have to be demolished so the numbers may fall. Another positive impact that the project is going to do is to add to coal production and it will be able to supple the Camden power station with coal. This may lead to a better supply of electricity over the local community hence this means that the community will have better access to electricity. Both local and overall economy of South Africa will increase because of this project.

Another thing is population distribution, such activities have both positive and negative impacts on population distribution. Since coal mines emit a large volume of carbon and usually the smoke produced can cause health problems to others, and they can decide to leave the area just to protect themselves. On the other hand, people who would've been employed may move from their respective homes to residential areas around the area of work. The measure of the impacts being negative or positive depends on the development status of the area whether its developed, developing or developing. So, in this case the area is developing so having people leave the area may delay development and local economic growth.

18 TRAFFIC MANAGEMENT

Traffic Management is a key branch within logistics that is concerned with planning, controlling and purchasing of transport services needed to physically move vehicles. Singo consulting will hire a specialist to do traffic studies on behalf of the applicant.

19 IMPACT ASSESSMENT

19.1 Methodology

Direct, indirect and cumulative impacts of the issues that will be identified during the specialist investigations will be assessed in terms of standard rating scales to determine their significance. The rating system used for assessing impacts (or when specific impacts cannot be identified, the broader term issue should apply) is based on five criteria, namely:

1. Status of impacts– Determines whether the potential impact is positive (positive gain to the environment), negative (negative impact on the environment), or neutral (no perceived cost or benefit to the environment).
2. Spatial scale of impacts– Determines the extent of the impact. Potential impact is expressed numerically on a scale of 1 (site-specific) to 5 (global).
3. Temporal scale of impacts – Determines the extent of the impact in terms of timescale and longevity. Potential impact is expressed numerically on a scale of 1 (project duration) to 5 (permanent).
4. Probability of impacts– Quantifies the impact in terms of the likelihood of the impact occurring on a percentage scale of <5% (improbable) to >95% (definite).
5. Severity of impacts– Quantifies the impact in terms of the magnitude of the effect on the environment (receptor) and is derived by consideration of points 1, 2 and 3 above. For this particular study, a conservative approach is adopted for severity (e.ge where spatial impact was considered to be 2 and temporal impact was considered to be 3, a value of 3 would be adopted as a conservative estimate for severity of impact).

Figure 64: Status of impacts

Rating	Description	Quantitative rating
Positive	A benefit to the receiving environment (positive impact)	+
Neutral	No determined cost or benefit to the receiving environment	N
Negative	At cost to the receiving environment (negative impact)	-

Figure 65: Spatial scale of impacts

Rating	Description	Quantitative rating
Very low(VL)	Site-specific: Impacts confined within the project site boundary.	1
Low(L)	Proximal: Impacts extend to within 1 km of the project site boundary.	2
Medium(M)	Logal: Impacts extend beyond to within 5 km of the project site boundary.	3
High(H)	Regional: Impacts extend beyond the site boundary and have a widespread effect, i.e. > 5 km from the project site boundary.	4
Very high(VH)	Global: Impacts extend beyond site boundary and have a national/global effect.	5

Figure 66: Temporal scale of impacts

Rating	Description	Quantitative rating
Very low(VL)	Project duration: Impacts expected only for the duration of the project or not longer than one year.	1
Low(L)	Short term: Impacts expected on a duration timescale of 1-2 years.	2
Medium(M)	Medium term: Impacts expected on a duration timescale of 2-5 years.	3
High(H)	Long term: Impacts expected on a duration timescale of 5-15 years.	4
Very high(VH)	Permanent: Impacts expected on a duration timescale exceeding 15 years.	5

Figure 67: Probability of impacts

Rating	Description	Quantitative rating
Highly improbable	Likelihood of the impact arising is estimated to be negligible <5%	1
Improbable	Likelihood of the impact arising is estimated to be negligible 5-35%	2
Possible	Likelihood of the impact arising is estimated to be negligible 35-65%	3
Probable	Likelihood of the impact arising is estimated to be negligible 65-95%	4
Highly probable	Likelihood of the impact arising is estimated to be negligible >95%	5

Figure 68: Severity of impacts

Rating	Description	Quantitative rating
Very low(VL)	Negligible: Zero or very low impact	1
Low(L)	Site-specific and short-term impacts	2
Medium(M)	Local scale and/or short-term impacts	3
High(H)	Regional and/or long-term impacts	4
Very high(VH)	Global scale and/or permanent environmental change	5

These five criteria combine to describe the overall significance rating. Calculated significance of impact determines the overall impact on (or risk to) a specified receptor and is calculated as the product of the probability (P) of the impact occurring and the severity (S) of the impact if it were to occur (Impact = P×S). This is a widely accepted methodology for calculating risk and results in an overall impact rating of Low (L), Low/Medium (LM), Medium (M), Medium/High (MH) or High (H). The significance of a particular impact is depicted in Figure 71 and assigned a particular colour code in relation to its severity.

Figure 69: Overall significance rating

Rating	Description		Quantitative rating
Low	PxS=1-3	(low impact significance)	L
Low/medium	PxS=4-5	(low/medium impact significance)	LM
Medium	PxS=6-9	(medium impact significance)	M
Medium/high	PxS=10-12	(medium/high impact significance)	MH
High	PxS=13-25	(high impact significance)	H

Figure 70: Overall significance rating - Severity

Probability (P)	Severity (S)

	1	2	3	4	5
1	L	L	L	LM	LM
2	L	LM	M	M	MH
3	L	M	M	MH	H
4	LM	M	MH	H	H
5	LM	MH	H	H	H

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings described in the following.

- *Insignificant:* The potential impact is negligible and will not have an influence on the decision regarding the proposed development.
- *Low*: The potential impact is very small and should not have any meaningful influence on the decision regarding the proposed development.
- *Low/medium:* The potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- *Medium:* The potential impact should influence the decision regarding the proposed activity/development.
- *Medium/high:* The potential impact will affect the decision regarding the proposed activity/development.
- *High:* The proposed activity should only be approved under special circumstances.

Practicable mitigation and optimisation measures are recommended, and impacts are rated in the prescribed way, both without and with the assumed effective implementation of the recommended mitigation (and/or optimisation) measures. Mitigation and optimisation measures are either:

- *Essential:* Measures that must be implemented and are non-negotiable.
- *Best practice:* Recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

The model outcome is then assessed in terms of impact certainty and consideration of available information. Where a particular variable rationally requires weighting or an additional variable requires consideration, the model outcome is adjusted accordingly.

20 IDENTIFICATION OF IMPACTS

Potential impacts resulting from the proposed Mamokebe Invest Coal Mine are identified during the scoping phase using input from the following sectors:

- Views of I&APs parties
- Existing information based on literature reviews and desktop studies (EAP, Stakeholders and specialist inputs)
- Mining permit outlier
- Site visit with the project team
- Legislation
- Guidelines

The following potential impacts were identified:

- Contamination of ground and surface water (including AMD)
- Disturbance of geology and soils
- Land uses and capability
- Socio-economic
- Flora and fauna
- Traffic
- Watercourses (wetlands)
- Dust and air quality
- Blast and vibration
- Heritage and cultural resource
- Paleontological

Proposed specialist studies to assess the environmental impacts during the EIA phase:

- Geohydrological investigation, impact assessment and modelling
- Wetland delineation and impact assessment (PES and EIS)
- Surface water assessment
- Terrestrial ecology including flora and fauna
- Civil engineering pollution control dam designs and storm-water management plan
- Blasting and vibration assessment
- Soils and land capability assessment
- Traffic impact assessment

- Updated Rehabilitation management plan
- Heritage impact assessment
- Hydropedological study
- Mine Work Programme
- Social and Labour Plan
- Paleontological desktop assessment
- IWWMP
- Geotechnical Studies

20.1 Positive and negative impacts of the proposed activities/development and alternatives

Currently, a comprehensive impact assessment has not being conducted for certain studies expect for Heritage impact assessment, Ecology and Wetlands. The anticipated impacts can, however, be discussed to provide an indication of whether it will be positive or negative (Figure 71).

Figure 71: Anticipated impacts

Impact	Status of impacts prior to mitigation	Proposed mitigation/improvement measures/ Recommendations
Surface and groundwater		
Ground and surface water contamination	Negative	❖ Conduct water monitoring and implement remedial actions as required and effective rehabilitation to as close to pre-processing conditions as practically possible. ❖ It is recommended that the monitoring network be extended to all the boundaries; north, south, east and west of the proposed coal mine. The construction must be overseen by a qualified Hydrogeologist to monitor pollution in the upper weathered aquifer as well as the lower fractured aquifer. ❖ A monitoring network should be dynamic. This means that the network should be extended over time to accommodate the migration of contaminants through the aquifer as well as the expansion of infrastructure and/or addition of possible pollution sources. An audit on the monitoring network should be conducted annually

		❖ Prevention of pollution of surface water resources and impacts on other surface water users by training of workers to prevent pollution, equipment and vehicle maintenance, fast and effective clean-up of spills, effective waste management, manage clean and dirty water in accordance ❖ The disturbance of streams and surface drainage patterns and reduction in flow to downstream must be mitigated through careful design of ephemeral stream diversion that minimizes impacts on the downstream environment, limit activities and infrastructure within wetland and watercourses and their floodlines and implementation of storm water management plan to divert clean water ❖ Clean water trenches should be constructed surrounding the coal mine to prevent clean water from entering the coal mine area, regarded as a dirty water catchment ❖ Dirty water trenches must be constructed as well to direct water from the mine to the pollution control dam, thereby preventing any contaminant water from leaving the mine area.
Wetland/River/ Hydrology/Geomorphology	Negative	• Natural pans and channeled valley bottom wetlands, including the Klein Olifants River, are the most important wetlands in the study area. These wetlands have been identified as potential no - go areas and it is recommended that all mining activities avoid these highly sensitive wetlands. Where any wetlands are to be destroyed, the best possible security factor (to a factor of 2) should be used if mining is above 100 m. This must be determined in the later stages of the design of the project. • Mining across wetlands/rivers should be restricted to low flow period (dry winter season) if possible. Ensure that mining activities are carefully monitored to limit unnecessary impacts to wetlands/riparian areas (particularly in-stream habitat). • Do not lower the original stream bed / profile of the

		wetland/river as this may result in scouring in an upstream direction and further alteration of bed conditions. • Ensure that coarse immovable material including boulders and other rock in river channels is not removed to ensure continued stability and functioning of the river systems. River sediments should not be permanently removed from the system in any case. • Limit activities occurring within the in-stream area of channels. • Under no circumstance should consideration be given to the excavation of an artificial channel or the damming of wetlands or rivers in such a manner as to totally restrict the flow. • Excavated material/sediments/spoil from the mining zone (including any foreign materials) should not be placed or stockpiled within wetlands or river channels, including the riparian zone of streams/rivers. • Any abstraction of water from rivers/wetlands for construction purposes must be approved by the Department of Water and Sanitation (DWS) by means of WUL.
Potential reduction of catchment yield of the aquifers through dewatering	Negative	• Regularly monitor groundwater levels as per the recommendations of the geohydrological report.
Excavated materials that are stockpiled in incorrect areas can interfere with the natural drainage, cause sedimentation and water pollution	Negative	• The areas excavated must have vegetated berms to separate dirty and clean water systems and serve as an erosion control measure. • The stockpiles must be vegetated to prevent erosion and subsequent siltation of clean and dirty water streams, as well as surface water resources. • Upslope diversion and down-slope silt containment structures should be constructed. • Surface water resources must be monitored pre-mining and during construction, as per the monitoring

		programme.
Terrestrial ecology		
The clearance for the construction of the proposed structures and infrastructure will result in habitat loss	Negative	• Keep the footprint of the disturbed area to the minimum and designated areas only. • Unnecessary vegetation clearing should be avoided. • Ensure rehabilitation plans are initiated during and after construction in areas not affected by mining operations. • Vegetation clearing on slopes must be minimised and, where necessary, appropriate stormwater management must be put in place to limit erosion of exposed soil. • No harvesting of indigenous tree species for firewood should be permitted. • An environmental induction for all staff members must be mandatory to discuss the potential of fire e.g. only smoking in designated areas and no open cooking fires. • All licences must be obtained prior to mining; • All ablution facilities must be placed far away from the water bodies including their buffer zone (50 meters from watercourses); • When placing structures as well as the mining area high sensitive areas must be avoided; • An alien and invasive management plan as well as emergency preparedness plan during spillages must be adhered to at all times; and • Rehabilitation of cleared/mined areas occurs to avoid or to limit erosion
Accidental introduction of alien species and invaders	Negative	• Eradication and/or control of alien invasive plants and weeds as per the alien and invasive species monitoring programme. • Disturbance of natural areas should be avoided as far as possible and the spread of alien flora into natural areas must be controlled. • Continuous monitoring of the growth and spread of alien and invasive flora coupled with an adaptive management approach to identify suitable control mechanisms (e.g.

		mechanical, chemical or biological control). Mechanical control is usually preferred. • Cleaning of vehicles and equipment before entering natural areas to remove large deposits of foreign soils and plant material sourced from elsewhere.
Faunal mortalities	Negative	• Environmental induction for all staff members must be mandatory to discuss issues related to the killing and/or disturbance of faunal species should be avoided. • Several staff members must complete a snake handling course to safely remove snakes from designated areas. • Road mortalities should be monitored by vehicle operators (for personal incidents only) and the ECO (all road kill on a periodic monitoring basis as well as specific incidents) with trends being monitored and subject to review as part of the monthly reporting. Monitoring should occur via a logbook system where staff notes the date, time and location of the sighting/incident. This will allow determination of the locations where the greatest likelihood exists of causing road mortality and allow mitigation against it (e.g. fauna underpasses, and seasonal speed reductions). Mitigation must be adapted to the on-site situation which may vary over time. • All staff operating motor vehicles must undergo an environmental induction training course that includes instruction on the need to comply with speed limits, to respect all forms of wildlife (especially reptiles and amphibians) and, wherever possible, prevent accidental road kills of fauna. Drivers not complying with speed limits should be subject to penalties. • The proposed prospecting activities will result in the deaths of numerous fauna species. It is suggested that construction and mining operations occur from a predetermined area and move along a gradient to allow fauna species to relocate. • The ECO must monitor live animal observations to detect trends in animal populations and implement proactive

		adaptable mitigation of vehicle movements. • Should holes or burrows be located on-site, contact a zoological specialist to investigate and possibly remove any species located in them. • Where possible, barriers around excavation sites must be erected to prevent fauna from falling into excavations. • The area surrounding the bulk sampling operation must be demarcated and fenced-off to restrict animals from moving into the area, and to reduce fauna mortalities.
Vegetation and Fauna Management		• Keep the clearing of natural vegetation in wetland areas to a minimum and attempt to ensure that clearing occurs in parallel with the mining progress where practically possible. • Limit mining equipment operating in wetland/riparian areas to that needed to clear • Temporary noise pollution due to mining works should be minimized in sensitive areas by ensuring the proper maintenance of equipment and vehicles and tuning of engines and mufflers as well as employing low noise equipment where possible. • No wild animal may under any circumstance be hunted, snared, captured, injured, killed, harmed in any way or removed from the site. This includes animals perceived to be vermin. • Any fauna that are found within the mining corridor should be moved to the closest point of natural or semi-natural vegetation outside the mining corridor. A specialist may need to be used for dangerous/venomous species such as snakes.
Geology and soils		
Land use change which will affect the soil and land use capability both during construction phase and	Negative	• Should the No-Go alternative not be considered, mining activities must be located on low-medium agricultural potential land to minimise impacts. • Compensate landowners.

post-mining operations. Loss of agricultural soils and land expected.		• Rehabilitate areas disturbed by mining to return land to arable land where feasible. If not, other land uses (decommissioning phase) deemed socially, economically or environmentally applicable must be considered.
Site clearance and levelling during the construction phase will cause some additional exposed areas and could trigger erosion and siltation, especially during rainy periods	Negative	• Prevent soil loss through erosion. • Develop appropriate storm water management system to control surface run off over exposed areas. • Preserve soil fertility for later use. • Ensure all vehicles stay within the designated areas (for example, away from watercourses). • Plan to construct the majority of development during the dry winter months. • Have in place temporary erosion and sedimentation trapping control measures during the construction phase
Storage of topsoil	Negative	• Remove and stockpile topsoil from roads, building platforms, stockpile and dam areas prior to construction. • Preserve topsoil and store in an appropriate manner to maintain viability and seed bank for future rehabilitation. • Store away from watercourses to prevent sedimentation and erosion. • Protect from alien plant establishment.
Soils and Sediment Management	Negative	• Where possible, mining activities in river and wetlands should proceed during the dry winter months (low or zero flow periods) in order to limit the potential for erosion linked to high runoff rates. • All soil stockpiles should be placed in an up-slope direction from the trench so that that any surface wash is directed into the trench and not further downslope. • Any erosion points created during mining activity construction should be filled and stabilized immediately. Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. • No stockpiling of soils or materials should take place within a watercourse, including wetlands and the

		riparian zone of streams/rivers. • Periodic visual inspections of on-site water quality, identifying the source of any rapid increases in turbidity of surface waters and remedying this where necessary such be performed by a qualified Environmental Officer. Water must be pumped out into a well- vegetated area some distance from any watercourse to facilitate sediment trapping and reduce the chance of sediment entering wetlands/streams. • Excavated and imported material should be stored away from streamlines / areas of concentrated flow to limit the risk of sediment wash to downstream areas. • Any topsoil removed from wetlands must be stockpiled separately from subsoil material and replaced once mining is complete to facilitate re-colonization of the site. • Stripped topsoil from wetlands must not be buried or in any other way be rendered unsuitable for further use by mixing with spoil or subjected to compaction by machinery. • Exposed soils should be rehabilitated as soon as practically possible to limit the risk of erosion. The channel embankments must be rehabilitated to ensure both longitudinal and cross-sectional stability against summer floods.
Pollution		
Waste Management/Pollution Control	Negative	• Storage of potentially hazardous materials (e.g. fuel, oil, etc.) should be outside of the 100-year flood line, or within a horizontal distance of 50m from a watercourse or wetland. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas. • Operation and storage of machinery and mining-related equipment must be done outside of wetlands and rivers wherever possible, unless authorised by a WUL. • Spillages of fuels, oils and other potentially harmful

		chemicals should be cleaned up immediately and contaminants properly drained and disposed of using proper solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil from the site must be removed and rehabilitated timeously and appropriately. • Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any watercourse (including river and wetlands). • Provide adequate waste disposal facilities (bins) and encourage workers not to litter or dispose of solid waste in the natural environment but to use available facilities for waste disposal. • Ensure that any rubbish is regularly cleared from the site, especially from wetlands/streams. • Routinely check machinery/plant for oil or fuel leaks each day before mining activities begin. No stockpiling should take place within a watercourse, including wetlands and the riparian area of the river. • Sanitation – portable toilets (1 toilet per 30 users is the norm) to be provided where mining is occurring. Workers need to be encouraged to use these facilities and not the natural environment. Toilets should be located outside of the 1:100 yr. flood line of a watercourse or 50m or from any natural water bodies including streams and wetlands. Waste from chemical toilets should be disposed of regularly and in a responsible manner by a registered waste contractor.
Social		
Recruitment strategies for the mine	Positive	N/A
Advantage to previously disadvantage individuals	Positive	N/A
Community development programmes	Positive	N/A

Upgrades and expansion of services will benefit local area	Positive	N/A
Increased income generation for local community	Positive	N/A
Increased job opportunities for local mining communities	Positive	N/A
Economic injection to the area and Mpumalanga	Positive	N/A
Noise		
Noise emanating from heavy machinery and transport vehicles	Negative	• Noise barriers in the form of berms should be constructed as close to the noise sources as possible. • Mining-related machines and vehicles must be serviced regularly to ensure noise suppression mechanisms are effective, e.g. installing exhaust mufflers where possible. • Noisy machinery must be used predominately during daylight hours. • Grievance mechanism to record complaints should be kept on site and investigated. • Regular monitoring of noise to take place.
Noise from blasting	Negative	• Blasting operations are generally intermittent and should be limited to the day when ambient noise levels are highest.
Infrastructure (e.g. contractor's yard, weighbridge, workshop and stores)	Negative	• To reduce the visual impact of permanent structures, colours for roofing, walls, etc. should have a matt finish to reduce reflection. • Infrastructure must be located away from sensitive and elevated areas.
Location of stockpiles, pollution control dams and discard dumps	Negative	• Place as far away as possible from roads and settlements. • Topsoil stockpiles must be vegetated as soon as possible, to reduce erosion and decrease visual disturbance. • Keep stockpiles as low as possible to reduce visual impact.

		• Plant fast-growing indigenous trees around the dams to enhance visual.
Lighting pollution	Negative	• Avoid up-lighting of structures but rather direct the light downwards and focused on the object to be illuminated. • Use non-UV lights where possible, as light emitted at one wavelength has a low level of attraction to insects. This will reduce the likelihood of attracting insects and their predators specifically in the site camps.
Heritage and cultural		
Heritage resources disturbed/destroyed	Negative	1. From a heritage perspective supported by the findings of this study, the proposed mining development and associated developments are feasible. However, the proposed mining development should be approved to proceed as planned under observation that the development dimensions do not extend beyond the proposed sites. 2. The recorded historical farmstead is older than 60 yeas and is thus protected by Section 34 of the NHRA. 3. Although the historical farm house, stock kraal are in a poor state of conservation, they must be assessed and documented. They must not be destroyed without a permit from PHRA as prescribed in Section 34 the NHRA. 4. The recorded burial site must be demarcated by a danger warning sign and must be clearly marked to avoid any accidental damage by heavy mining equipment and haulage trucks. 5. The applicant must ensure that the descendants of the recorded graves are sought, and notified about this proposed mining development has an impact (directly or indirectly) on their burial site. 6. No stone robbing, or removal of any material is allowed. Any disturbance or alteration on this burial site would be illegal and punishable by law, under Section 36(3) of the
Paleontological sites disturbed/destroyed	Negative	
Cultural places disturbed/destroyed	Negative	

		NHRA. 7. Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1). 8. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA. 9. The footprint impact of the proposed mining development and associated infrastructure should be kept to minimal to limit the possibility of encountering chance finds. 10. Should any unmarked burials be exposed during mining, affected families must be tracked and consulted, relevant rescue/ relocation permits must be obtained from SAHRA before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999. 11. Should chance archaeological materials or human burials remains be exposed during mining work on any section of the proposed mining development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in mining scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the PHRA and NHRA regulations (see appended Chance Find procedure for further details). 12. The Project Public Participation Process should ensure

		that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated to PHRA throughout the proposed project development. This form of extended community involvement would pre-empty any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study. 13. The landowner must be requested to declare burial sites within their farmsteads to the EAP. 14. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP there are no other significant cultural heritage resources barriers to the proposed mining right application. The Heritage authority may approve the proposed development to proceed as planned with special commendations to implement the recommendations here in made.
Traffic		
Increased traffic volumes on the existing road networks	Negative	• Implement speed limits and safety controls on-site. • Construct access roads within safety limits from other crossings. • Possible road upgrades where required. • Create safe environment for pedestrians, animals and motorists. • Create fauna underpasses where necessary (e.g. bridge crossings).
Blasting and vibration		
Blasting and vibration	Negative	• Pre-blast survey of all structures in the mining area. • Ground vibration survey in the form of signature trace study to be done for determination of ground vibration constants that can be used for accurate ground vibration prediction. • Investigate the possibility of alternative methods to

		blasting.
Safety		
Blasting	Negative	• Clearly demarcated areas and erect signs to indicate blasting zones.
Roads and vehicles	Negative	• Speed limits must be in place on site and before access roads on a provincial or national road. • Ensure drivers are trained in road safety.
Surrounding neighbours	Negative	• Personnel are not permitted on other properties without permission. • Avoid conflict with surrounding landowners. • Safety specialist will be appointed, and assessments will be conducted. Recommendations will be implemented.
Air quality		
Dust pollution	Negative	• The removal of vegetation will be minimised during stripping to reduce the effects of dust pollution as a result of exposed soil. • Water or dust control agents must be used in working areas, and roads will be sprayed for dust suppression on a regular basis in designated susceptible areas during heavy usage. • Dust monitoring must be undertaken in accordance to the monitoring programme. It is recommended that topsoil stockpiles be vegetated to sustain biological components and prevent dust emissions. • Reduction of dust fallout levels and particulate matter. • All coal haul trucks must be covered by a tarpaulin. • The overland conveyor belt should be covered and coal on the conveyor should be sprayed to reduce emissions.

20.2 Mitigation measures

The impacts that are generated by development can be minimised if measures are implemented to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts to minimise impacts and achieve sustainable development. This will be

assessed and discussed in more detail during the EIA phase., however some recommendations as part of mitigations are listed in Table 28.

20.3 Motivating the preferred site

As a result of the scoping phase impact assessment and the sensitivity mapping exercise, a preferred layout alternative will be identified and assessed in the EIA phase.

21 ENVIRONMENTAL HEALTH AND SAFETY

This is a field that seeks to provide or improve safety in workplace. Singo Consulting will hire a specialist to do a study and come up with safety measures or recommendations during the EIA process.

22 PLAN OF STUDY

The scoping phase identified potential environmental impacts and discussed alternatives considered. The following section outlines the proposed plan of study which will be conducted for the various environmental aspects during the EIA phase. It is important to note that the plan of study will be guided by comment obtained from I&APs and other stakeholders during the PPP of Scoping Phase.

22.1 Impact assessment phase objectives

The impact assessment phase will have the following objectives:

- Identify and assess the environmental (biophysical and social) impacts of the construction, operation, decommissioning and post closure impacts of the proposed development. The cumulative impacts of the proposed development will also be identified and evaluated.
- Determine and assess alternative activities and locations in parallel with the proposed activity.
- Identify and evaluate potential management and mitigation measures that will reduce the negative impacts of the proposed development and enhance the positive impacts.
- Compile monitoring, management, mitigation and training needs in the EMPr.
- Provide the decision-making authorities with sufficient and accurate information to make a sound decision on the proposed development.

22.2 Impact assessment phase tasks

The impact assessment phase has four key elements, namely:

- ***Specialist studies**:* Specialist studies identified in the scoping phase and any additional studies that may be required by the authorities, will be conducted during the initial phase of the EIA. The relevant specialists will be appointed to conduct the various assessments. They will gather baseline information relevant to the study and assess impacts associated with the development. Specialists also make recommendations to mitigate negative impacts and optimise benefits. The resulting information is synthesised into the draft EIA report that will be made available to I&APs for review.
- ***EIAr**:* The main purpose of this report is to gather environmental information and evaluate the overall impacts associated with the project, consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIAr identifies mitigation measure/management recommendations to minimise negative impacts and enhance benefits.

  The draft EIAr and associated reports will be made available for public and authority review and comment for a period of thirty days as it was for scoping phase. The availability of the draft EIAr will be communicated to all registered I&APs and will be easily accessible. After comments have been received, the final EIAr will be compiled and submitted to the competent authority (DMRE) for review. This report will assist the DMRE in making an informed decision.
- ***EMPr**:* The EMPr provides guidelines to the proponent and the technical team on how to best implement the mitigation measure/management recommendations outlined in the EIAr during the construction, operational and decommissioning/rehabilitation phase. The EMPr is a legally binding document, and once approved cannot be amended without permission from the DMRE.
- ***PPP**:* The PPP initiated during the scoping phase, is continued. This includes continuous engagement with I&APs and stakeholders, which includes meetings, receiving comments, issues and concerns raised by I&APs and the authorities during the review period, and also provides relevant responses to these comments.

22.3 Alternatives to be considered, including no-go option

According to the MPRDA and NEMA regulations, feasible alternatives need to be considered and assessed during the scoping and impact assessment phase of the project. During the scoping phase, based on professional judgement of the EAP, the engineering designs, specialist inputs, and I&AP comments, must

be considered. The alternatives identified must achieve the triple bottom-line of sustainability, i.e. they must meet the social, economic and ecological needs of the public. The alternatives must aim to address the key significant impacts of the proposed project by maximising benefits and avoiding or minimising the negative impacts. The primary objective must be to avoid all negative impacts, rather than minimise them. The "feasibility" and "reasonability" of and the need for alternatives must be determined by considering:

- The general purpose and requirements of the activity
- Need and desirability
- Opportunity costs
- The need to avoid negative impact altogether
- The need to minimise unavoidable negative impacts
- The need to maximise benefits
- The need for equitable distributional consequence

A comparative assessment (of all alternatives identified) will be conducted in accordance with the aforementioned criteria, as part of the impact assessment.

22.4 Aspects to be assessed as part of the EIA

The following specialist studies will be assessed during the EIA phase:

- Soil, Land Capability and Land Use
- Surface Water
- Geohydrology
- Cultural and Heritage Resources
- Paleontological Impacts
- Social Impacts
- Air Quality
- Waste Classification
- Closure (updating rehabilitation plan)
- Geotechnical Study
- Terrestrial ecology
- Baseline Risk Assessment
- Traffic Impacts
- Blasting and Vibration

In addition, the following will continue during the EIA phase:

- Public participation and consultation
- Environmental Management Programme
- Site layout designs and Mining Works Programme

22.5 Proposed method of assessing environmental aspects and alternatives

Refer to section 20 for more details.

22.6 Stages at which the competent authority will be consulted

Competent authorities stated being consulted during the initial notification period, scoping phase and during the EIA phase. A scoping phase meeting was not held with the DMRE and DWS, however, draft Scoping reports were submitted to their offices (See Appendix 9). The purpose of the authority meeting is to explain the project in detail to authorities and clarify the process anticipated. Stakeholders include the district and local municipalities, ward councillors, and others. Thus a meeting was held with ward 21 counsellor and other stakeholders responded through emails with their comments based on the draft scoping report which was sent to them.

The consultation process to be followed as part of the review and decision-making stages include:

- Scoping review and decision-making stage
- Environmental impact assessment review and decision-making stage
- The environmental authorisation decision making and appeal process stage

22.7 Public participation process for the impact assessment

Competent authorities, stakeholders and I&APs were and/or will be consulted during the initial notification period, scoping phase and EIA phase.

22.7.1 Steps to be taken to notify interested and affected parties

A detailed description of the PPP conducted for the scoping phase is described in Section 7 and Appendices. I&APs were notified of the proposed application via newspaper advertisement, emails, site and public notices. The PPP was undertaken in accordance with the NEMA process and the 2014 Regulations (as amended). A minimum of thirty days was provided to the public to register as I&APs and provide initial comments. Thirty days was provided to comment on the draft scoping report. The

information submitted by I&APs was utilised Final Scoping and will be utilised more in detail during the Impact Assessment and compilation of the EIAr. Should the final scoping report be accepted by the competent authority, an EIA will be undertaken. During the EIA phase I&APs, stakeholders and the competent authorities will be notified of the process to be undertaken (as described in Section 7 and outlined in the NEMA regulations (2014, as amended). They will also be provided an opportunity to comment on the draft EIAr (which will include specialist studies) and attend public meetings.

22.7.2 Details of the engagement process

The process of identifying and contacting landowners, stakeholders and I&APs commenced when I&APs were notified via site and public notices, newspaper adverts, emails and distribution of the BID. Landowner and his contact details was identified through the prospecting phase register from the client, direct consultation and/or Title Deed search for the property was done. Proof of notifications and documentation pertaining to the PPP during scoping phase have been recorded and will be recorded also during environmental impact assessment phase.

During the EIA phase, I&APs will be afforded the following opportunities in order to participate in the project:

- I&AP'S will be notified of the following phase and acceptance of the Scoping Report.
- I&APs will be asked to provide their comments on the project, notified when the draft EIAr is available for review and notified of a public meeting that will take place.
- The EIAr and EMPr will be available for comment for a period of thirty days at the same public places in the project area that the scoping report will be made available. Report copies will be sent to stakeholders who request it.

All comments and issues raised during the public comment period will be incorporated into the final EIAr and EMPr to be submitted to the competent authorities for review and the final decision-making stage. I&APs will be notified of the decision of the competent authority within fourteen days of receiving written letters and will specify any further process to be undertaken, like the appeal process.

22.7.3 Information which was provided during Scoping and will be t provided to interested and affected parties during EIA phase.

The following information was and/or will be made available to I&APs:

- BID: The aim of the BID is to inform all I&APs of the proposed project and process followed during the scoping and which will be followed during EIA phase, which were/or are; the undertaking of

the PPP and EIA for the compilation of the EIA, Environmental Management Programme and Waste Management Licence for the proposed mining activities.

- The site plan, scale and extent of activities to be authorised.
- The draft scoping report, which included:
    - The plan of study:
        - List of activities to be authorized according to NEMA, NEM:WA and NWA
        - Indication and discussion of the impacts of activities to be authorised
        - The proposed specialist studies that will be undertaken as part of the project
        - The proposed mining methods to be used
        - Discussion of alternatives, including location, process and methodology and no-go
        - Details of the MPRDA, NEMA, NEM:WA and NWA Regulations (including a list of other applicable regulations) that must be adhered to
    - Draft EIR and EMPr (including results from the specialist assessments) will be made available for public review and comment for a period of thirty days.
    - Information will be made available as requested by the I&APs throughout the process.

22.8 Tasks that will be undertaken during the EIA

The following tasks will be undertaken as part of the EIA phase of the project:

- Finalisation of the legislative context in which the activities will take place and documentation of the proposed activity and how it complies with this legislation.
- Finalisation of the activities triggered under NEMA and NEM:WA based on the specialist assessments and final design layout and specifications.
- Identification of the location of the development footprint in the preferred site based on impact and risk assessment process. This includes cumulative impacts and ranking of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.
- Identification of the most ideal location for the activities in the preferred site based on the lowest level of environmental sensitivity identified during the assessment, especially with the proposed sitting of the mining infrastructure.
- Determination of the nature, significance, consequence, extent, duration and probability of the impacts occurring to identify preferred alternatives and the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, can be avoided, managed or mitigated.
- Identification of suitable measures to avoid, manage or mitigate identified impacts
- Detailed specialist studies

- Continued PPP
- Compilation of the draft EIAr and EMPr and, once the consultation, review and commenting period has finished, the finalisation of the EIAr and EMPr, which will be submitted to the CA (Competent Authority) for review and final decision making.

❖ SUMMARY OF NEXT STEPS IN THE EIA PROCESS.

The next step will be to finalise the specialist studies that will inform the impact assessment. During the impact assessment phase, the issues raised by stakeholders and the potential impacts of the proposed project on the environmental and socio-economic status of the area will be examined in detail. Stakeholder issues will therefore assist to drive the EIA process. When complete, the findings of the specialist studies will be integrated into a single report, the Draft EIA Report and EMPR. The report will then be made available for stakeholder comment, after which it will be finalised and submitted to the decision making Authorities for a final decision.

22.9 Measures to avoid, reverse, mitigate, or manage identified impacts and determine the extent of the residual risks

Please refer to Figure 71: Anticipated impacts.

22.10 Financial Provision

Financial provision data for Mamokebe Investments (Pty) Ltd is still under way. After the layout has been drawn then the information will be made available.

23 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

Compliance with the provision of Section 24(4)(a) and (b) read with Section 24 (3) (a) and (7) of the NEMA, the EIA must include the following.

23.1 Impact on the socio-economic condition of any directly affected person

Full details will be made available during the EIA phase after the specialist studies and consultation with the community, stakeholders and other I&APs. The proposed Mamokebe Investments Coal Mine will provide employment opportunities, skills development, social development programmes, community upliftment and economic injection to the local area. Furthermore, impacts including traffic, service delivery, land use changes, security and safety will be assessed and discussed during the EIA phase.

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

A specialist will be appointed by Singo Consulting (Pty) Ltd. The appointed specialist will conduct the first assessment during the scoping phase and the second phase of assessment during the EIA phase whereby full result of both phases will be made available.

23.3 Other matters required in terms of Section 24(4) (A) and (B) of the Act

Section 24(4)(b)(i) of the NEMA (as amended), stipulates that an investigation must be undertaken to determine the potential consequences or impacts of the alternatives on the environment and assess the significance of these consequences or impacts, including the option of not implementing the activity. Alternatives have been discussed in Section 6 of this report and will be addressed in detail during the EIA phase once all specialist assessments and comments from I&APs, stakeholders and the competent authorities have been received.

24 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTIES

Certain assumptions, limitations, and uncertainties are associated with the scoping phase. This report is based on information that is currently available. The following limitations and assumptions are applicable:

- This report is based on project information provided by the client.
- Not all specialist studies have been conducted for the scoping phase: only heritage, ecology and wetland studies have been conducted thus far. Descriptions of the environmental, economic and social environments are based on desktop studies and available literature for the area. More detailed information will be provided in the EIA phase based on the outcomes of the specialist studies. Limited scoping-phase specialist input was obtained for inclusion in this report.
- The description of the baseline environment and, where possible, the updated information, has been obtained from various sources. More detailed information will be provided in the EIA phase based on the outcomes of the specialist studies, the finalisation of the Mining Works Programme and design layout.
- A detailed impact assessment was partially done at present; however, the levels of confidence is considered too low. Thus, full detailed impact assessment will be done once detailed specialist input and comments have been obtained from the I&APs, which will be presented and discussed in more detail during the EIA phase.

25 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 I&APs and any responses by the EAP to comments or inputs made by I&APs are correctly reflected herein.

-END-

26 EAP DECLARATION

I, _____ declare that:

General declaration:

- I act as the independent EAP in this application.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting Environmental Impact Assessments ("EIAs"), including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations and all other applicable legislation.
- I will take into account, as far as possible, the matters listed in Regulation 8 of the Regulations when preparing the application and any report relating thereto.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority.
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to I&APs and the public and that participation by I&APs is facilitated in such a manner that all I&APs will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application.

- I will ensure that the comments of all I&APs are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments made by I&APs in respect of a final report may be attached to the report without further amendment to the report.
- I will keep a register of all I&APs that participated in a PPP.
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.
- All the particulars furnished by me in this form are true and correct.
- I will perform all other obligations as expected from an EAP in terms of the Regulations.
- I realise that a false declaration is an offence in terms of Regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.

Disclosure of vested interest (delete whichever is not applicable)

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity other than remuneration for work performed in terms of the Regulations.

I do not have any vested interest in the proposed activity other than remuneration for work performed in terms of the NEMA regulations.

Signature of the EAP

Name of company

Date

Appendix 1: DMRE correspondence