SCOPING REPORT FOR COAL MINING RIGHT APPLICATION, INTEGRATED WATER USE LICENSE APPLICATION, INTERGRATED ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL AUTHORISATION, ON PORTION 09 OF THE FARM NAUDESBANK 172 IS, LOCATED IN THE MAGISTERIAL DISTRICT OF CAROLINA, MPUMALANGA. (DMR Ref MP30/5/1/2/2/10255MR.)

Prepared for:

Mining & Industrial Supplier (Pty) Ltd

2 Gladiola Street, Deljudor Ext 10, Emalahleni, 1035.

Prepared by:

Singo Consulting (Pty) Ltd

Office No. 16

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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:	MBG MINING AND INDUSTRIAL SUPPLIERS (PTY) LTD(2011/112327/07)
TEL NO.:	076 130 0602
E-MAIL.:	bafanaz@numsa.org.za
FAX NO.:	086 5144 103
POSTAL ADDRESS.	PO BOX 4050 MIDDLEBURG 1050
PHYSICAL ADDRESS.	2 Gladiola Street, Deljudor Ext 10, Emalahleni
FILE REFERENCE NUMBER SAMRAD:	MP 30/5/1/2/2/10255MR

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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 taken into account any minimum requirements applicable or instructions or guidance provided by the Competent Authority to the submission of applications. It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or 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.

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OBJECTIVES OF THE SCOPING PROCESS

The objective of the scoping process is to, through a consultative process –

(a) Identify the relevant polices 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; and
(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.

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EXECUTIVE SUMMARY

Background

MBG MINING AND INDUSTRIAL SUPPLIERS (PTY) LTD (hereafter the applicant) has appointed Singo Consulting (Pty) Ltd to undertake environmental authorizations associated with the proposed Carolina Coal Mine. The applicant has obtained a Prospecting Right reference number MP 30/5/1/1/2/10529 PR of which the EMP was approved on the 17th of April 2013 by the Department of Mineral Resources (DMR) to prospect for coal on Portion 09 of the farm Naudesbank 172 IS with an extent of 179.534ha, Carolina Mpumalanga province. The application of a mining right to the DMR includes the abovementioned property and extent. An application was lodged with the DMR on 21 May 2018 (reference number: MP 30/5/1/2/2/10255MR). The extent of the mining right covers the above-mentioned farm portion and the proposed project relate to the opencast which within the project area there is only one coal seams intersected, the E-Seam. The seam is the last seam as per the stratigraphy of the Ermelo Coal Field. According to the CPR, Geology of A Block shows that the block is characterised E-Seam which can attain a maximum thickness of up to 2m and coal quality of 29MJ/kg at raw CV. The coal seam deeps towards the North of the block. When coal seams are near the surface, it may be economical to extract the coal using open cut (also referred to as open cast, open pit, or strip) mining methods. Open cast coal mining recovers a greater proportion of the coal deposit than underground methods, as more of the coal seams in the strata may be exploited.

In order for the proposed mine to operate, the applicant is required to submit an application for a mining right with the DMR. In support of the application to obtain the mining right, the applicant is required to conduct a Scoping and Environmental Impact Assessment (S&EIA) process that need to be submitted to the DMR for adjudication, which includes 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).

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Scoping and Environmental Impact Assessment (S&EIA) process

A S&EIA is conducted in two phases. The first phase is scoping and the second phase is the EIA/EMPr report compilation. The scoping phase will commence once the application has been submitted with the competent authority and the following tasks will be undertaken: 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; and 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 that are set out in the scoping report. The EIA/EMPr report will document the assessment findings and will detail the measures required to avoid, mitigate and/or manage the potential impacts.

The requirements for the S&EIA process are specifically 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 scoping phase, 106 days for EIA phase, and107 days for competent authority to review).

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LIST OF ABBREVIATIONS

BID: Background Information Document
DEA: Department of Environmental Affairs
DMR: 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
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 tons 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

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1. INTRODUCTION AND BACKGROUND

MBG MINING AND INDUSTRIAL SUPPLIERS (PTY) LTD (hereafter the applicant) has appointed Singo Consulting (Pty) Ltd to undertake environmental authorizations associated with the proposed Carolina Coal Mine. The applicant has obtained a Prospecting Right reference number MP 30/5/1/1/2/10529 PR of which the EMP was approved on the 17th of April 2013 by the Department of Mineral Resources (DMR) to prospect for coal on Portion 09 of the farm Naudesbank 172 IS with an extent of 179.534ha, Carolina Mpumalanga province. The application of a mining right to the DMR includes the abovementioned property and extent. An application was lodged with the DMR on 21 May 2018 (reference number: MP 30/5/1/2/2/10255MR). The extent of the mining right covers the above-mentioned farm portion and the proposed project relate to the opencast which within the project area there is only one coal seams intersected, the E-Seam. The seam is the last seam as per the stratigraphy of the Ermelo Coal Field. According to the CPR, Geology of A Block shows that the block is characterised E-Seam which can attain a maximum thickness of up to 2m and coal quality of 29MJ/kg at raw CV. The coal seam deeps towards the North of the block. When coal seams are near the surface, it may be economical to extract the coal using open cut (also referred to as open cast, open pit, or strip) mining methods. Open cast coal mining recovers a greater proportion of the coal deposit than underground methods, as more of the coal seams in the strata may be exploited.

In order for the proposed mine to operate, the applicant is required to submit an application for a mining right with the DMR. In support of the application to obtain the mining right, the applicant is required to conduct a Scoping and Environmental Impact Assessment (S&EIA) process that need to be submitted to the DMR for adjudication, which includes 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).

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The proposed opencast coal mining operations constitutes various listed activities which have been listed within the scheduled activities in Government Notice Regulation No 324, 325 and 327 (amended 7 April 2017) and therefore require a full Scoping and EIA process to be followed. Prior to any listed activity being approved by the DMR, it is required that an environmental process is undertaken and a report is 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. There are two primary phases, namely the scoping phase and the impact assessment phase.

These two phases are discussed in more detail below:

1.1 SCOPING PHASE

The scoping phase is conducted as the precursor to the Environmental Impact Assessment (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 of the proposed project area and surroundings, desktop studies which include GIS mapping, and review of existing reports, guidelines and legislation.
- Landowners, adjacent landowners, local authorities, environmental authorities, as well as other stakeholders which may be affected by the project, or that may 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 for further investigations and specialist input required in the EIA phase is identified.

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- 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 report for consideration in the EIA phase.

1.2 EIA PHASE PROCESS

After the initial scoping phase, the EIA phase of the application includes:

- 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 accordingly to the nature and scale of the project impacts.
- An evaluation of development alternatives and identification of a proposed option.
- An 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 comment received during scoping and the draft EIA into the final EIA report.
- Issuing of the final EIA report for review.
- After the draft EIA report was reviewed, comments received are incorporated in the final EIA report and final Environmental Management Program (EMPr).

The requirements for the S&EIA process are specifically 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 scoping phase, 106 days for EIA phase, and 107 days for competent authority to review).

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2.PROPONENT AND ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) DETAILS

2.1 DETAILS OF THE PROPONENT

For purposes of this project, the following person may be contacted:

Table 1: Proponent's contact details

NAME OF APPLICANT	MBG MINING AND INDUSTRIAL SUPPLIERS (PTY) LTD
CELL NO:	Maria Zitha-076 130 0602
FAX NO:	086 5144 103
EMAIL:	bafanaz@numsa.org.za
POSTAL ADDRESS:	P/BAG X7297, SUITE 87, WITBANK, 1035.
PHYSICAL ADDRESS:	2 Gladiola Street, Deljudor Ext 10, Emalahleni, 1035.
FILE REFERENCE NUMBER DMR:	MP30/5/1/2/2(10255)MR

2.2 DETAILS OF EAP

MBG MINING AND INDUSTRIAL SUPPLIERS (PTY) LTD has appointed Singo Consulting (Pty) Ltd as an independent Environmental Assessment Practitioner (EAP) to undertake a Scoping and Environmental Impact Assessment (S&EIA) process that is required to support the application for a mining right. Singo Consulting (Pty) Ltd has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations. For purposes of this S&EIA, the following person may be contacted at Singo Consulting (Pty) Ltd:

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Table 2: EAP's contact detail

ENVIRONMENTAL ASSESSMENT PRACTITIONER	SINGO CONSULTING (PTY) LTD
Contact Person (s)	Senior: Kenneth Singo Junior: Rudzani Shonisani
Address	Office No: 16 First Floor (South Block) Corridor Hill Crossing 09 Langa Crescent, Corridor Hill, eMalahleni, 1035.
Postal Address	Private Bag X7297, Postnet Suite 87, Witbank, 1035
Contact Number(s):	Senior: 078 2727 839 / 072 0816 682 / 013 692 0041 Junior: 078 5481 244 / 079 9304 772 / 013 692 0041
Telephone number:	013 692 0041
Facsimile:	+27 86 5144 103
Email(s):	Senior: kenneth@singoconsulting.co.za Junior: rudzani@singoconsulting.co.za

2.2.1 Expertise of Environmental Assessment Practitioner

2.2.1.1 Qualifications (Appendix 4)

REFER TO CV

2.2.1.2 Junior consultant expertise

REFER TO CV

2.2.2 Specialist studies

Specialist studies will be undertaken to address the key issues that require further investigation. The specialist studies involve the gathering of data relevant to identifying and assessing impacts that may occur as a result of the proposed project. The specialists will also recommend appropriate mitigation / control or optimisation measures to minimise potential negative impacts or enhance potential benefits, respectively. Specialists will be appointed, and the relevant specialist assessments will be made available during the EIA phase.

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2.3 PROPERTY DESCRIPTION

Property description details for the proposed Naudesbank Coal mine are provided in Table 3. All farm names applicable to this S&EIA is listed below, although several S&EIA processes would have to be followed for the proposed mining operations as discussed in the introduction above.

Table 3: Property descriptions of the proposed Naudesbank Coal Mine

Farm Name:	Naudesbank MINE: Naudesbank 172 IS
Application area (Ha)	Approximately 179.53a Ha
Magisterial district:	Chief Albert Luthuli Local Municipality Gert Sibande District Municipality
Distance and direction from nearest town	The proposed mining area is situated approximately 16.36 km west of Carolina and 24.74 km North East of Hendrina. The site is close to national route R38 at about 2.51km North West of the road. The area is a mining area dominant and there is sufficient infrastructure like roads, electricity power lines and rail. The closest coal fired power station is Arnot and Hendrina; located in less than 70km north of the project area. There is no communities around the farm thus community unrest is not likely
21-digit Surveyor General Code for each farm portion	Mine T0IS00000000022200009
Locality map	Attach a locality map at a scale not smaller than 1:250000 and attached. (See Figure 1and 2).

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2.4 LOCALITY MAP

The mining right area is located on portion 09 of the farm Naudesbank 172 IS, owned by Mr VILLIERS CHARLES BENJAMIN DE at Carolina in the jurisdiction of Chief Albert Luthuli Local Municipality in the District of Gert Sibande in Mpumalanga Province, South Africa. The site is 179.534 hectares in extent and situated approximately 16.36 km west of Carolina and 24.74 km North East of Hendrina. The site is close to national route R38 at about 2.51km North West of the road. The area is a mining area dominant and there is sufficient infrastructure like roads, electricity power lines and rail. The closest coal fired power station is Arnot and Hendrina; located in less than 70km north of the project area. There is no communities around the farm thus community unrest is not likely. Refer to figure 1 and 2 below.

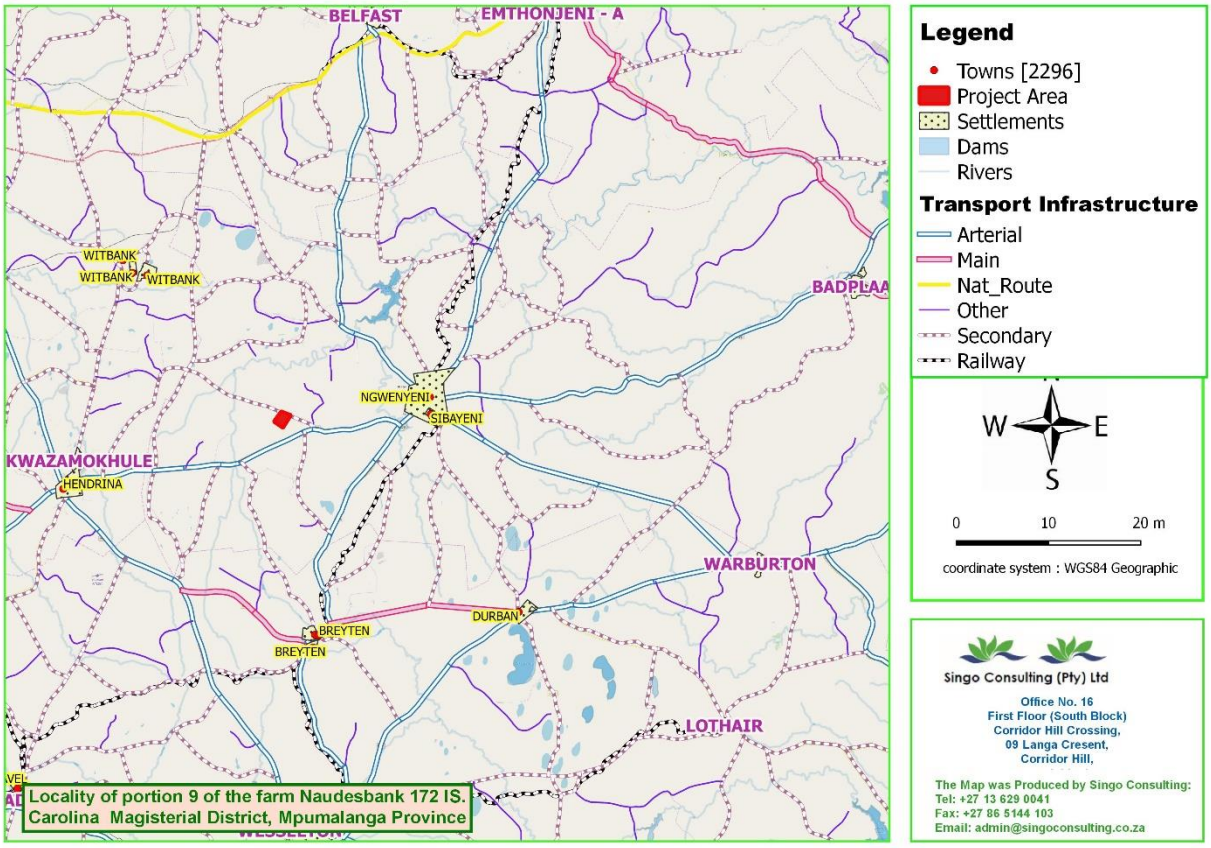

Figure 1: Locality map of the project area.

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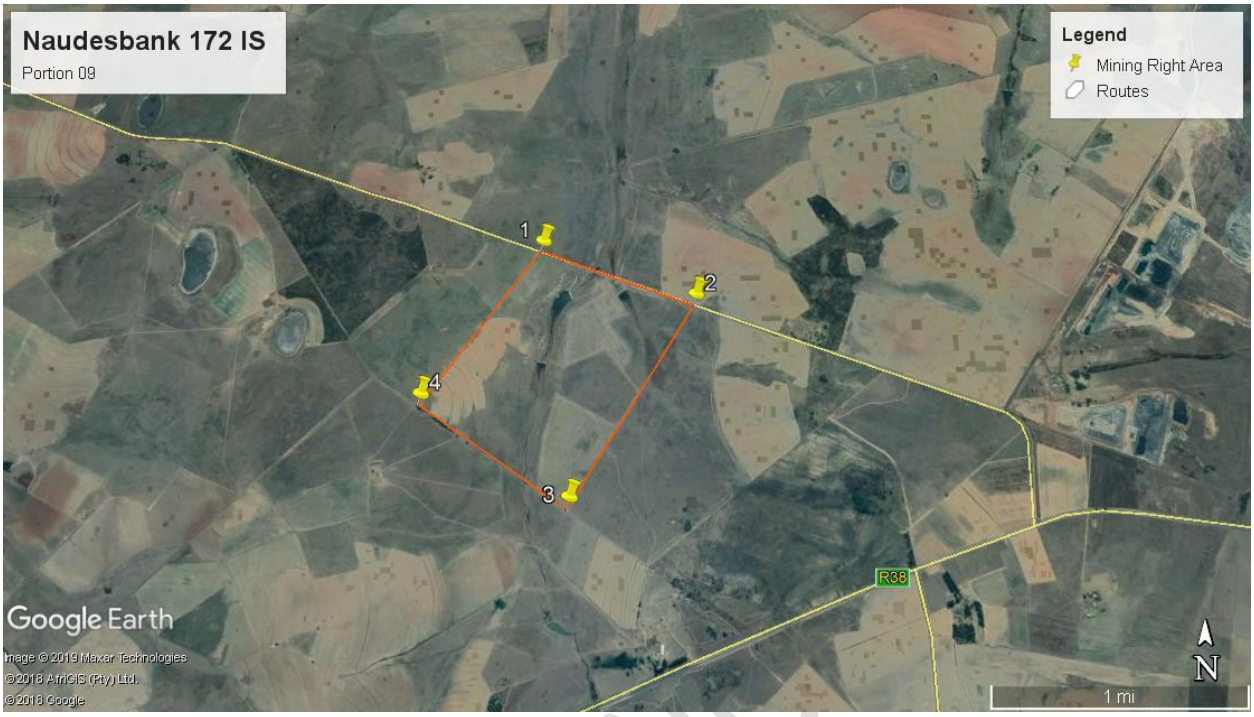

Figure 2: Google Earth View of the project area.

2.4.1 Landowners

The mining right is applicable for the entire Portion 09 of the above-mentioned property. Environmental Authorisation process for the Naudesbank Coal Mine project study area covers the following property which belong to the following landowners (See Table 4).

Table 4: Landowners of the affected properties

Landowner	Property description	Title deed number
Mr VILLIERS CHARLES BENJAMIN DE	Naudesbank 172 IS, Portion 09	T142618/2004

2.4.2 Description of current land cover

Land cover information is a crucial reference dataset that informs a wide variety of activities ranging from environmental planning and protection, development planning, economic development, compliance monitoring, enforcement and strategic decision making. When the global accessibility of Landsat 8 satellite imagery became available,

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it offered the opportunity to create the national land-cover dataset for South Africa, circa 2013-14, which replaced and updated the previous 1994 and 2000 South African National Land cover datasets (GEOTERRAIMAGE, 2015). The 2013-14 National Land cover dataset is based on 30x30m raster cells and is ideally suited for ± 1:75,000 - 1:250,000 scale GIS-based mapping and modelling applications. From the 2013-14 National Land cover dataset, the current land cover for the study area included multiple classes, the majority being: cultivated commercial fields, waterbodies and uncategorized land use, however during a field assessment it was observed that most of the farm is being used for grazing and commercial cultivation. The affected area from mining operations will be stipulated during the EIA phase.

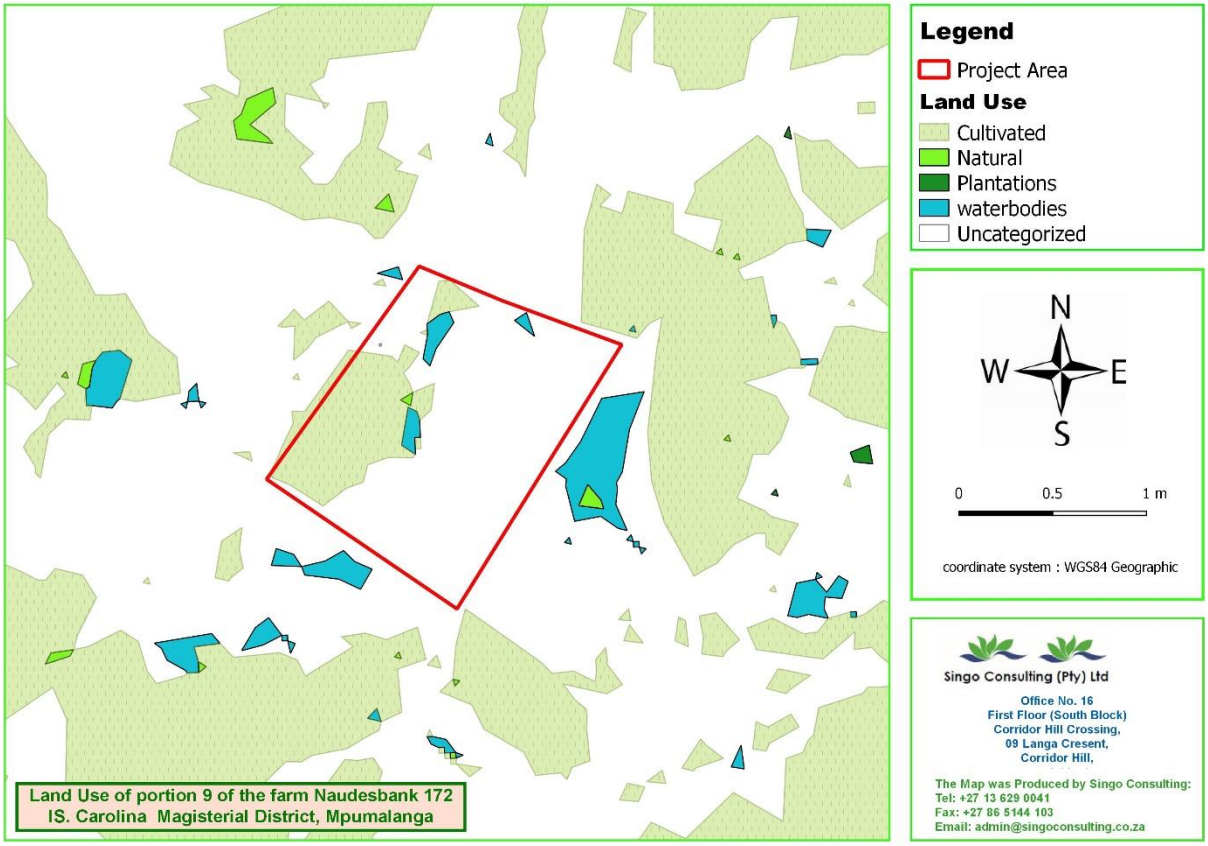

Figure 3: Study area in relation to current land cover

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2.4.3 Land claims

A land claim enquiry was conducted on the 4th of October 2019 from [Lazarus.Masuku@drdlr.gov.za,lynn.boucher@drdlr.gov.za,takalani.sirakalala@drdlr.gov.za'] and Lynn Boucher responded on the same day to say that communication must be made through phone call to the Mpumalanga offices and provided the contact details which are(013 752 4054). According to the outcomes it turns out that there is no land claim lodged against the proposed portion of Naudesbank 172 IS Farm. (See below and Appendix 3 for consultation correspondence)

COMMISSION ON RESTITUTION OF LAND RIGHTS

OFFICE OF THE REGIONAL LAND CLAIMS COMMISSIONER: MPUMALANGA PROVINCE
30 SAMORA MACHELL DRIVE, RESTITUTION HOUSE, NELSPRUIT
PRIVATE BAG X 11330 NELSPRUIT, 1200
TEL: 013 752 4054 FAX: 013 752 5418

Enquiries: Lazarus Masuku
Date: 09/10/2019

SINGO CONSULTING
E-MAIL: rudzani@singoconsulting.co.za
NAME: Rudzani Shonisani

LAND CLAIM IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 AND AS AMENDED IN TERMS OF THE RESTITUTION OF THE LAND RIGHTS AMENDMENT ACT 2014 (ACT NO 15 OF 2014).

REFERENCE NUMBER: R/6/142/271/29362

PROPERTY DESCRIPTION OF THE CLAIMED LAND

- Portion 9 of farm Naudesbank 172 IS

We refer to the land claim enquiry on land claims lodged with the Department.

Note that the lodgement of land claim is based on the Restitution of Land Rights Act, Act no 22 of 1994 and the Restitution of Land Rights Amendment Act, (Act not 15 of 2014.

Please note that there are no land claims lodged before 1998 re-lodgement period, however there are new claims lodged. The Commission is empowered to investigate all land claims and where applicable issues a Government Gazette to interested and affected parties if such land claims has been approved as valid claims.

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The above claim was lodged in terms of the Restitution of Land Rights Amendment Act, 2014 (Act No 15 of 2014) ("the Amendment Act") which, amongst others, reopened the lodgement of claims for a period of five years.

The validity of the Amendment Act was challenged in the Constitutional Court. The Constitutional Court found the Amendment Act to be invalid because of the failure of Parliament to facilitate public involvement as required by the Constitution. The Amendment Act ceased to be law on 28 July 2016 and the Commission is no longer allowed to accept lodgement of new claims from that date.

The Constitutional Court ordered that the claims that were lodged between 1 July 2014 and 27 July 2016 are validly lodged, but it interdicted the Commission from processing those claims until the Commission has finalised the claims lodged by 31 December 1998 or until Parliament passes a new law providing for the re-opening of lodgement of land claims. Parliament was given until 27 July 2018 to pass such a law.

The Commission will therefore not be processing these new claims until it finishes claims lodged by 31 December 1998 or until Parliament passes a new law providing for re-opening of lodgement of claims.

We apologise for the inconvenience caused.

Please quote the claim reference number in all correspondence with the Commission.

Yours sincerely,

MR E.S. NKOSI
CHIEF DIRECTOR
OFFICE OF THE REGIONAL LAND CLAIMS COMMISSIONER
DATE: 09/10/2019

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3. POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which may relate to the proposed project.

3.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, ACT 108 OF 1996 AS AMENDED

Section 24 states:

"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—

(i) prevent pollution and ecological degradation;

(ii) Promote conservation; and

(iii) 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 Act, 2002 (MPRDA), outlines the procedural requirements an applicant must follow to get a mining right who wishes to proceed with a mining project, part of which requires the applicant to obtain Environmental Authorisation (EA) in terms of the National Environmental Management Act (1998, as amended).

The MPRDA is administered by the Department of Mineral Resources (DMR) 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".

In the event that the proposed activities require material (e.g. sand, gravel, aggregate) for the purposes of construction then the provisions of the MPRDA may apply. In support of the application to obtain the mining right, the applicant is required to conduct a Scoping Report, EIA /EMPr and I&AP consultation process that need to be submitted to the DMR for adjudication.

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3.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA regulations, the applicant is required to appoint an environmental assessment practitioner (EAP) to undertake the EIA, as well as conduct the public participation process. In South Africa, EIA 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 again in December 2014. The December 2014 NEMA regulations are applicable 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 activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

In accordance with the provisions of Sections 24 (5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIA's in order to apply for, and be considered for, the issuing of an

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Environmental Authorisation (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 simpler 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 there are activities triggered under GN R. 984 and as such a full EIA process is necessary. On 7 April 2017, the NEMA 2014 regulations were amended, and accordingly the activities triggered under GN R. 324, 325 and 327 are applicable to this application.

A Scoping and EIA process is reserved for activities which have the potential to result in significant impacts which are complex to assess. Scoping and EIA accordingly provides a mechanism for the comprehensive assessment of activities that are likely to have more 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 a water resource such as a stream, wetland or river. The NWA is administered by the Department of Water and Sanitation (DWS).

The NWA section 21 defines eleven water uses that require an environmental authorisation:

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;

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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; and

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

3.5 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT

The National Environmental Management: Waste Act, 2008 (NEM:WA) (Act 59 of 2008) lists activities triggered for the mining project and for the management of waste that will be generated as part of this project to prevent environmental pollution and littering. On 2 June 2014 the National Environmental Management: Waste Amendment Act came into force. Waste is accordingly no longer governed by the MPRDA, but is subject to all the provisions of the National Environmental Management: Waste Act, 2008 (NEM:WA).

Section 16 of the NEMWA must also be considered which states as follows:

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

- "Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;
- Reduce, re-use, recycle and recover waste;
- Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, 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."

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These general principles of responsible waste management will be incorporated into the requirements in the EMPr to be implemented for this project. The NEM: WA provides for specific waste management measures to be implemented; as well as providing for the licensing and control of waste management activities. Waste management activities will be applicable 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 (Table 3).

3.5.1 NEMWA THE PLANNING AND MANAGEMENT OF RESIDUE STOCKPILES AND RESIDUE DEPOSITS REGULATIONS, 2015 (GN R 632):

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

3.5.2 NEMWA 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

3.5.3 NEMWA WASTE CLASSIFICATION AND MANAGEMENT REGULATIONS, 2013 (GN R. 634)

Chapter 9 of the above-mentioned Regulations 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.:

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- 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 accordingly to determine their nature (i.e. general or hazardous), and subsequently managed and disposed of in accordance with the relevant legislative requirements.

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 Object of the Act is:

- 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; and
- 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 which result in atmospheric emissions and consequently cause significant detrimental effects on the environment, human health and social welfare. The Listed Activities and Minimum National Emission Standards were published on the 22nd November 2013 (Government Gazette No. 37054).

According to the Air Quality Act, air quality management control and enforcement is in the hands of local government with District and Metropolitan Municipalities as the licensing authorities. Provincial government is primarily responsible for ambient monitoring and ensuring municipalities fulfil their legal obligations, with national government primarily

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as policy maker and coordinator. Each sphere of government must appoint an Air Quality Officer responsible for coordinating matters pertaining to air quality management. Given that air quality management under the old Act was the sole responsibility of national government, local authorities have in the past only been responsible for smoke and vehicle tailpipe emission control. The National Pollution Prevention Plans Regulations which came into effect on 21 July 2017 and tie in with The National Greenhouse Gas Emission Reporting Regulations which took effect on 3 April 2017. In summary, the regulations aim to prescribe the requirements that pollution prevention plans of greenhouse gases declared as priority air pollutants need to comply with, in terms of the NEM: AQA. The regulations specify who needs to comply, and by when, as well as prescribing 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 authorization from the relevant heritage authority. Section 34(1) of the NHRA states that, "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…" The NHRA is utilized as the basis for the identification, evaluation and management of heritage resources and in the case of CRM those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through NEMA, MPRDA and the 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 Environmental Impacts Processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage. The NEMA 23(2)(b) states that an integrated environmental management plan should, "…identify, predict and

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evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage".

A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations.

A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down.

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

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 also 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) (NEMBA), within the framework of NEMA, is to provide for:

- The management and conservation of biological diversity within South Africa, and of the components of such biological diversity;
- The use of indigenous biological resources in a sustainable manner; and

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❖ 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 NEMBA, 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, as the case may be; and
- 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.

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3.9 THE CONSERVATION OF AGRICULTURAL RESOURCES ACT

To provide for control over the utilization of the natural agricultural resources in South Africa in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

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.

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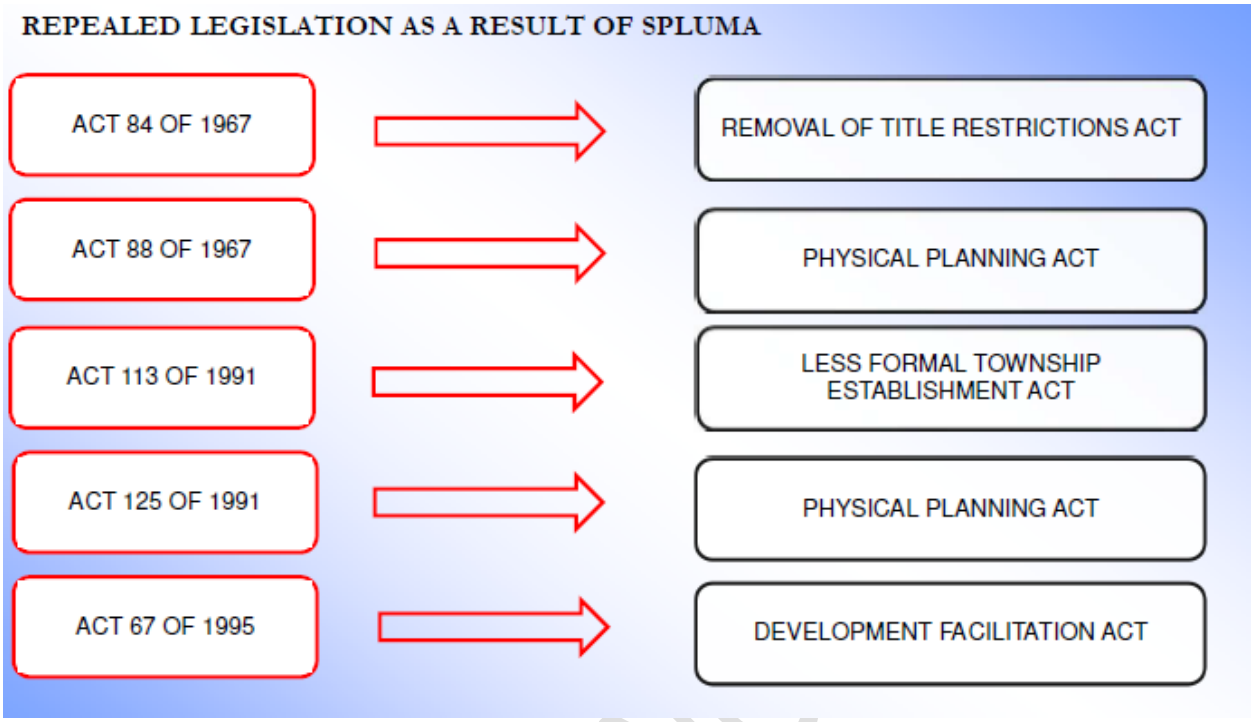

3.11 ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989) – NOISE CONTROL REGULATIONS

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 will need to be considered in relation to the potential noise that may be generated mainly 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

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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 process.

3.12 NOISE STANDARDS

There are a few South African Bureau of Standards (SABS) relevant to noise from mines, industry and roads which are:

- 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'; and
- 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 for determining 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

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necessarily render an activity unlawful per se. The noise assessment will take these noise standards and impacts into consideration.

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

4.1 MINING OPERATIONS

The mining right application is for 179.534ha and falls within The Ermelo coalfield. There are 8 drilled holes within the Naudesbank prospecting license area and the exploration results shows that coal is deposited in pockets. Portion 9 of the farm has small pocket of the E-Seam that is on itself divided into two Blocks; the A and the B-Block. There are 8 more holes are planned in order to fully understand the area geology. Only one major geological structures was picked up the dolerite dykes. Resource estimation is currently based on the drilled Block A. The block is classified as a Indicated Coal Resource as per the SAMREC code. The entire project is referred to as indicated coal resource.

Figure 4: Plan showing the drilling holes

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4.2 MINING METHODOLOGY

Mining methods vary widely and depend on the location, type and size of mineral resources. Surface mining methods are most economical in situations where mineral deposits occur close to the surface (e.g. coal, salts and other evaporite deposits or road quarry material) or form part of surface deposits (e.g. alluvial gold and diamonds, and heavy mineral sands). For this specific project the mining of coal by means of surface mining methods are viable due to the fact that the resource is situated close enough to the surface to make it economically mineable. Typical surface mining methods include: strip mining and open pit mining, as well as dredge, placer and hydraulic mining in riverbeds, terraces and beaches. These activities always disrupt the surface and this, in turn, affects soils, surface water and near-surface ground water, fauna, flora and all alternative types of land-use.

The generally low strip ratios and wide surface area of the project area makes it ideal for the opencast truck and shovel mining method. Also, the mining method applicability is driven by technical applicability, economic viability, safety, equipment and infrastructure.

The proposed mining method and sequence comprised of the following main mining activities for both waste and coal:

- Initial topsoil and soft overburden removal which will be stockpiled to ensure it can be replaced back in the initial box cut;
- The physical mining of the coal seam which includes drilling of hard overburden material, charging and blasting;
- The coal is loaded into trucks and hauled to the crushing and screening facility;
- Discard coal will be extracted and replaced in the bottom of the opencast pit, while the product will be taken to the weighbridge via trucks and then removed off site;
- The overburden is replaced back into the pit as mining progresses leaving a minimum area open at a single time;

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• The topsoil which was stripped and stockpiled separately before mining commenced is then replaced. The findings of the land capability study will determine the optimal composition to ensure pre-mining conditions for utilisation.

The proposed mining layout for the mine is of 100X50m block size. The purpose of a square mining layout is to increase the ease of strategic mine scheduling. The start of the mining layout was based on the mining boundary.

INFRASTRUCTURE REQUIREMENTS

• Access & Haul roads (with necessary security) including the upgrading of the access point to the gravel road;
• Contractor's Yard with septic/chemical ablution facilities;
• Offices;
• Weighbridge, workshop and stores (with septic/chemical ablution facilities);
• Rail Siding;
• Diesel facilities and a hardstand;
• Power and Water;
• Boxcut;
• Stockpiles (topsoil, overburden, subsoil/softs, ROM);
• Surface water management measures (stormwater diversion berms and trenches, pollution control dams, Discard
dump etc); and
• Crushing & screening.

The preliminary mining layout including infrastructure and the opencast pits is indicated in Figure 5 below. This layout will change when specialist investigations are completed, alternatives are assessed and also according to the requirements of the Environmental Authorisation for both the NEMA and WULA processes. This will be discussed in more detail during the EIA phase once the draft Mining Works Programme has been updated.

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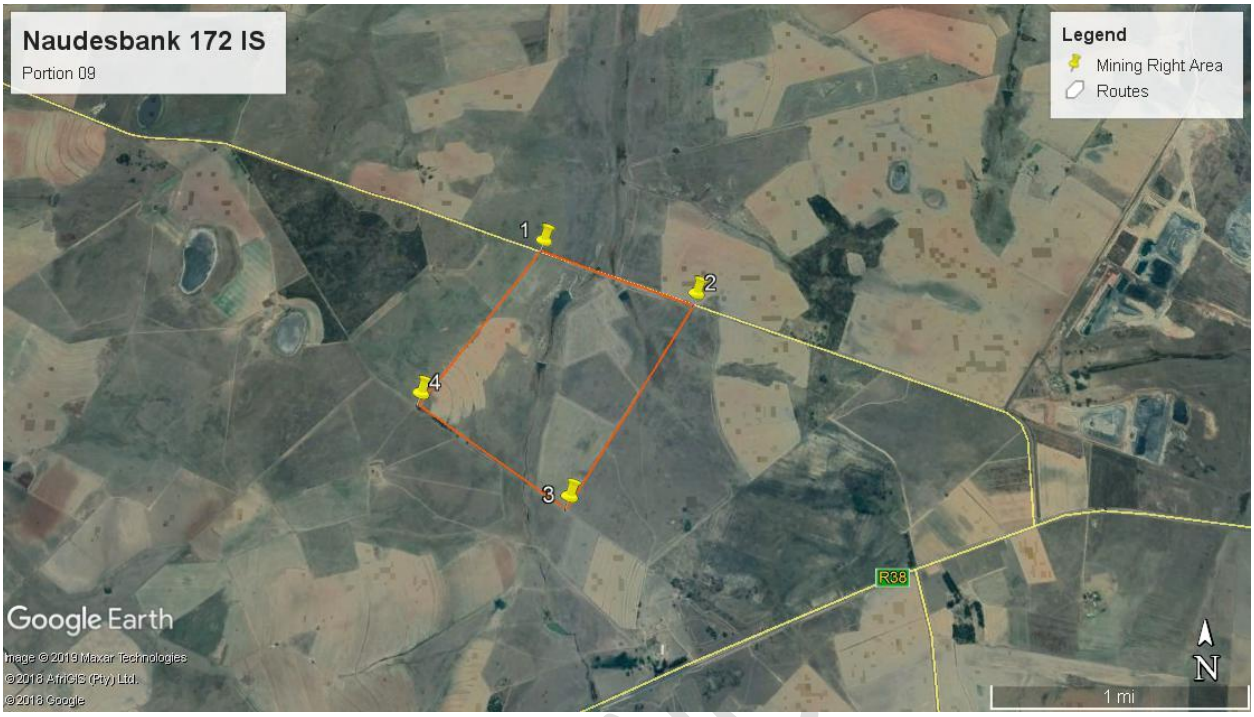

Figure 5: Preliminary mining layout for the proposed Naudesbank Coal Mine

4.3 LISTED AND SPECIFIED ACTIVITIES

The applicant has applied for a mining right and environmental authorisation for the development of a mine and supporting infrastructure for the two mining blocks identified. Both applications were accepted (refer to Appendix 2 for signed letters).The listed activities that require environmental authorisation in terms of the NEMA EIA Regulations GN R.326/324/325/327 amended on 7 April 2017, the Waste Management Activities listed in terms of the NEM: WA GN R. 921 (2013) and GN R. 633 (amended 2015) and the water uses in terms of section 21 of are indicated in Table 5, Table 6 and Table 7 below, respectively.

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Table 5: Listed activities according to NEMA requiring environmental authorization.

Government Notice	Activity Number	Description
Listing Notice 1: R.324 on 7 April 2017	9	The development of infrastructure exceeding 1 000 meters in length for the bulk transportation of water or storm water— (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 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 of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more The internal reticulation of water still needs to be finalised
	12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 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 exists, within 32 metres of a watercourse, measured from the edge of a watercourse This will be confirmed during the EIA phase.
	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 cubic metres or more Pollution Control Dams

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	14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metre Storage of diesel and other hydrochemicals
	19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres 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 – will be confirmed during the EIA phase
	24	The development of a road— (i) 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 (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres 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 cubic metres but less than 15 000 cubic metres Pollution control dams – confirm during the EIA phase

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	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 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;
	31	The decommissioning of existing facilities, structures or infrastructure for— (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014 This will be applicable for existing infrastructure on the properties – will be confirmed during the EIA phase
	56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; Upgrades to existing roads – to be confirmed during the EIA process
Listing Notice 2: R.325 on 7 April 2017	4	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 more than 500 cubic metres. Storage of diesel and other hydrocarbons – will be confirmed during the EIA phase
	6	The development of facilities or infrastructure for any process or activity which requires a

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		permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent Pollution control dams – will be confirmed during the EIA phase
	15	The clearance of an area of 20 hectares or more of indigenous vegetation Needs to be confirmed from the ecological assessment
	17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.
	19	The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— a) NA; or b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing Relates to the coal crushing, screening and washing of coal on site

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	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. Needs to be confirmed by soil capability study and wetland specialist
Listing Notice 3: R.327 on 7 April 2017	4	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 kilometres from national parks or world heritage sites or 5 kilometres 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	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

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		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 kilometres from national parks or world heritage sites or 5 kilometres 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	Mpumalanga i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA 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	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

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		plans; (gg) Core areas in biosphere reserves; or (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres 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	The treatment of hazardous waste using any form of treatment at a facility that has the capacity to process in excess of 10 tons but less than 100 tons
	12	The construction of a facility for a waste management activity listed in Category A of this Schedule
R.921 Category B	1	The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage
	7	The disposal of any quantity of hazardous waste to land.
	10	The construction of a facility for a waste management activity listed in Category B of this Schedule
R.633: Category B	11	The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002).

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R.921 **Category C**	2	The storage of hazardous waste at a facility that has the capacity to store in excess of 80m3 of hazardous waste at any one 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 (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 (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

This section will examine the need and desirability of the proposed Naudesbank Coal Mine project as well as the importance of coal as a resource and the desirability of coal mining operations at the proposed study area.

5.1 PROJECT SELECTION AREA

The project site has been selected based on the presence of an economically mineable coal resource. There are several economic benefits from the Naudesbank project, these include the fact that revenue at the mine will facilitate fund allocation to local economic development through the implementation of projects identified on the social and labor plan. Local contractors and businesses are also likely to benefit from supplying the mine with certain goods and service. MBG MINING AND SUPPLIER (PTY) LTD is fully

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committed to implementing development plans and projects that will line with the provision of the broad-based socio-economic empowerment charter for the South African Mining industry.

Development of the project will also contribute to the national 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 as well as providing wages for employees. More information regarding employment generated by the Naudesbank project will be included in the EIA report. Indirect income will also be increased through the mine's procurement of goods and services.

The Albert Luthuli spatial development framework (ALM, 2019-2020) identifies mining as a strategic objective for economic development and job creation. Mining will also enable community members to gain skills in the construction and operation of the mine.

Although mining is becoming more of 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 that the agricultural values of the land use are restored once the mineral resource is fully depleted. The location of the coal resource to be mined is fixed, but the mine infrastructure has been located with due consideration to known environmental and social sensitivities, while still considering engineering feasibility and financial factors. Thus, in summary, the Naudesbank project is needed and desirable to:

- Enable MBG MINING AND SUPPLIER (PTY) LTD to commence coal mining and producing coal;
- Enable MBG MINING AND SUPPLIER (PTY) LTD to stay in operation and earn profit;
- Enable MBG MINING AND SUPPLIER (PTY) LTD to produce a sufficient quality of coal to satisfy the various requirements of its clients;
- Facilitate the employment and economic development opportunities which will be created by the product

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

5.2 COAL AS AN IMPORTANT RESOURCE

Coal, because of its strategic importance, is one of the five minerals selected by the DMR for local beneficiation as it is considered critical to the on-going development of South Africa (Department of Mineral Resources, 2011). The driving force behind the emphasis of the importance of coal, coal mining and local beneficiation is primarily due to concerns voiced by Electricity Supply Commission (Eskom) over the future security of supply in both the medium and long term of the mineral to its coal fired electricity generating power stations, which has economical impacts if not met. South Africa's energy is predominately coal fueled, with limited renewable energy alternatives. South Africa consumes approximately 175 Mtpa of coal where Eskom consumes approximately 110 Mtpa (Eskom, 2017)1. Eskom is a South African electricity public utility, established in 1923 as the Eskom by the government of South Africa in terms of the Electricity Act (1922). The utility is the largest producer of electricity in Africa, is among the top seven utilities in the world in terms of generation capacity and among the top nine in terms of sales. The company is divided into Generation, Transmission and Distribution divisions and together Eskom generates approximately 95% of electricity used in South Africa. Currently, Eskom has 24 power stations in commission, consisting of 13 coal-fired stations (3 of which are in cold reserve storage, 1 nuclear station, 2 gas turbine stations, 6 hydroelectric stations and 2 pumped storage schemes. Eskom's existing coal fired power stations are critical in terms of electricity production and in meeting the growing energy requirements of South Africa as a whole. Coal and coal supply is consequently seen as critical and its importance is detailed in the Eskom Transmission Ten Year Development Plan 2018 to 2027 (Eskom, 2017)2. Without steady, secure supply of the mineral, it is unlikely that Eskom will be able to meet the energy demands of the country. As a result, coal mining, beneficiation and supply is of paramount importance to South Africa for continued electricity generation to meet the rising energy demands of the country in the short, medium and long term.

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5.3 NAUDESBANK PROPOSED OPENCAST PIT MINING OPERATIONS

Mining in South Africa directly contributed to the establishment of the Johannesburg Stock Exchange in the late 19th century, and today it still accounts for a large portion of its market capitalisation. From this, mining in South Africa has shaped the country politically, culturally, and economically and that the South African mining sector has provided the critical mass for several industries that are either suppliers to the mining industry, or users of its products. These include, but are not limited to, energy, financial services, water and engineering services, and specialist seismic geological and metallurgical services. The proposed Naudesbank coal mine will not only contribute directly to the South African economy but will also contribute to the development and growth of other industries supporting the mining sector.

The proposed opencast mining operations for the Naudesbank coal mine project, will contribute to favourable economic impacts on both a local, regional and national scale. This will result in as said, numerous job creation and skills development opportunities and provide an economic injection in the region. If the project was not to proceed the additional economic activity, skills development and available jobs would not be created, and the coal reserves would remain unutilized. Numerous coal mines occur within the surrounding farm portions (**E.g. Boetha Botha Vaal water Colliery and Vaalbelt Colliery**). The proposed mining activities fit in with these developments and the surrounding area. If the applicant is not to proceed with the proposed application, mining of these coal reserves will not necessarily be avoided, as another application in terms of the MPRDA, Act 28 of 2002 can be made by another company. Unless the government declares these areas as "NO-GO" for mining and/or the demand for coal subsides, mining houses will continue to attempt to mine these coal reserves.

5.4 PERIOD FOR WHICH ENVIRONMENTAL AUTHORISATION IS REQUIRED

The estimated period is 5 years which comprises of construction, mining and closure together with rehabilitation. A period for the management of post closure risks will also

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be investigated during the EIA phase.

6. PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

The identification and investigation of alternatives is a key aspect during the S&EIA process. All reasonable and feasible alternatives must be identified and assessed during the scoping phase to determine the most suitable alternatives to consider and assess during the EIA phase. There are however some significant constraints that have to be taken into account when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed in the evaluation of the alternatives. The preferred option is to be highlighted and presented to the authorities. Alternatives can typically be identified according to:

- Location alternatives;
- Process alternatives;
- Technological alternatives; and
- Activity alternatives (including the No-go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. The alternatives are described, and the advantages and disadvantages are presented. It is further indicated which alternatives are considered feasible from a technical as well as environmental perspective. Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation measures and are not specifically identified as distinct alternatives. This section provides information on the development footprint alternatives, the properties considered, as well as the type of activity.

6.1 LOCATION ALTERNATIVES

The study area was considered due to the positive results obtained during the prospecting phase and exploration drilling with regards to the underlying coal grade. As

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the applicant already has prospecting rights on the above-mentioned property, and with the favorable results from the prospecting phase regarding coal deposits, the proposed study area locality is optimal for mining coal.

6.2 LAND USE ALTERNATIVES

The first alternative is mining of coal due to the results obtained during the prospecting phase, while the second alternative would be to use the area for its agricultural potential (as per the current land use).

- Alternative 1 – Coal mine: Based on the land cover map the area to the west of the proposed mining area is already being mined by Vaal Belt Colliery and a new mine which has recently opened called Boetha Botha Vaal water Colliery, The mine has not yet been captured on google earth (see figure below). The coal is also of a very high grade and the economic injection to the local and regional economy compared to the agricultural sector needs to be investigated in the EIA phase.
- Alternative 2 – Agricultural land: The current land use (as per Figure 5 below) of the study area is mainly cultivated lands and falls under heavily modified, moderately modified old lands and irreplaceable critical biodiversity areas.

The land use alternatives need to be investigated in more detail once specialist investigations have been completed in the EIA phase.

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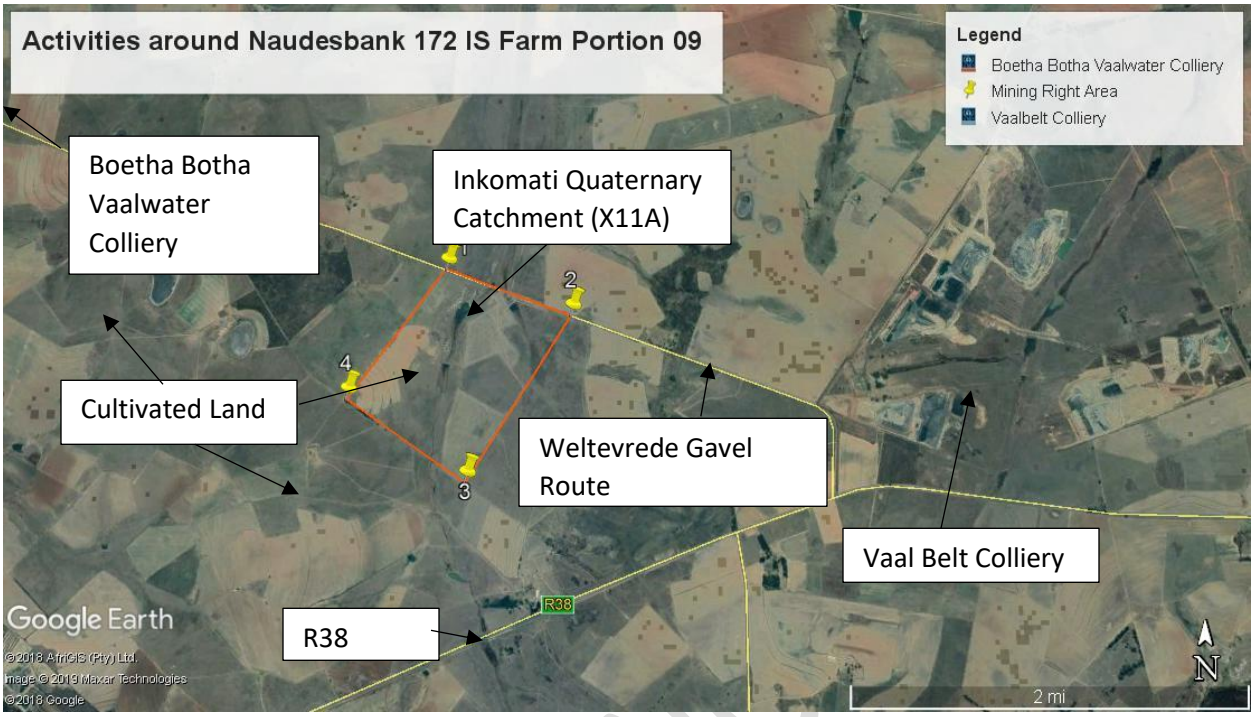

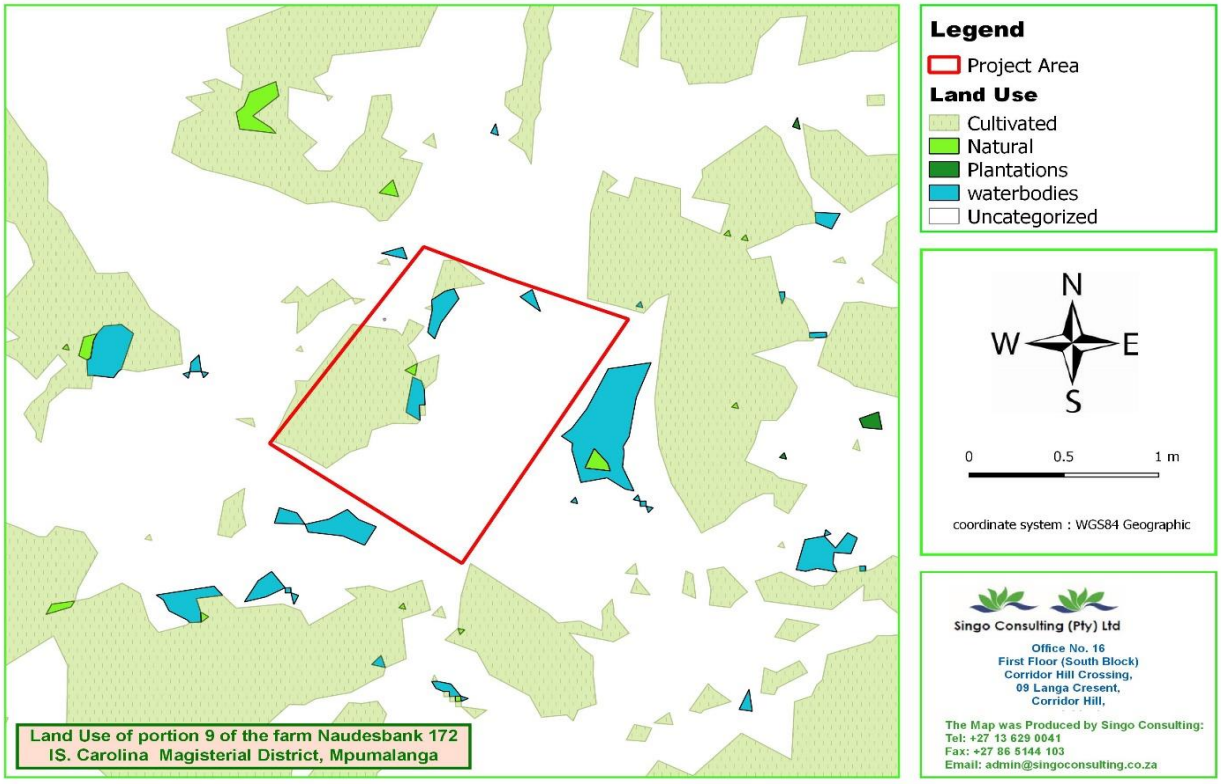

Figure 6: Land use and activity maps around the proposed area.

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Table 8: Site pictures of the current active activities

Site pictures of the current active activities in and around the mining right application area	
	
	
	

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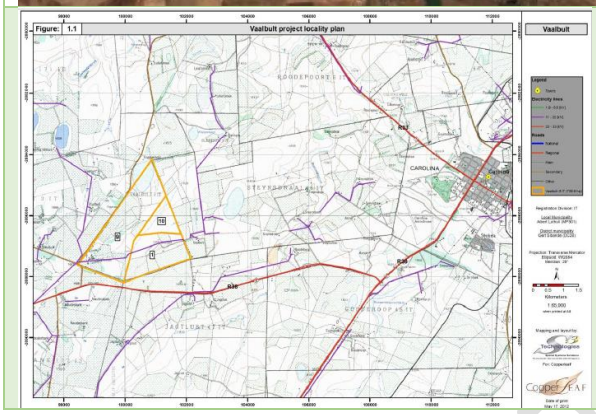

The mining right area constitutes of an old heritage houses situated from the farm, agricultural activities/crop plantation, Inkomati quaternary catchment passes in between the mine application area, power-lines supplying electricity were not observed within the farm portion however, they were observed on the sides as there is existing household nearby. The farm portion has graveyard which was observed within the mining right area on the far southern side of the mine boundary. (see figure 7 below).

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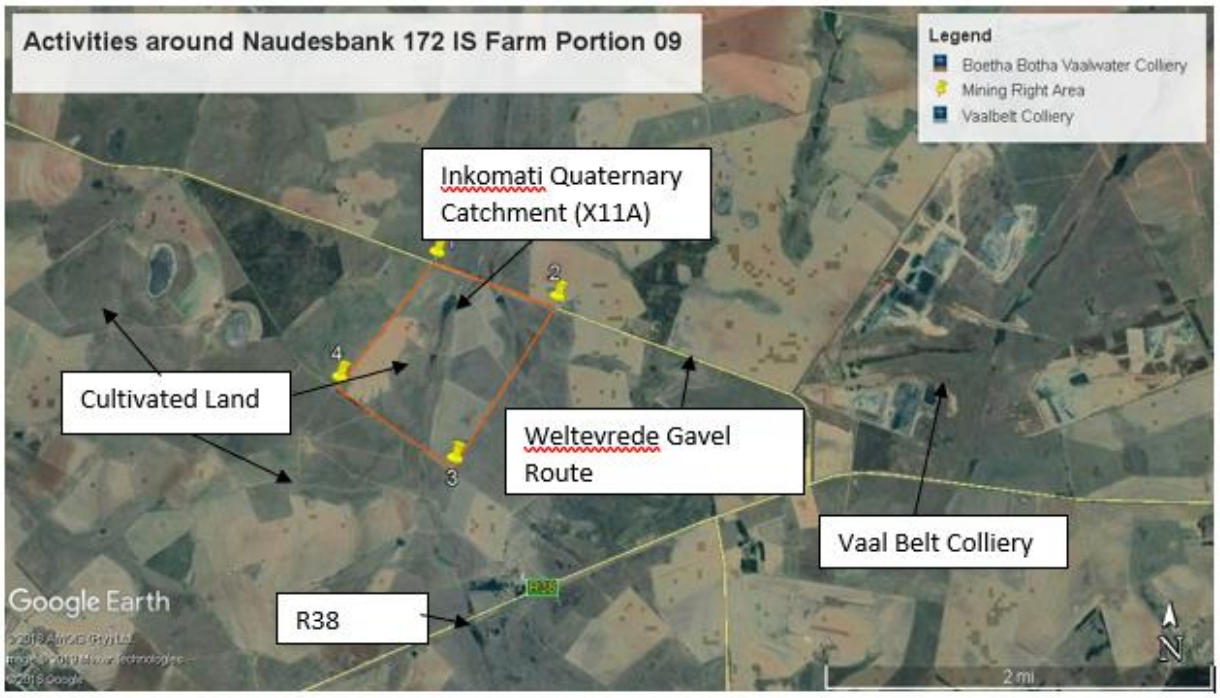

Figure 7: Wide range of activities on and around the proposed area.

6.3 PROCESS ALTERNATIVES

- Mine Technology

The alternatives for mining and extracting target mineral resource is through an open cast surface mining.

- Mine Operational

Operations and associated infrastructure including crushing and screening plant during the mine life will be available.

- Water supply

Two alternatives for the supply of water, namely:

- Water from natural ground or surface water resources
- Water obtained from dirty water containment facilities: Water would be obtained from dirty water containment facilities such as the Pollution Control Dams (PCD). For example, water for dust suppression will be sourced from the PCD. Should water be

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sourced from ground or surface water sources, the necessary water uses triggered would be included in the IWULA.

- Disposal of Wastes

❖ Stockpile for use as non-select product: This option involves temporarily stockpiling on site and selling it off at a later stage

❖ 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

The no-go alternative would entail not mining the coal reserve and leaving the area as cultivated land.

In accordance with the National Environmental Management Act No. 107 of 1998 (NEMA) Regulations, the no-go alternative is required to be investigated and assessed. The no-go alternative would mean that the Naudesbank project is not undertaken and therefore the associated negative environmental and social impacts will not occur. This alternative will need to be weighed against the findings of the EIA as well as the potential socio-economic benefits that may result from the project. The results of the assessment will be presented in the EIA report.

Coal is currently becoming a very strategic resource in South Africa and coal resources are essential to ensure economic growth in South Africa. By not implementing this project in excess of 48 permanent jobs and approximately 20 unskilled jobs will not be created and a seam quality which is very good with calorific value of up to 29Mj/kg as raw of coal which could potentially have benefitted the economy would become sterilised. Although not fully assessed at this time, the potential negative impacts on the environment would not exist should the project not be implemented. The environmental, social and economic impacts will be assessed in detail during the EIA phase to identify and address all negative impacts, where possible.

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Whether the No-Go alternative is viable 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 by no means an in-depth assessment and the impacts need to be assessed and discussed in detail in the EIA report.

7. PUBLIC PARTICIPATION PROCESS (PPP)

7.1 OBJECTIVES OF PUBLIC PARTICIPATION

- Provides Interested and Affected parties (I&APs) with an opportunity to voice their support, concerns and questions regarding the project, application or decision;
- Provides an opportunity for I&APs, Environmental Assessment Practitioners (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;
- Provides I&APs with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts
- Enables the applicant to incorporate the needs, preferences and values of affected parties into the application;

7.2 LEGISLATION

The PPP must comply with the several important sets of legislation that require public participation as part of an application for authorization or approval; namely:

❖ The Mineral and Petroleum Resources Development Act (Act No. 28 of 2002 - MPRDA);

❖ The National Environmental Management Act (Act No. 107 of 1998 - NEMA);

❖ The National Environmental Management Waste Act (NEM: WA, Act No. 59 of 2008); and

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❖ The National Water Act (NWA, Act No. 36. Of 1998). Adherence to the requirements of the above-mentioned Acts will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts. The details of the Integrated PPP are provided below.

7.3 IDENTIFICATION OF I&APS

Potential Interested and Affected Parties (IAPs) were identified based on the definition of IAPs in the EIA regulations. The IAP database includes authorities and surrounding landowners. The public participation process and consultation is and will be in adherence to the relevant legislation. People and/or organizations were registered as IAPs for the project if they:

- Are landowner or tenants adjacent to the proposed study area of the Naudesbank Project.
- Are the local municipality/ ward councilor with jurisdiction in the area, represent as ratepayer's association,
- Are an authority or organ of state having jurisdiction in respect of any aspect of the activity,
- Responded to the Background Information Document (BID), press advertisements and site posters,
- Attended a public meeting.

The PPP commenced on the 4th of October 2019 and the public meeting was held on the 25th of October 2019 with an initial notification and call to register for a period of 30 days, ending on the 2nd of November 2019. The notification procedure included (Appendix 3-5):

Newspaper advertisement: published on the ''Die Highvelder'' on the 4th of October 2019

A meeting with the counselor Mrs Velephi Nkosi (velephiN@gsibande.gov.za) was scheduled and held on the 25th of September 2019 and upon completing of the meeting with the counselor, a meeting with the LED Manager b (Mrs 'Wanda Mkhwanazi' MkhwanaziW@albertluthuli.gov.za) for the purpose of Social and Labour Plan (SLP) was held on the same day in Carolina Albert Luthuli Local Municipality.

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A meeting was held with the landowner Mr VILLIERS CHARLES BENJAMIN DE ('springfontein@lando.co.za') on the 2nd of October 2019 at his private property and all proceeding what unfolded were recorder as attached on appendix 3 and table summary of I&AP's.

Site Notices: erected at prominent points on the 2nd of October 2019 around the mine boundary, close to the farm houses, along the R38 route and around town of Carolina.

Upon erection of site notices, a small meeting was held with the available farm community members whereby, an introduction about the project was explained to them in detail and they were informed about the meeting that was scheduled on the 25th of October 2019 and arrangements for transporting them to the community was made as they had mentioned their lack of transportation. Arrangements were made with a community member named Nqobile (060 8400 155).

A door to door consultation was made with the two nearby mines which are currently operating, namely; Boetha Botha Vaalwater Colliery and Vaal belt Colliery on the 2nd of October 2019. The purpose of it was to get their details in order to consultant them on every development as neighboring or adjacent land occupiers. See Summary table for I&AP's for what unfolded and appendix 3.

Public Notices: distributed to identified stakeholders, landowner and residents where possible (See Summary of I&AP's table).

Consultation emails were composed and sent to the identified authorities, adjacent landowners, ward councilors and I&APs thus far. See table enclosed below.

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Table 9: Consultation procedure

Consultation procedure that have been taken thus far
Counsellors meeting (Albert Luthuli Local Municipality, 25th September 2019)
  
A meeting with the Land owner (Mr VILLIERS CHARLES BENJAMIN DE, 2nd October 2019)

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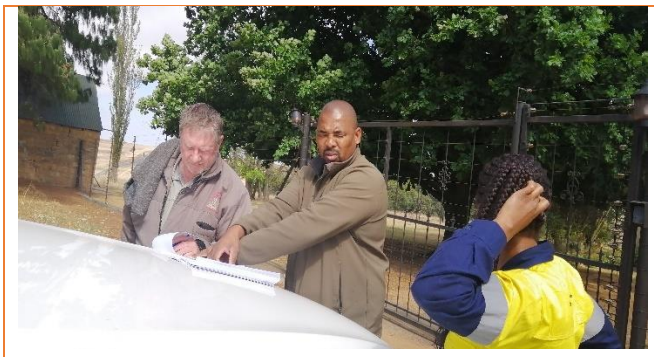


A mmeting woith the farm commuity members, 2nd October 2019)




(A consultation meeting with Vaalbelt mine and Boetha Botha Vaalwater Collieries, 2nd October 2019.)

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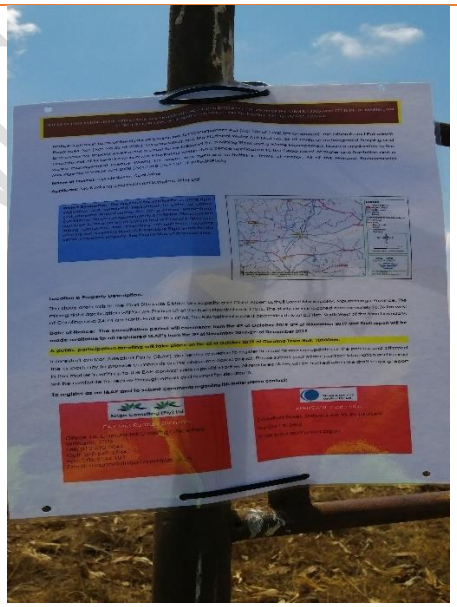
Site Notices Erected around the farm, neighboring, national routes and Town



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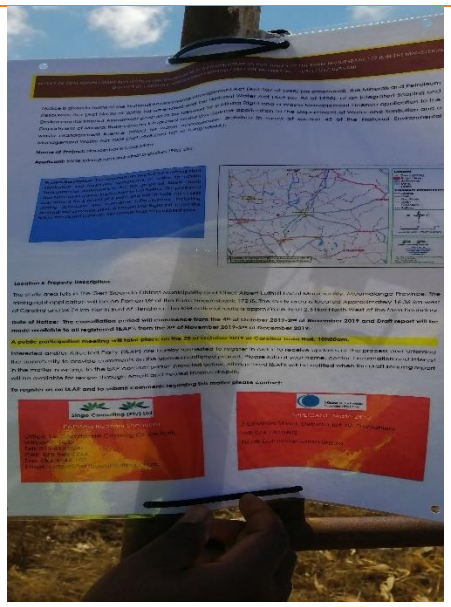

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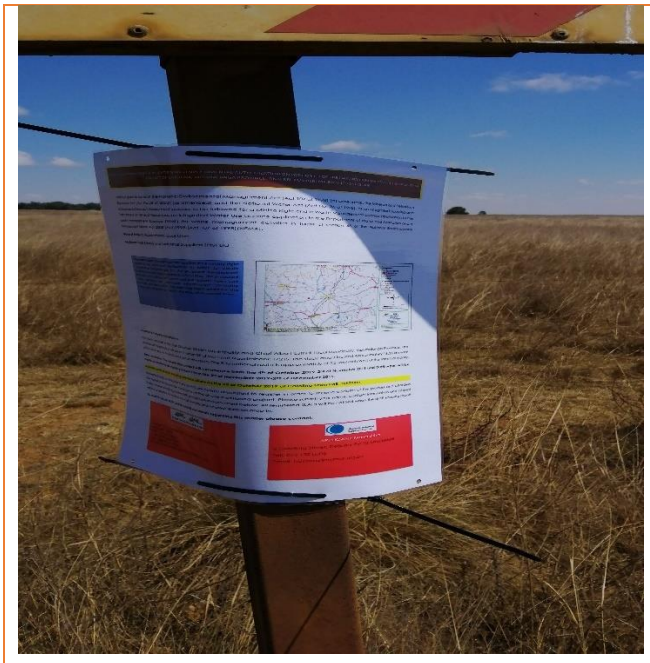

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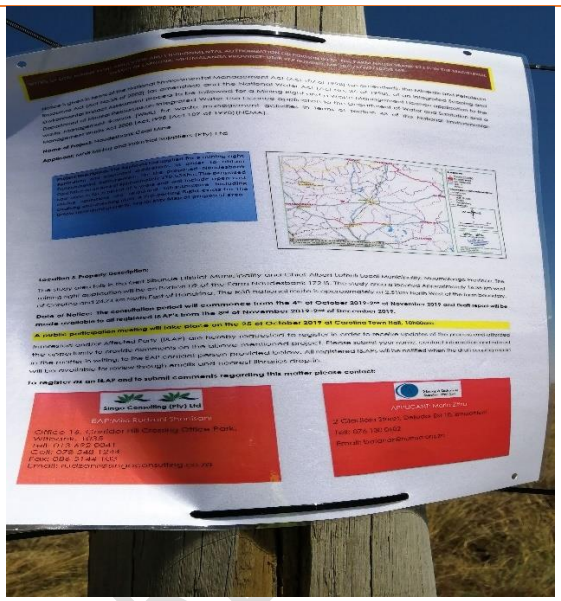

7.4 BACKGROUND INFORMATION DOCUMENT

Included in the I&AP notification letters, facsimiles, and e-mail is a Background Information Document (BID). The BID includes the following information:

- Locality map and description
- Project description and background
- Legal framework
- Explanation of the Scoping and EIA Process to be followed
- Provide opportunity to get involve and comment on the proposed project

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 period of 30 days from **3rd of November 2019 to 2nd of December 2019**. The report was made available at the following locations:

Address	
Public library in Carolina	**11 Voortrekker St, Carolina, 1048**

The report is also available at Singo consulting under EAP: ***shonisani rudzani, rudzani@singoconsulting.co.za***

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All comments that are being received from stakeholders and interested/affected parties are being included in the Issues and Comments register (Appendix 5 and summary table of I&AP's). No comments have been received from stakeholders expect form Department of Agriculture and Sanral (Appendix 3).The Final Scoping Report will be submitted to the DMR on the 4th of December 2019. The DMR has 43 days to review and reach a decision to either accept or refuse the report upon submission.

7.6 MEETINGS

A meeting was held with the landowners, the municipality and a community meeting:

- Municipality meeting: 25 September 2019
- Landowner's meeting: 2 October 2019
- Informal Community meeting: 2 October 2019
- Community Meeting: 25 October 2019

The minutes of all three formal meetings and the PowerPoint presentation (Appendix 5) from the community meeting has been attached in Appendix 5. Site notices advertising the community meeting has been attached in Appendix 5.

Tell.: 013 692 0041
E: admin@singoconsulting.co.za
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Names of I&AP's	Organization
Mr VILLIERS CHARLES BENJAMIN DE	Naudesbank 172 IS, Portion 09 (Landowners)
Boetha Botha Vaalwater Colliery	Mine Manager (Hardy Van Der Westhuijzen)
Vaal Belt Colliery	Mine Manger (Vos Greykung)
Municipal manager Mrs Velephi Nkosi Mrs 'Wanda Mkhwanazi'	Albert Luthuli Local Municipality
Tebogo	Gert Sibande District Municipality
Mrs Velephi Nkosi	Ward 21 Councillor
Mr. Rhulani Chavalala	Department of Agriculture, Forestry and Fisheries
Mr Sonnyboy Mhlongo	Department of Water and Sanitation
Okwethu Fakude **Mr J.D Mdluli** **Mr PS Mohlala**	Department of Environmental Affairs
Mr. Richard Mokoena	Department of Labour
Mr. P Mashiane	Department of Public Works
Mrs. P Lindoor, Mr. L Masuku, Mr V Khoza	Commission on Restitution of Land Rights
Ms Okwethu Fakude Mr Frans	Mpumalanga Tourism
Mrs. M Lotter Mr Khumbelo Makhuvha	Biodiversity Planning
Mr. M Wayleaves MR Ludere	Eskom
Mr. J Oliver Nr Statutory Control	Sanral

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Mr. D Moshe	Sanbi
Mr Tshilidzi Mavulwana	Transnet

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7.7 SUMMARY OF ISSUES RAISED BY I&APS

I&APs List the names of persons consulted in this column. 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 issues and/or responses were incorporated
Landowner					
Mr VILLIERS CHARLES BENJAMIN DE Nayderbank 172 IS, Portion 09 Cell: 082 527 6601 Email: Springfontein@lando.co.za	X	25/09/2019	A meeting was held by the applicant (Mr Musa Nene) and landowner (Mr Villers) whereby he raised a few pointers of his concerns and they were captured in Afrikaans and translated in English. • Mine must not be for 24hiurs operating. • No movement of any vehicles through the private domain • No accommodation in the premises • Any effects on water must be corrected or repaid immediately. • No ,mining operation can commence until all fees and contacts are signed and paid. • Any damage caused by the mine will be paid by the mine		Appendix 3
	X	26/09/2019			Appendix 3

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	X **X**	02/10/2019	The applicant called Singo consulting to announce that the landowner wants to see all specialists who are involved in the project.	A copy of Afrikaans comment from was given to the Eap to translate in English upon meeting with the landowner and Applicant as per the request and ecology specialist together with heritage where present. Another meeting is to scheduled with the landowner when specialist are all available.	
Lawful occupiers/ Adjacent					
Vos Greyling **Cell: 082 831 2690** **Vaalbelt Colliery**	**X** **X**	02/10/2019 03/10/2019	An informal consultation meeting was held with the security with the hope of meeting the mine manager, however due to his unavailability contact details were given to the EAP to communicate with him,	A call was made to Mr Vos, however the number was on voicemail and it was again tried multiple times and doesn't go through.	Appendix 3

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Hardy Van Der Westhuijzen **Mine Manager** Cell: 071 684 5647 Email: hardyv@alsgroup.co.za Boetha Botha Vaalwater Colliery	**X**	02/10/2019	An informal consultation meeting was held with the security with the hope of meeting the mine manager, however due to his unavailability contact details were given to the EAP to communicate with him,	A Notice was left on the 2nd of October 2019 plugged at the cross next to the mine for the Vaalbelt Management team's attention. No correspondence has been received from the Vaalbelt people thus far. A call was made to the Mine Manger on the 3rd of October 2019 and he gladly gave the EAOP his email address in order to fully consult him and give him all the necessary documents and register him as I&AP.	
Government departments					

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Albert Luthuli Local Municipality **Mrs Velephi Nkosi** 'velephiN@gsibande.gov.za' **Municipal Manager** 'mm@albertluthuli.gov.za' **Mrs Wanda Mkhwanazi** 'mkhwanaziw@albertluthuli.gov.za' **Mr Petrus Masina Carolina, Albert Luthuli Town Hall Caretaker.**	**X** **X**	04/10/2019 21/10/2019	Meetings were held with LED Manager (Mrs Wanda Mkhwanazi) for Social and Labour Plan (SLP) and a way forward was concluded that a meeting must be held for discussion. A meeting was held with Mrs Velephi Nkosi whom is the counsellor of ward 21 in Carolina. Whereby projects proceedings were discussed and a meeting request for the 25th of October was agreed upon. Bookings of the town hall was said to be booked under Mr Masina who is the care taker of the Carolina town hall under Albert Luthuli Municipality. Arrangements and phone call were made with Mr Masina in order to secure and book the venue of which was a success.	A reminder email was sent to Mrs Wanda for the SLP discussion and responds it still waited upon.	Appendix 3

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Cell: 082 546 0448 **Email: MasinaMP@albertluthuli.gov.za**					
Gert Sibande District Municipality **Tebogo Mogakabe** **Email:**tebogoM@gsibande.gov.za **Lindokuhle Magagula** Email: 'Lindokuhle Magagula'	**X** **X** **X**	22/10/2018 04/10/2019 22/10/2019	No comments have been received yet. Good day Rudzani The email has been forwarded to Lindo regards	BID, DMR letters and Google earth view were sent as part of the consulting email to the stakeholder. A consultation email was sent to Miss Tebogo informing the Municipality of the project and associated timelines of commenting and meetings that are scheduled to take place. responds is still waited upon and reminder email will be sent when the commenting period is closer to ending. Good day Tebogo, Thank you for your correspondence and assistance. We will wait upon Lindokuhle for comments or concerns regarding the project.	Appendix 3

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<LindokuhleM@gsibande.gov.za>				Kind Regards,	
Mrs Velephi Nkosi(Ward21 Councillor) **'velephiN@gsibande.gov.za'** Cell: 073 2189 4284	**X** **X** **X**	25/09/2019 02/10/2019 21/10/2019	A call was made to Mrs Velephi Nkosi with regards to alerting of about the project and requesting a meeting with her in order to have formal discussion pertaining the project. A date was set for the meeting to take place and of which it took place on the 02 October 2019	A BID, Attendance register, and minutes were presented, and results are attached in appendix 5. A reminder email was sent to the counsellor concerning the meeting that was arranged for the 25th of October 2019.	Appendix 3
Department of Agriculture, Forestry and Fisheries	**X**	04/10/2019		A consultation email was sent to Mr Rhulani informing the Department of the project and	

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agriculture, forestry & fisheries Department: Agriculture, Forestry and Fisheries REPUBLIC OF SOUTH AFRICA Mr. Rhulani Chavalala Email: Minolta@daff.gov.za OR RhulaniC@daff.gov.za	X X	17/10/2019 22/10/2019	The department responded by saying they have no comments as yet or thus far.	associated timelines of commenting and meetings that are scheduled to take place. Good day Mr Rhulani, Kindly note that your comment has been captured and Scoping draft Report will be sent to your office so you can review it and present your comments or concerns again. Kindly note that the Draft Scoping Report (DSR) will be available from the 3rd of November 2019 to the 2nd of December 2019. I hope the above is in order. Kind Regards,	Appendix 3
South African Heritage Resource Agency	X	22/10/2019		Heritage study was conducted and submitted online as part of regulation requirements in order for the	

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SAHRA an agency of the Department of Arts and Culture				organization to comment.(Refer to appendix 11 for proof of submission)	
Department of Water and Sanitation	**X**	04/10/2019	No comments have been received yet.	A consultation email was sent to Mr Sunnyboy informing the Department of the project and associated timelines of commenting and meetings that are scheduled to take place. Quaternary water catchment and Hydrology Maps were sent for the department to have an informed decision or comment to send through.	Appendix 3

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water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA Sonnyboy Mhlongo Email: 'mhlongos@iucma.co.za'					
	X		A pre application of any water use licence activities meeting and site visit will be held between Singo consulting and DWS prior submission of final EIA Report.		
Department of Environmental Affairs environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA	**X**	21/10/2019	No comments have been received	A consultation email was sent to environmental affairs Department to introduce the project and associated timelines of commenting and meetings that are scheduled to take place.	Appendix 3

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Okwethu Fakudde oqfakude@mpg.gov.za; **Ms I Serakalala** **Email:** smohlala@mpg.gov.za; **Mr J.D Mdluli** **Email:** jdmdluli@mpg.gov.za					
Department of Labour labour Department: Labour REPUBLIC OF SOUTH AFRICA Mr.Richard Mokoena Email: richard.mokoena@labour.gov.za Or Email: mp.customercare@labour.gov.za	**X**	04/10/2019	No comments have been received yet.	A consultation email was sent to Department of labour to introduce the project and associated timelines of commenting and meetings that are scheduled to take place.	Appendix 3

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Department of Public Works public works Department: Public Works REPUBLIC OF SOUTH AFRICA Mr. P Mashiane pat.mashiane@dpw.gov.za Tell: 013 752 6371 Cell: 083 676 5764	**X**	22/10/2019	No comments have been received as yet.	A consultation email was sent to Department of Public Works to introduce the project and associated timelines of commenting and meetings that are scheduled to take place.	Appendix 3

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Commission on Restitution Of Land Rights 'Petruscha Elaine Lindoor' <Petruscha.Lindoor@drdlr.gov.za> Mr. V.K. Khoza Vusi.khoza@drdlr.gov.za	**X** **X** **X** **X**	04/10/2019 07/10/2019 10/10/2019	Good day Please find attached as requested.	BID was sent as part of the consulting email to the stakeholder to request assistance with the outcomes of land regarding it having claims or not. Email was forwarded to Mr Lazarus by Lindoor.	Appendix 3

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Mrs. P Lindoor(Petruscha.Lindoor@drdlr.gov.za Mr. L Masuku Lazarus.Masuku@drdlr.gov.za	X X	10/10/2019	Regards Petruscha	Good day Petruscha, Thank you for your assistance. The outcomes are well received. Kind Regards, The outcomes resulted that there is no land claim on the farm portion in question.	
Mpumalanga Tourisim Mpumalanga TOURISM AND PARKS AGENCY **Komilla Knarasoo** **Komilla.Knarasoo@mtpa.co.za**	X	24/10/2019	Please forward hard copy documents to our head office. Mpumalanga Tourism and Parks Agency Attention: Komilla Narasoo Halls Gateway on N4 Block G Room 25 Mbombela	Documents sent via courier. 24/092016, the document was sent to Khumbelo for review. Comments are waited upon.	Appendix 3

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Khumbelo Makhuvha **khumbelomakhuvha940@gmail.com]** Ms. T Lunanga **thanduxolo.lubanga@mtpa.co.za** Ms. P Nkosi **phumla.nkosi@mtpa.co.za**			Please deliver a hard copy of the document as the MTPA 's policy is to receive only hardcopies of any EIA related documents. They can be delivered to our office in Nelspruit. The address is: MTPA N4 Halls Gateway Mataffin Nelspruit 1200 Attention: Phumla Nkosi Block G; Room 3D		
Biodiversity Planning Ms. M Lotter Mervyn@intekom.co.za	**X**	22/10/2019	Respond is waited upon.	A consultation email was sent to introduce the project and associated timelines of commenting and meetings that are scheduled to take place. An email reminding Ms. Lotter to send in their	Appendix 3

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				comments and documentation when the commenting period will be sent when commenting period is closer to ending.	

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Eskom  Mr. M Wayleaves wayleavesmou@eskom.co.za 'LudereTH@eskom.co.za' Ludere TH Land and Rights Negotiations Land Development Eskom Distribution MOU	**X**	04/10/2018	No Comments have been received as yet.	A consultation email was sent to introduce the project and associated timelines of commenting and meetings that are scheduled to take place. An email reminding Eskom to send in their comments and documentation when the commenting period will be sent when commenting period is closer to ending.	Appendix 3

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Tell 013 693 2562 Fax 086 605 3668					
SANRAL  Ria Barkhuizen nrstat@nra.co.za Mr. J Oliver **oliverj@nra.co.za**	**X** **X** **X** **X**	04/10/2019 11/10/2019 26/07/2019 06/08/2019	Good day This email is an acknowledgement of receipt for your enquiry. Please note that your enquiry will be evaluated and a response provided within 60 days, in line with requirements of Section 29 of the Spatial Planning and Land Use management Act (Act No.16 of 2013) read with Section 3 of the Promotion of Administrative Justice Act (Act No.3 of 2000). Should you not receive any response within 60 days, kindly follow up on the enquiry by responding to Jan Oliver who will be dealing with it and will convert back to you. He can be contacted on	A consultation email was sent to introduce the project and associated timelines of commenting and meetings that are scheduled to take place.	Appendix 3

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			(012) 426-6200 / 6242. Tx and Regards	An email reminding Jan Oliver to send in their comments and documentation when the commenting period will be sent when commenting period is closer to ending.	
SANBI Mr. D Moshe D.Moshe@sanbi.org.za	**X**	22/10/2019	No comments have been received yet however SANBI shape files have been used to create sensitivity maps.	A consultation email was sent to introduce the project and associated timelines of commenting and meetings that are scheduled to take place. An email reminding Sanbi to send in their comments and documentation when the commenting period will be sent when commenting period is closer to	Appendix 3

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				ending.	
Transnet  **Tshilidzi Mavulwana** **Thilidzi.Mavulwana@transnet.net'**	**X**	22/10/2019	No responds have been received as yet.	A consultation email was sent to introduce the project and associated timelines of commenting and meetings that are scheduled to take place. An email reminding Mr Tshilidzi to send in their comments and documentation when the commenting period will be sent when commenting period is closer to ending. A reminder email, with the draft EIA report and comment form was sent to both parties stating that they should revert before the expiration date.	Appendix 3
Other Interested and Affected Parties					

8. ENVIRONMENTAL ATTRIBUTES AND DESCRIPTION OF THE BASELINE RECEIVING ENVIRONMENT

8.1 GEOLOGY

8.1.1 REGIONAL GEOLOGY

In general, the coal deposits in South Africa are hosted by the Karoo Supergroup, which was deposited in the Gondwana basin that covered parts of Africa, Antarctica, South America and Australia. The basal Stratigraphy of the Karoo Supergroup comprises the Dwyka Group which is a Late Carboniferous to Early Permian (~320Ma) sequence of glacial and periglacial sediments including diamictite, till moraine, conglomerate, sandstone, mudstone and varved shale.

This is overlain by the Ecca Group which is an Early to Late Permain (~260 Ma) sequence comprising sandstone, siltstone, mudstone and significant coal seams deposited in a terrestrial basin on a gently subsiding shelf platform. In the surrounding Witbank Coalfield areas, the Ecca Group is overlain by the Beaufort Group, which is Early Triassic (~260 to 210 Ma), comprising multi-coloured mudstone and sandstone with only minor coal accumulation, and was deposited in a fluvial environment. The Molteno Formation rests unconformably on the Beaufort Group and comprises Late Triassic (~210 Ma) coarse, immature sandstone with minor argillaceous layers derived from braided streams. This in turn is overlain by the Elliot Formation consisting of red mudstone and sandstone and the Clarens Formation comprising Aeolian sandstone. At the top of the Karoo Supergroup stratigraphy is the Drakensburg Group, which comprises Early to Middle Jurassic (~180 Ma) flood basalts.

The project area is situated within the Ermelo Coalfield. The Coalfield extends from Brakpan in the west through to Belfast in the east. The northern boundary is a very irregular sub-crop against the pre-Karoo basement rocks of predominantly Waterberg sandstones with the most northerly limit about 15 km NW of Witbank, with many "inlets" to the east and west. The south boundary is a prominent pre-Karoo felsite contact called the Smithfield ridge.

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The basin is a multiple seam deposit type with the development of five major seam horizons which may in places be composite seams. The major controls for the development of the coal are proximity to undulations of the "basement" topography, through erosion channeling and sediment influx into swamp beds and finally erosion of the current erosion surface. The primary economic coal seams have been the No. 2 Seam and No. 4 Lower Seam and, in places, the No. 5 Seam.

Structurally, the coal horizons are un-deformed with each displaying a very slight dip to the south east of less than a degree and minor discrete faulting events that have a south west to north east trend of graben features and other minor faulting events. The most distinctive post-depositional feature is the intrusion of dolerites related to the Lesotho Basalts that have resulted in a variety of sills and dykes of various ages.

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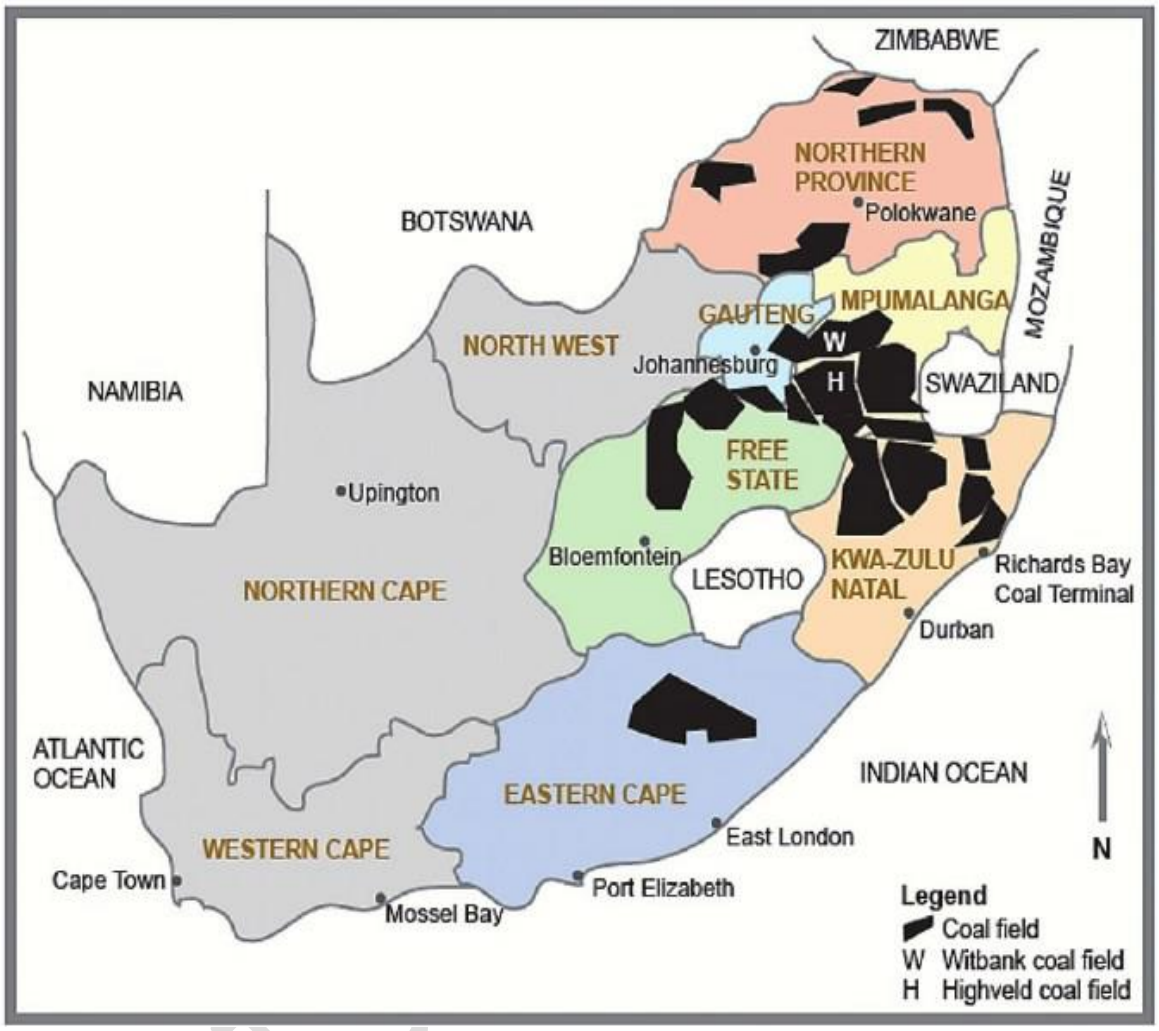

Figure 8: Depiction of the coalfield.

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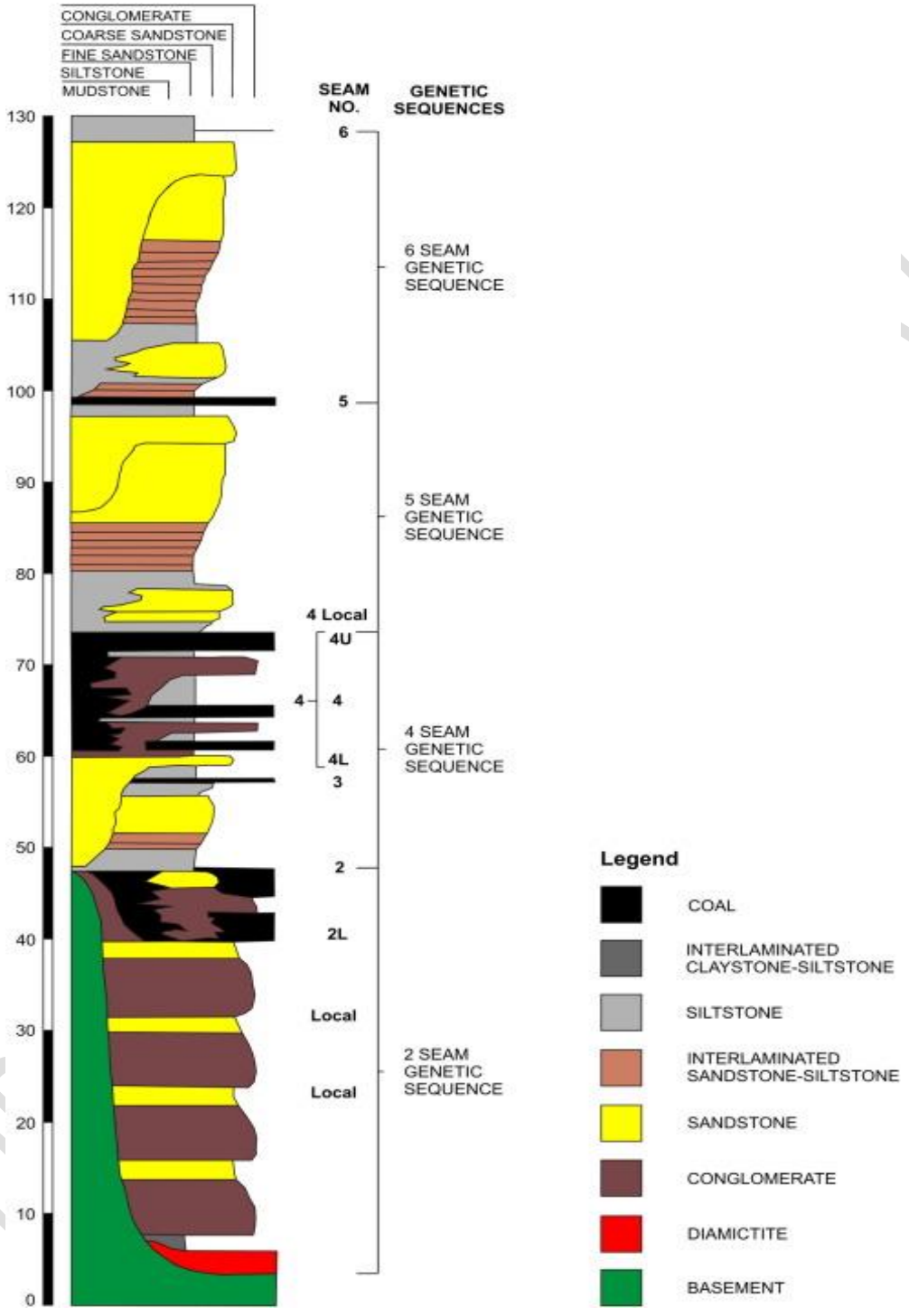

Figure 9: The stratigraphic column of the coalfield.

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- **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 (Figure 9). 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 southeast, the Vryheid Formation grades laterally into undifferentiated, deepwater argillites of the Ecca Group (Figure 9).

The Vryheid Formation is one of sixteen (16) 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.

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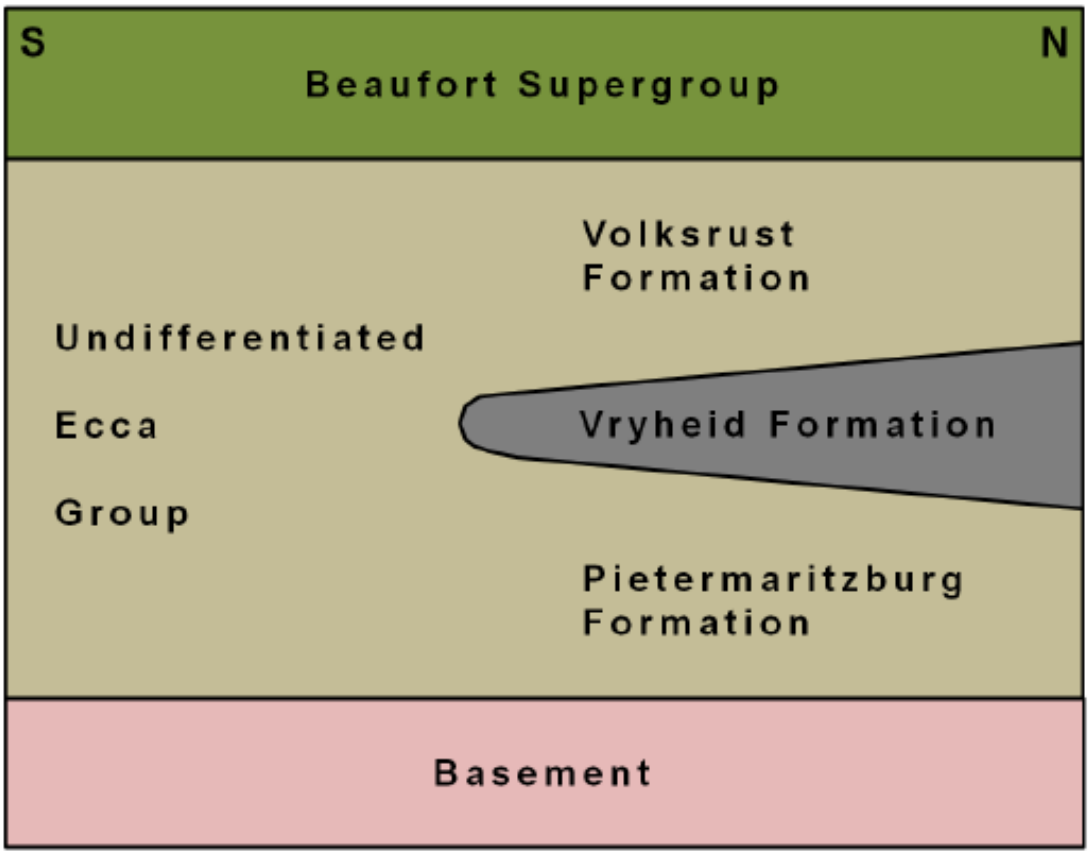

Figure 10: Schematic north-south oriented stratigraphic section of the Ecca Group in the northeast corner of the Karoo Basin. The Volksrust and Pietermaritzburg Formations can only be recognised when the Vryheid Formation forms part of the vertical sequence. In the north and north-western portions of the basin, the Pietermaritzburg Formation was not deposited and the coal-bearing strata of the Vryheid Formation rest directly upon the basement.

8.1.2 Local Geology and coal seams

- **Ermelo Coalfield**

The Ermelo Coalfield is located in the districts of Carolina, Dirkiesdorp, Hendrina, Breyten, Davel, Ermelo and Morgenzon in the southeast Mpumalanga Province. It extends approximately 75 km east–west, and 150 km north–south, covering an area of about 11,250,000 ha. The northern and eastern boundaries of the Ermelo Coalfield are defined by the sub-outcrop of the coal-bearing strata against pre-Karoo basement. In the west, the Ermelo Coalfield shares a boundary with the Witbank and Highveld coalfields, and to

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the south with the Klip River and Utrecht coalfields of KZN (Greenshields, 1986). Between the Ermelo and westernmost part of the Highveld Coalfield there is an area of poor (thin) coal development where no coal mining takes place.

The project falls under the Vryheid formation and the rocks of the Permian Vryheid Formation and Jurassic aged dolerites dominate the surface exposures of the coalfield. 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 the also variable yellow sandstone and coal seams. (See lithology map below)

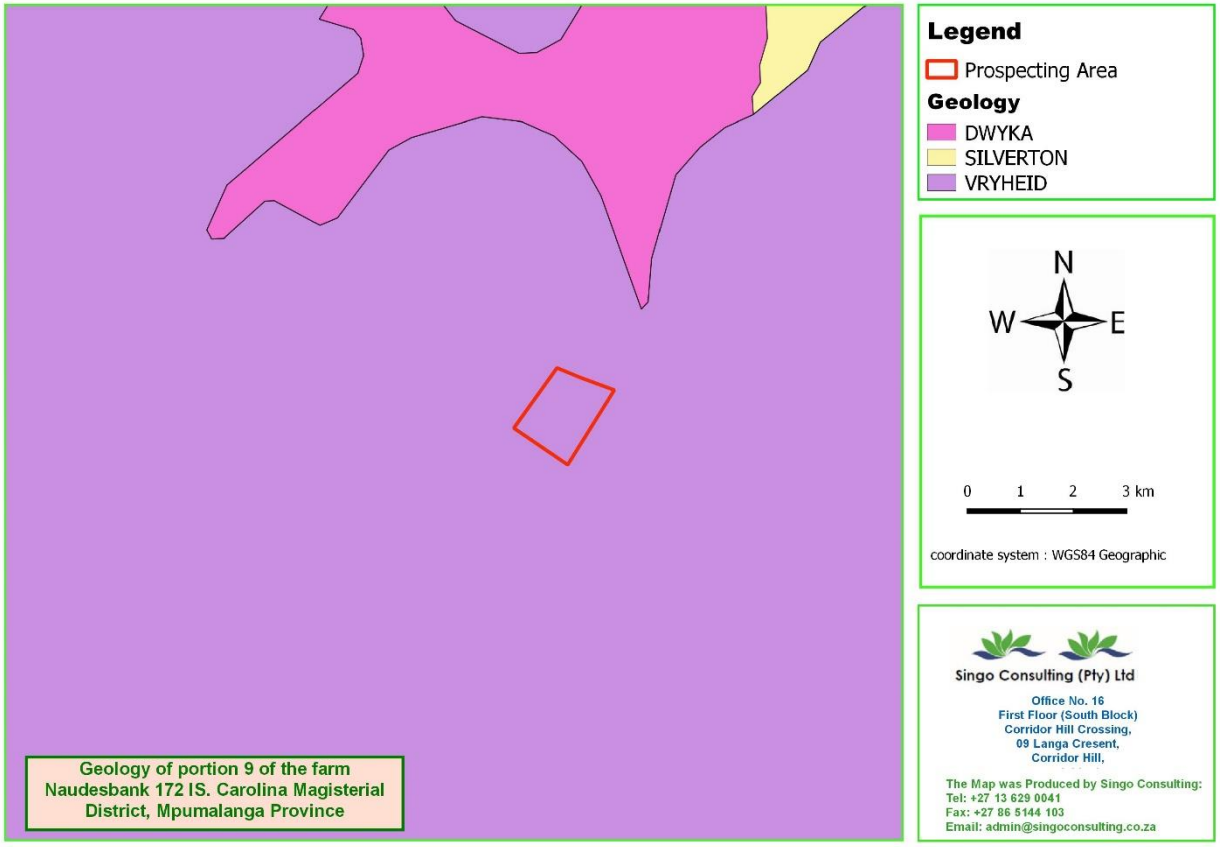

Figure 11: The lithology of the area.

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In the Ermelo Coalfield, the thickness of the Vryheid Formation varies between 170 and 350 m (Greenshields, 1986) and as mentioned above contains five coal seams. Two stratigraphic marker horizons occur within the sequence that may be useful in exploration drilling (Stavrakis, 1991). These are a glauconitic sandstone unit, which overlies the B Seam package, and the bioturbated Siphonicnus-zone that occurs below the C Seam and which may be used as a marker to terminate exploration drilling. Wakerman (2003) documents a 3m thick E "shale" marker (a sandy bioturbated mudstone) in the floor of the E Seam, which he felt made a prominent end of hole (EOH) marker when the D and E seams are being targeted. The overlying Volksrust Formation is only present along the western and southern escarpment areas, where it can achieve a thickness of up to 106 m (Greenshields, 1986).

- **Coal seams**

The coal seams in the Ermelo Coalfield are generally flat-lying to slightly undulating and as for the Witbank and Highveld coalfields, are separated by fine- to coarse-grained sandstones, siltstones and mudstones. The A, D and E seams are usually too thin to be of economic interest and historically the C Seam group was the most important in the Carolina–Breyton area, and the B Seam group in the Ermelo area. Rapid seam thickness variations characterise the coalfield.

- **LOCAL GEOLOGY**

Ermelo Coalfield is known for three economic coal seams, the B-Seam, C-Seam and the E-Seam. In the project area the E-Seam is the only seam that is present. The seam is well developed with a maximum thickness of up to 2m. The seam quality is very good with calorific value of up to 29Mj/kg as raw. Where the seam is preserved the stripping ratio is good with an average stripping ratio of 4.0. There are no major geological structure intersected during the drilling process accept for a dolerite on borehole 3. **Geology of A Block** shows that the block is characterised E-Seam which can attain a maximum thickness of up to 2m and coal quality of 29MJ/kg at raw CV. The coal seam deeps towards the North of the block. This is an indication that some of the areas assumed to

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be barren can have coal. More drilling need to be done on the northen side of the A Block.

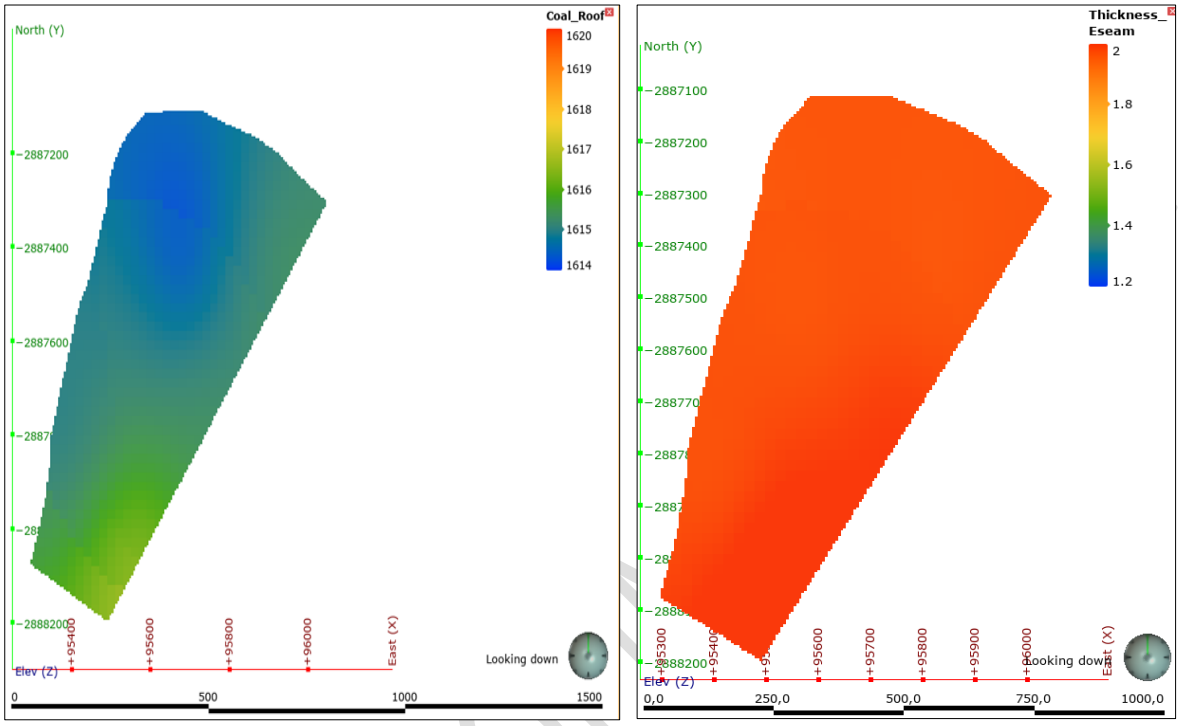

Figure 12: E Seam roof; coal deeps towards North and Average seam thickness 2m respectively.

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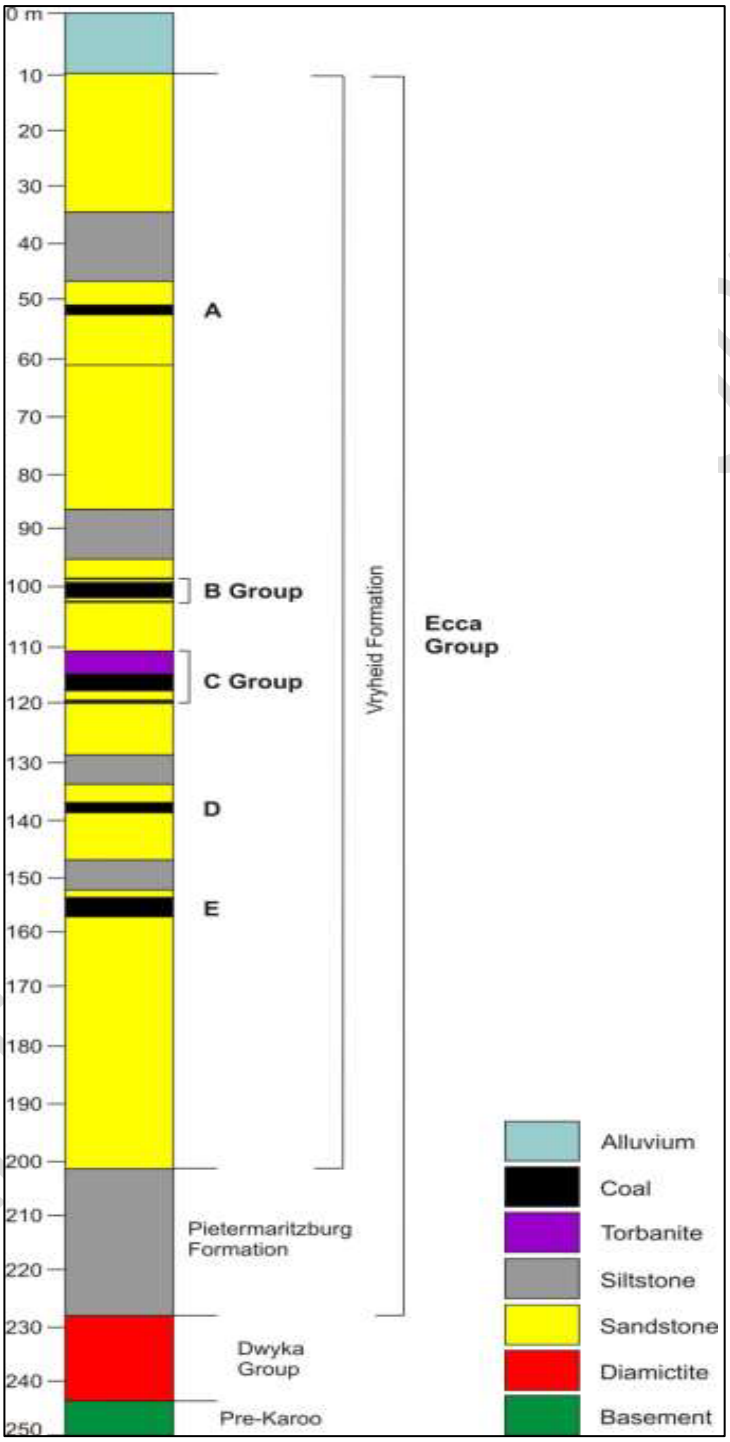

Figure 13: Ermelo coalfield stratigraphic column.

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Portion 9 of the farm has small pocket of the E-Seam that is on itself divided into two Blocks; the A and the B-Block. There are 8 more holes are planned in order to fully understand the area geology. Only one major geological structures was picked up the dolerite dykes. Resource estimation is currently based on the drilled Block A. The block is classified as a Indicated Coal Resource as per the SAMREC code. The entire project is referred to as indicated coal resource. See Figures below.

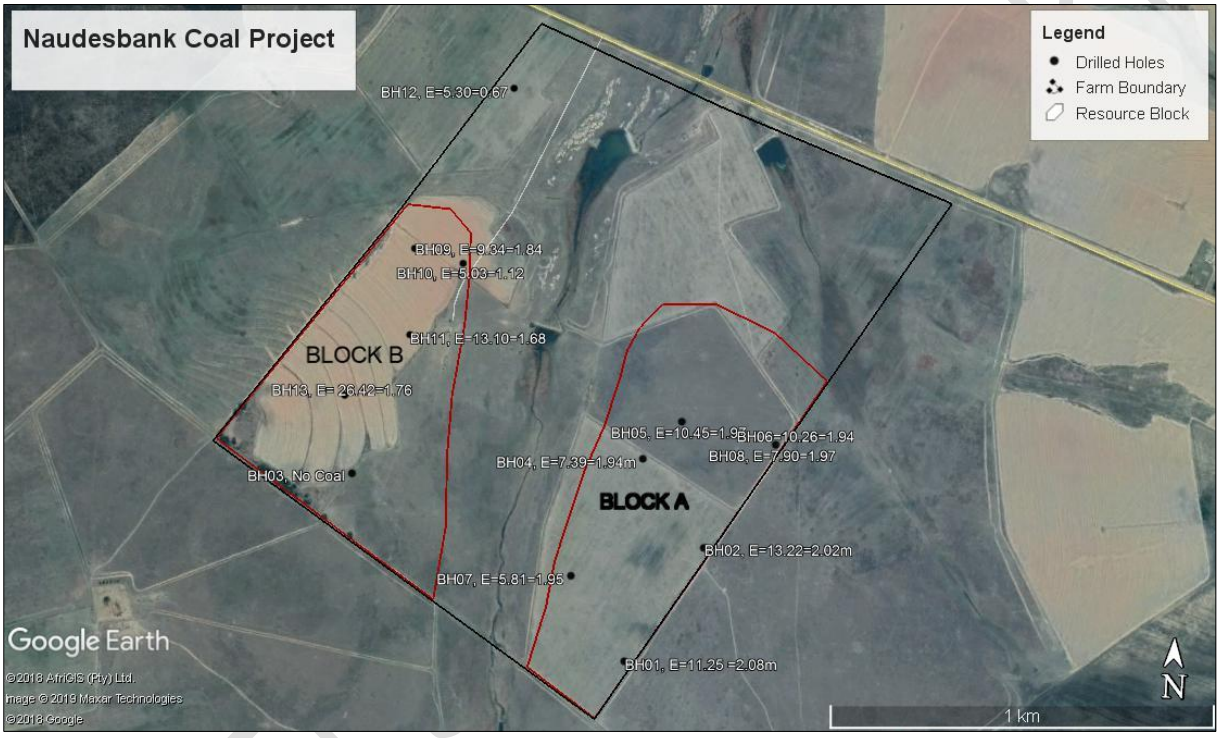

Figure 14: Google Earth Map showing areas which were drilled.

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Figure 15: Google Earth Map, visibly showing the dolerite (Dyke).

8.1.3 Soil

The area of the property is associated with classes undifferentiated shallow soil and land classes, where the area of the permit is associated with classes as undifferentiated structureless soil, freely drained soil and structureless soil. The area seems dominated by red and yellow structureless soil with a plinthic horizon.

Top soil of many parts of the property and on alternative site is disturbed or degraded by erosion as the property is used for cultivation and mining activities, the permit area is located in a flate slope where storm water not easily flows in high speed, it flows in a slow speed as the slope is flate which most of the storm water is being dammed in after rain fall. As it is highlighted below on map (see Figure 4), the project falls under soil type or association with class 1 to 4, undifferentiated structureless soil as stated in the soil classification map. Soil classes from 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

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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. Several different soil forms are found in the proposed area. Pink, brown and green, structureless, sandy loam to sandy clay soils, generally moderately deep to deep. Soil forms mainly include Hutton and Clovelly, with some shallow Glenrosa and Mispah soils. See map below and specific image.

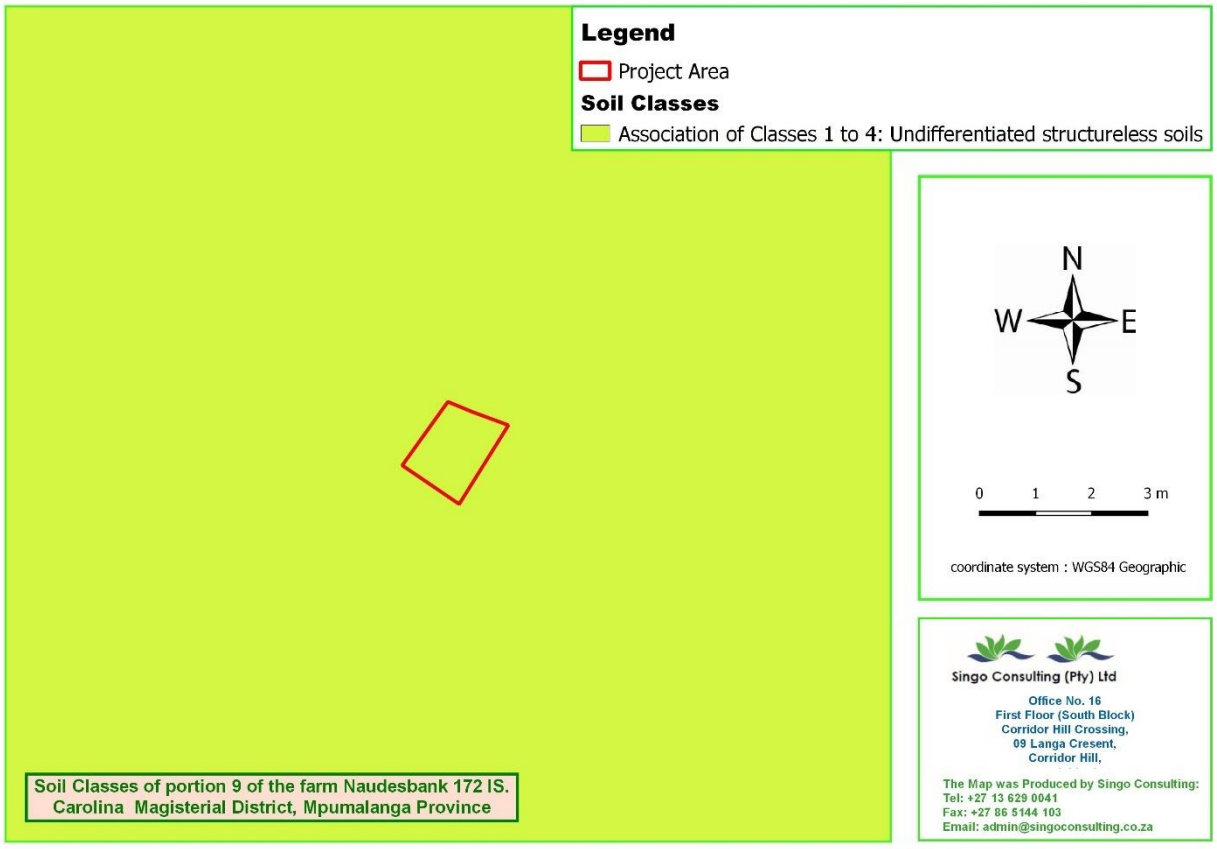

Figure 16: Soil Classes map encountered.

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Figure 17:Soil type observed on site.

9. CLIMATE

- **Regional Climate**

The study area is situated in the Mpumalanga Highveld Region in the summer rainfall region of Southern Africa. The climate is temperate with warm 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 an average of 6 days per year. The average annual rainfall is between 624 mm and 713 mm with 85 % of this falling in the high rainfall months between October and March. The highest rainfall in 24 hrs. was 129 mm, recorded thus far.

The highest mean daily maxima of >25°C occur in the period December to February. Average maximum temperatures in the winter months (May - 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 minima 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 58 frost days per year.

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The prevailing wind direction throughout the year is from the northwest, but storm winds (i.e. high velocity winds) generally blow from the southeast, with the strongest winds occurring in late winter and early spring. Maximum evaporation occurs in summer, from October to January, due to high summer temperatures. When mean annual evaporation (approximately 1 700 mm) is compared to rainfall, there is a net monthly deficit throughout the year, which results in an average annual water deficit of 1 010 mm. The annual rain fall of the specific area is between 601-800mm annually.

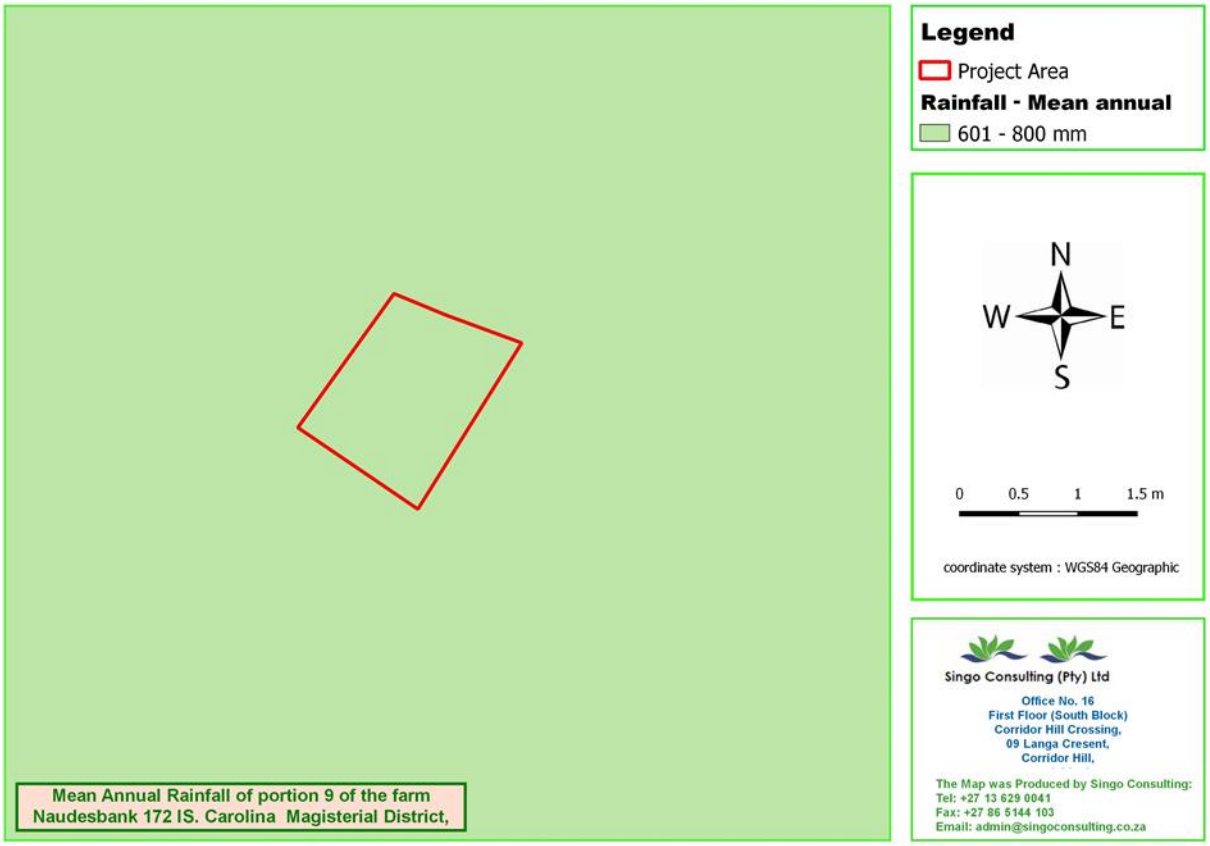

Figure 18:Map showing the amount of Rainfall in the area

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- **Local Climate**

Climate of Carolina is temperate with warm, cool summers and cold, dry winters. Carolina receives a mean annual rainfall of between 601mm and 800mm with the most rainfall occurring during the summer months. The November month receives the most rainfall with an average of 134mm and July receiving the least rainfall of 5mm. The Koppen-Geiger climate classification is Cwb. Furthermore, Carolina has an average temperature of 14.9°C and during the year, the average temperatures vary by 9.6°C.

High and Low temperatures of Ermelo.

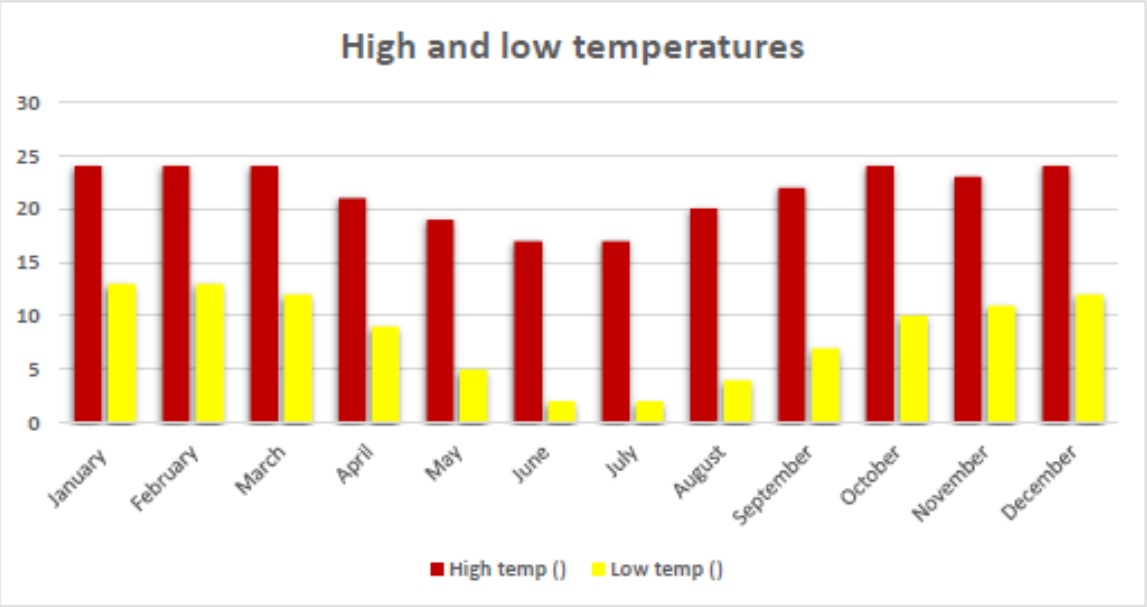

Figure 19: High and Low temperatures.

- **Local Temperatures**

The closest weather station is in Carolina. The area normally receives about 614mm of rain per year, with most rainfall occurring during summer. It receives the lowest rainfall (1mm) in July and the highest (119mm) in November. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Carolina range from 15.4°C in June to 23.4°C in January. The region is the coldest during June

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when the mercury drops to 0.9°C on average during the night and overall, annually temperatures vary between 0.1to 2 °C and -1.9 to 0°C.

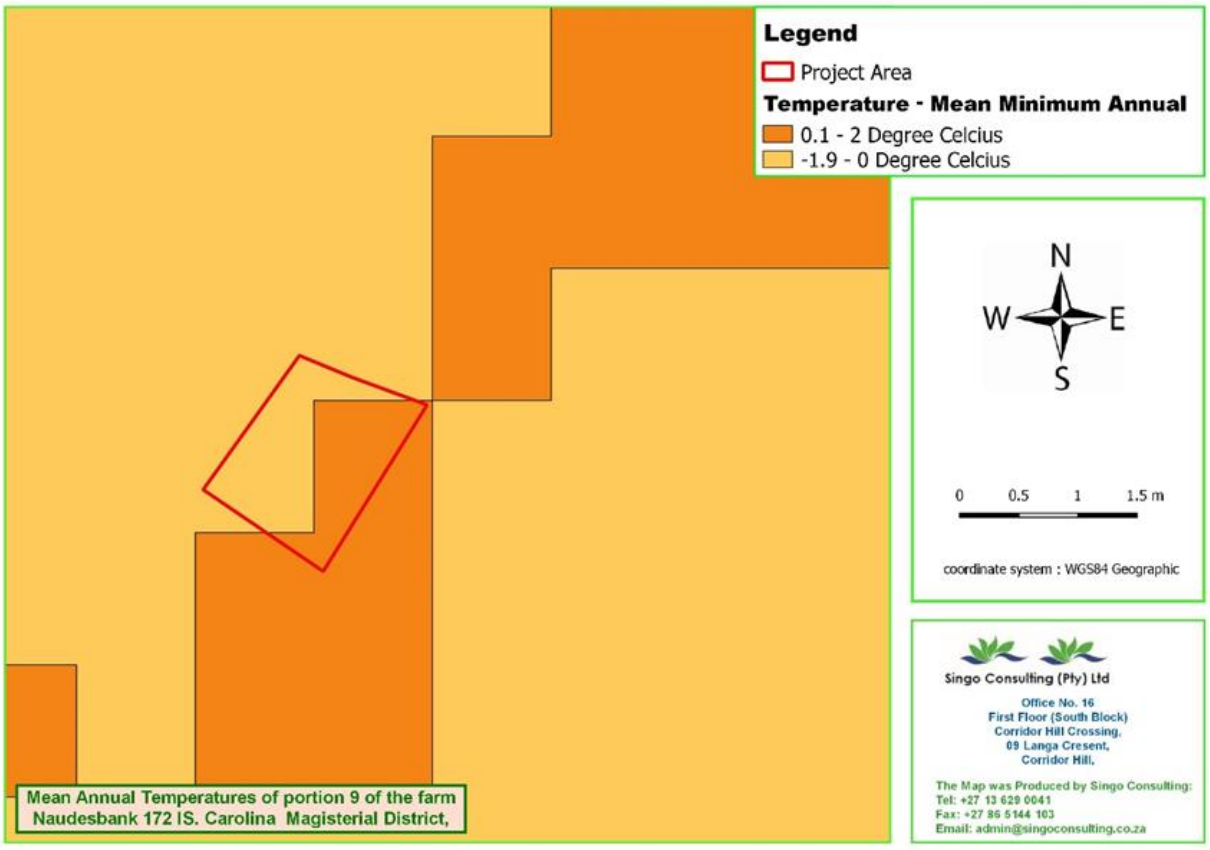

Figure 20: Temperature Ranges Annually

Carolina is an area that is slightly moist. Less rain fall occur around the area as shown on the map below.

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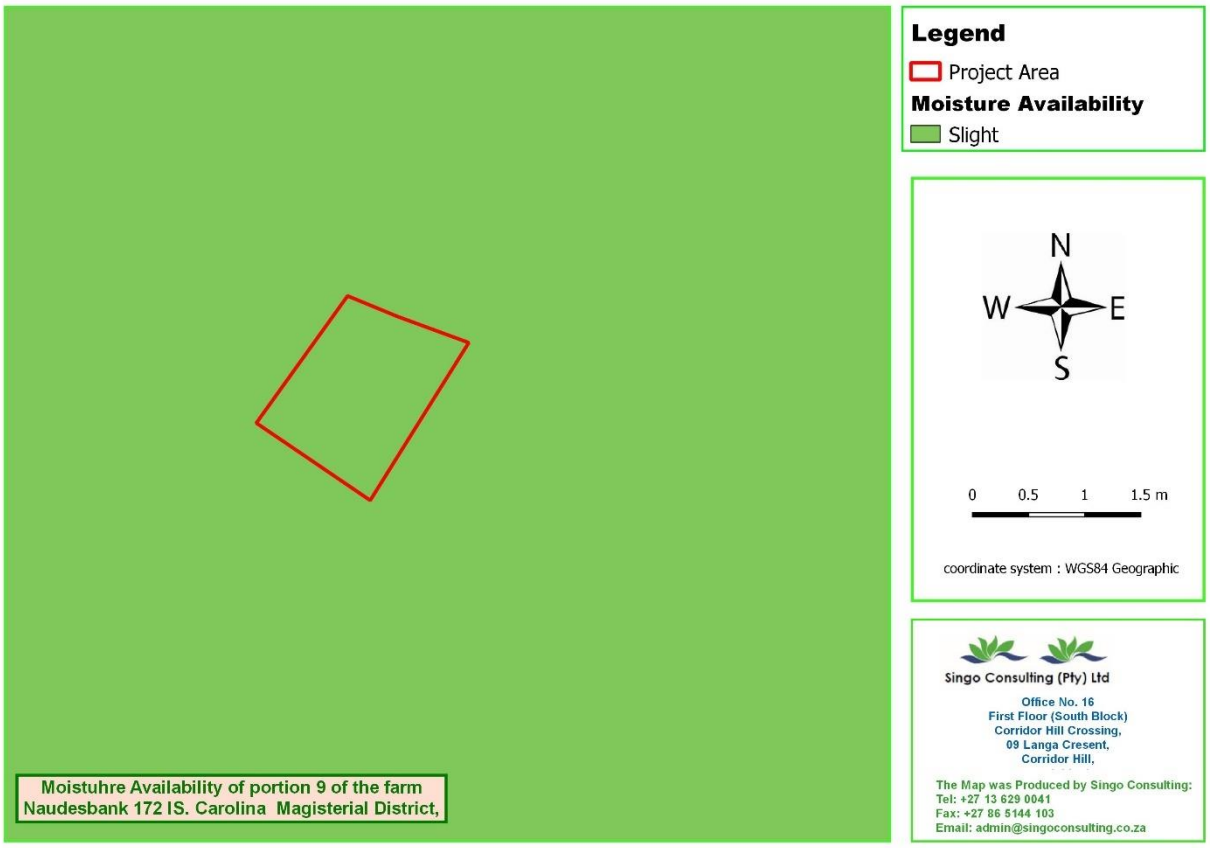

Figure 21: Moisture Content

Wind roses comprise 16 spokes, which represent the directions from which wind blows during a specific period (see Figure 22). The colours used in the wind roses depicted in figure 22, reflect the wind speed categories. The dotted circles provide information regarding the frequency of wind speed occurrence and direction categories. The prevailing wind directions are from the north-east and north, with frequencies of up to 10% and strong wind speeds of up to 15m/s. During day-time the predominant winds are from the north-westerly sector. Night-time conditions are characterized by winds from the north-easterly and south-easterly sectors.

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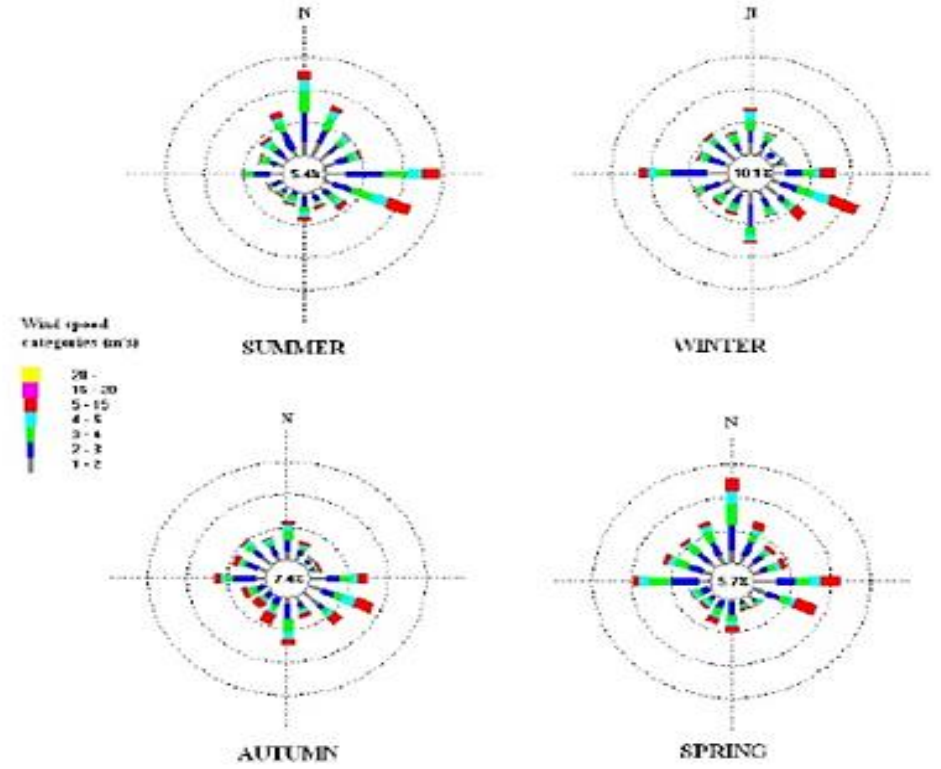

Figure 22: Wind characteristics of the areas.

10.Topography

The topology of the area is illustrated below by Figure 23 below. The slope within and around the mining right is not uniform and this is evident by the contour lines which are neither evenly nor parallel spaced. The elevation ranges from 1640m to 1685m above sea level with the mining right at 1625m.The contour lines are pointing upstream and

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forming a V shape which indicates that there is a valley. The slope tends to be gentle towards the western side of the mining site and quite steep towards the eastern side.

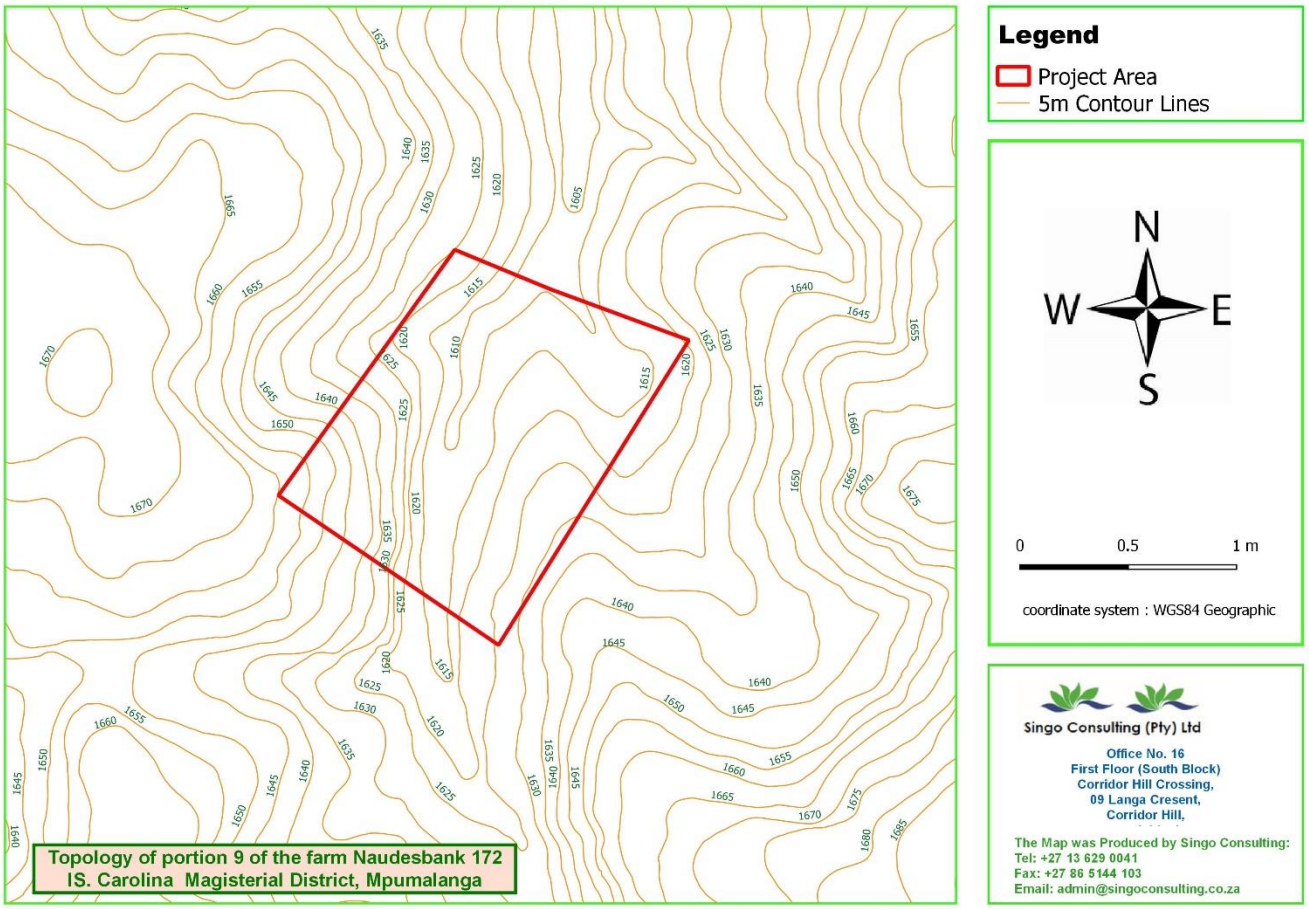

Figure 23:Topology Map of the area

11. Air Quality

The assessment of the ambient air quality is based on available ambient air quality information identified in the literature review and data supplies by the Department of Environmental Affairs (DEA) and the South African Weather Service (SAWS).

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- **Regional Ambient Air Quality**

Mpumalanga experiences a wide range of both natural and anthropogenic sources of air pollution ranging from veld fires to industrial processes, agriculture, mining activities, power generation, paper and pulp processing, vehicle use and domestic use of fossil fuels. Different pollutants are associated with each of the above activities, ranging from volatile organic compounds and heavy metals to dusts and odours.

The area are in the Mpumalanga Highveld Priority Area which has been declared by the Minister of Environment and Tourism in terms of section 18 (1) and 57 (1) of the National Environmental Management: Air Quality Act, No. 39 of 2004. The area is situated near coal mines (e.g. Canyon Coal Mine), resulting in a significant negative impact on air quality in the area that requires specific air quality management actions to rectify the situation.

Ambient air quality in Mpumalanga is strongly influenced by regional atmospheric movements, together with 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 within Mpumalanga and between neighboring provinces and countries bordering South Africa.

Mpumalanga experiences distinct weather patterns in summer and winter that affect the dispersal of pollutants in the atmosphere. In summer, unstable atmospheric conditions result in mixing of the atmosphere and rapid dispersion of pollutants. Summer rainfall also aids in removing pollutants through wet deposition. In contrast, winter is characterized by atmospheric stability caused by a persistent high-pressure system over South Africa. This dominant high-pressure system results in subsidence, causing clear skies and a pronounced temperature inversion over the Highveld. This inversion layer traps the pollutants in the lower atmosphere, which results in reduced dispersion and a poorer

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ambient air quality. Preston-Whyte and Tyson (1988) describe the atmospheric conditions in the winter months as highly unfavorable for the dispersion of atmospheric pollutants.

Plumes emitted at night from stacks during stable conditions can be transported up to thousands of kilometers downwind of the source before reaching ground level in a well diluted state. During day-time however, strong convection currents transport plumes upward and downward whilst drifting downwind (Mpumalanga State of Environment report, 2003). Pollutants thus reach ground level close to the point source of emission and are well diluted due to convective mixing (Turner, 2001). Emissions at low levels (such as from mine residue deposits, households or vehicles) do not disperse much at night because of the atmospheric stability, resulting in high concentrations of pollutants at ground level despite the relatively low emissions quantities. During the day, these low-level emissions are readily mixed into the convective layer close to the earth's surface (Turner, 2001), which results in lower concentrations of pollutants at ground level and better air quality.

12. Noise

The project area is situated surrounded by other Mining areas and Agricultural activities. It is next to a gravel road and on the other side of the road a stream flows and a railway line passes about 1.5 km away parallel to it. The trains which utilize the railway line and other already existing mines are a primary source of noise in the area hence ambient noise levels has already been impacted. In the proposed coal prospecting area, the noise will be coming from drilling rig and also car movements to and from the site whilst getting water.

13. Water Resources

Figure 24 below is illustrating the hydrology of the project area. There are a few channeled valley-bottom wetlands within the boundaries of the project area. The flow of

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direction of these wetlands is to the south which can be deduced from the topography of the area where the V shaped contours are pointing upstream (north) in the opposite direction from the flow of a stream. There are also depressions less than 3 km from the mining right.

The mining right is located more than 5 km from the Vaalwaterspruit perennial river in the northern side that diverges to flow in the southern direction. The river is of considerable distance from the mine, therefore there will be no possible contamination flow from the mine to the Vaalwaterspruit River. The report will access the significant impacts that could affect the wetlands within the mine site and outside boundaries, considerably the wetlands within 5 km.

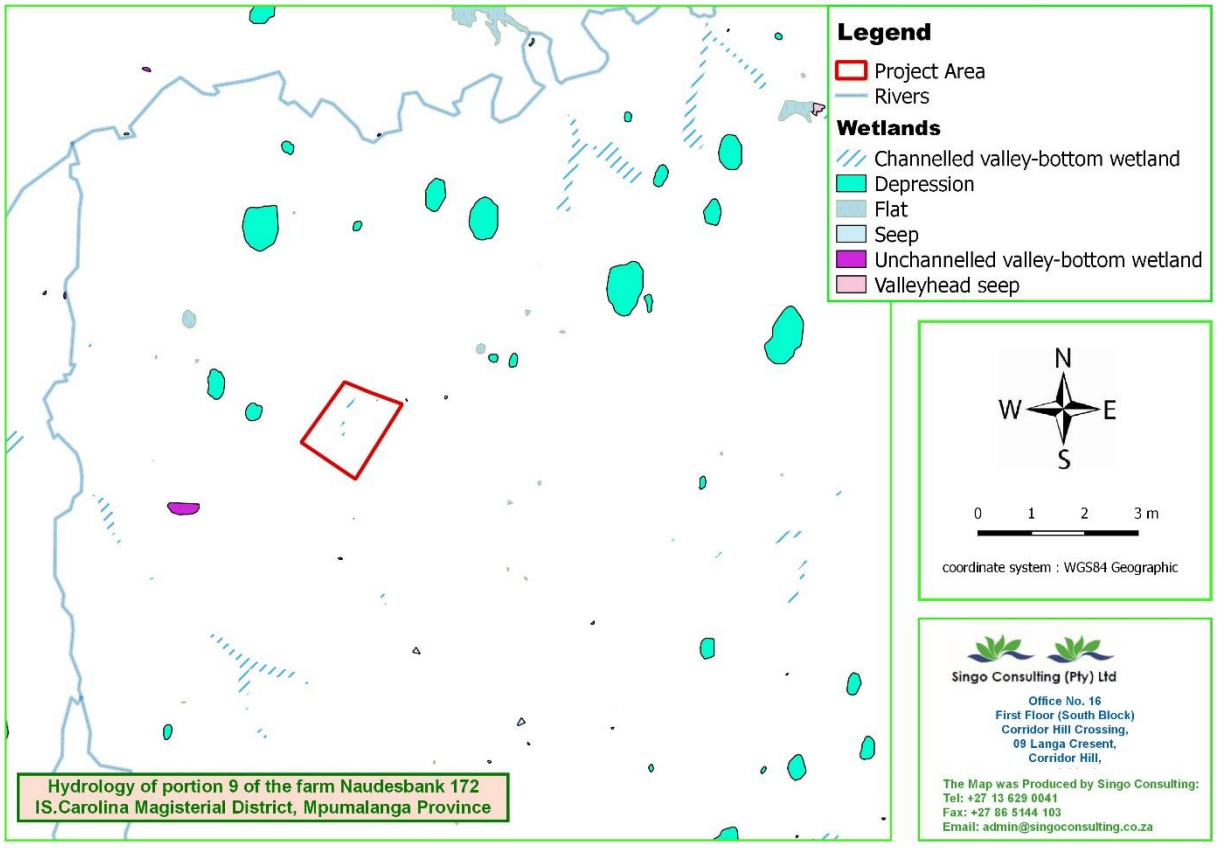

Figure 24: Hydrology map

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- **Hydro census**

The Hydrocensus' main objective is to identify the baseline groundwater use and users within the study area. The hydrocensus took place at the mining right farm. The project area falls within X11A quaternary catchment area. Groundwater in the investigation area is mainly used for domestic use and stock watering purposes.

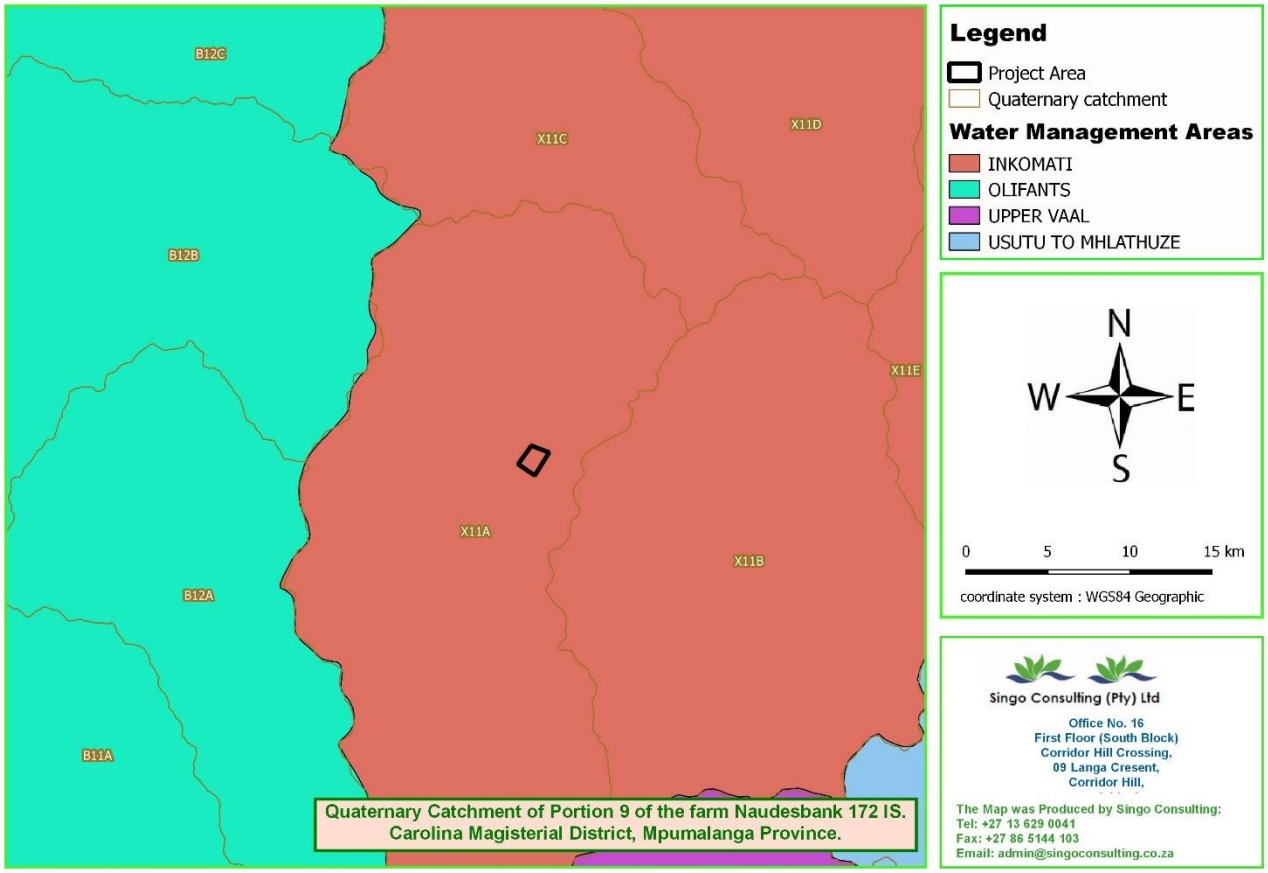

Figure 25: quaternary catchment (X11A)

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Figure 26: Groundwater is used for domestic use

Figure 27: Cattle grazing within the mining right

A hydro census was conducted on the mining site on the 02nd of October 2019 as one of the methods to collect the data on the site. Various tools were used in collecting the

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data such as TLC, hand GPS, measuring tape and a bailer. These tools were used on various boreholes on the site. The hand GPS was used 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 levels.

- **Acid mine drainage (AMD) Generation Capacity**

Acid mine drainage (AMD) poses a serious threat in mines especially coal mines where there is an abundance of sulphide minerals. AMD is expected to occur due to the extraction of sulphide ores such as chalcopyrite, pyrite or arsenopyrite ores. Hence, acid mine drainage studies should be included as one of the impacts to be mitigated in the mining area. The presence of acid mine drainage in a mining area will be demonstrated by a drop in pH. The equations below show the process of acid mine drainage formation detailed in four steps. This process is self-propagating until the ferric iron or pyrite is depleted. Generally, when pyrite combines with oxygen and water, acid mine drainage forms. If AMD gets into surface waterways, both the acidity and metal content can produce significant environmental problems over large distances. Once AMD reaches surface waters, 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: $FeS2 + 15/4\ O2 + 7/2H2O \rightarrow 2Fe(OH)3 + 2SO42- + 4H+$

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Acid mine drainage 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 Na CO3 or NaCl).
- Removing metals like iron, zinc and aluminium from water.
- Conducting passive treatments of acid mine drainage (limestone leach beds) as well as conducting active treatment of acid mine drainage (treatment plants)

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

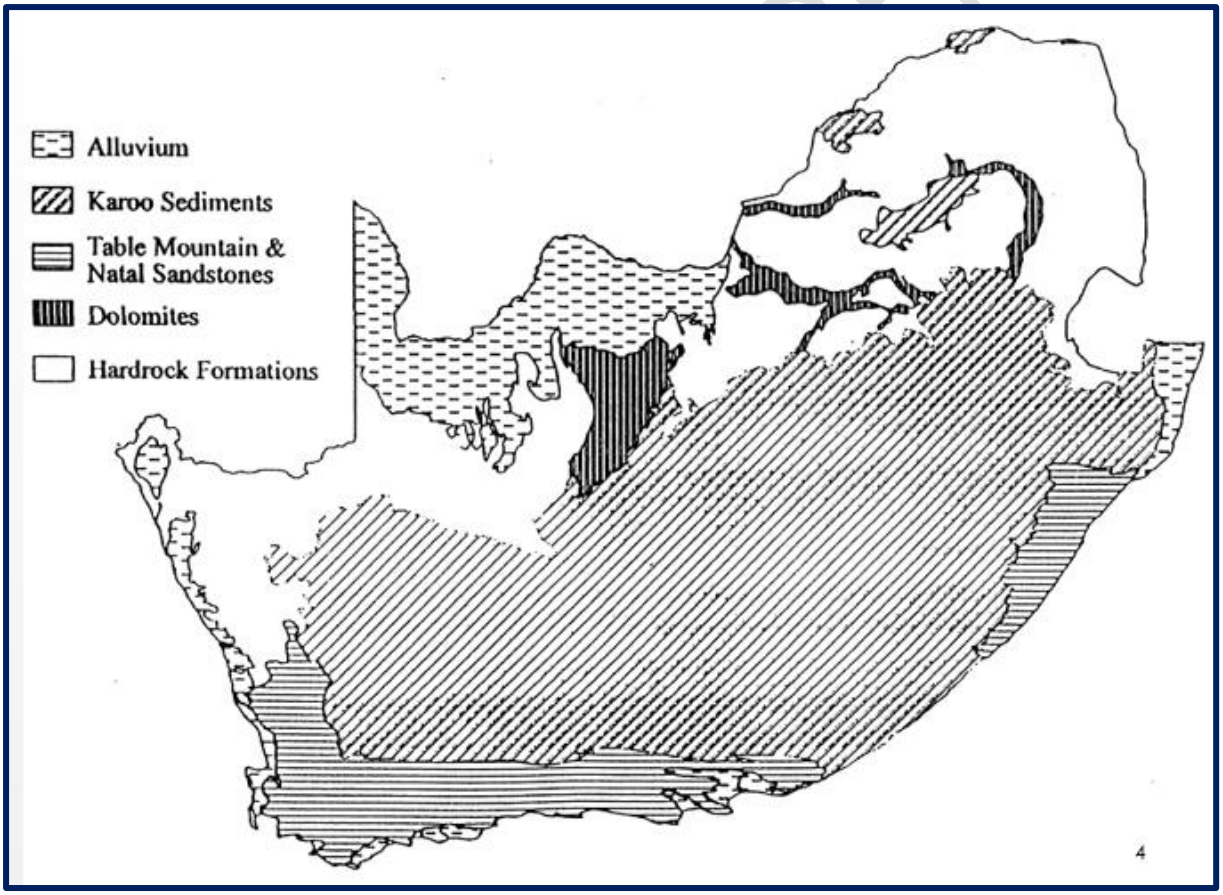

Figure 28:Aquifers of South Africa

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The groundwater potential of the formations located in the project area is limited in their pristine state due to low permeability, storage, and transmissivity. Secondary processes, such as weathering, fracturing, etc., are required to enhance the groundwater potential. Based on regional data, as compiled on the 1:500 000 hydrogeological map 2326 Polokwane, the following hydrogeological information is available for the formations on site.

14. Regional Groundwater Occurrence and Aquifers

Based on the geology within the study area, the structural geology, and the geomorphology, the following conditions can arise to enhance aquifer development within the study area:

- The fractured transition zone between weathered and fresh bedrock
- Fractures along contact zones between the host rocks due to heating and cooling of rocks involved with the intrusions
- Contact zones between sedimentary rocks of different types
- Interbed or bedding plane fracturing
- Openings on discontinuities formed by fracturing
- Faulting due to tectonic forces
- Stratigraphic unconformities
- Zones of deeper weathering
- Fractures related to tensional and decompressional stresses due to off-loading of overlying material
- Groundwater occurs within the joints, bedding planes and along dolerite contacts.
- Groundwater potential is generally low in these rocks, with 87% of borehole yields < 3 l/s.

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,

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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 formation of cooling joints. The dykes may act as permeable or semi-permeable features to impede flow across the dykes.

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 characterised by high fluoride levels which limits exploitation of this aquifer in combination with the general low yields, deep (expensive) drilling and the low recharge (Grobbelaar et al, 2004). Mining of the coal seams has resulted in the introduction 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.

- **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.
- 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 current study.

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- 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.

➢ **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)

➢ **Local Hydrogeology**

Three distinct superimposed groundwater systems are present. These are the upper weathered Ecca aquifer, the fractured aquifers within the unweathered Ecca sediments

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and the aquifer below the Ecca sediments. The following aquifer description extracted from the previously stated references is relevant to the project area.

- Groundwater levels

- The depth to groundwater level i.e. the top of the saturated zone generally lies between 5 and 40 metres below the surface.
- The probability of striking water is highest within the first 10-15 metres or so below the groundwater level.
- Peak strike depths range from 15 to 50 metres below the surface. Below 50 m strike frequency averages about one third of that between 10 and 40 m.
- The chances of striking water are neither enhanced nor on the other hand appreciably reduced by the presence of dykes.
- Dykes should not be regarded as hydrogeologically different from the gneisses, granites and granitoids in which they occur but as part and parcel of a hard-rock entirety. Their water-bearing characteristics should be seen neither as barrier nor as conduit but as variable as the adjoining country rock.
- Dyke contacts are not per se water strike zones. Success depends on whether country rock or dyke or both are weathered and fractured to below the water level.

Deeper strikes do not necessarily result in higher yields. There is no material difference between shallow-strike and deep-strike median yields. The effect of greater pumping drawdown is apparently counteracted by a decrease of fracture aperture and 5.5 Groundwater potential contaminants.

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15. TERRESTRIAL ECOLOGY

15.1 Regional Vegetation

Overview of the Biome type

Mucina and Rutherford (2006) described the project area as falling within the 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 2000 m. The Grassland Biome is very rich in plants, with nearly 3800 plant species recorded. Because fires are frequent, there are very few woody plants like trees (mainly in river courses and on rocky slopes). C4 grasses dominate throughout the biome, except at the highest altitudes where C3 grasses become prominent.

In the past, grasslands were home to 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 up to plant maize, sunflowers, sorghum and wheat. Grassland also supports livestock farming, including cattle and sheep. Most of Gauteng and the Mpumalanga Highveld are found in the Grassland Biome. Much of this region has been developed for mining, industry and urban development.

The Grassland Biome is considered to have an 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, comprising mainly endemic geophytes or dicotyledonous herbaceous plants. Very few grasses are rare or endangered. The scenic splendour of the escarpment region attracts many tourists.

Broad vegetation classification

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According to Mucina and Rutherford, 2006, the proposed area is located within the **Eastern Highveld Grassland** (Gm 12).

1. Eastern Highveld Grassland

This vegetation is distributed in the Mpumalanga and Gauteng Provinces: Plains between Belfast in the east and the eastern side of Johannesburg in the west and extending southwards to Bethal, Ermelo and west of Piet Retief. Altitude 1 520–1 780 m, but also as low as 1 300 m.

The climatic conditions of the vegetation unit are strongly seasonal summer rainfall, with very dry winters. MAP 650–900 mm (overall average: 726 mm), MAP relatively uniform across most of this unit, but increases significantly in the extreme southeast. The coefficient of variation in MAP is 25% across most of the unit, but drops to 21% in the east and southeast. Incidence of frost from 13–42 days, but higher at higher elevations. See also climate diagram for Gm 12 Eastern Highveld Grassland.

The vegetation is regarded Vulnerable with a conservation target of 24%. Only very small fraction conserved in statutory reserves (Nooitgedacht Dam and Jericho Dam Nature Reserves) and in private reserves (Holkranse, Kransbank, Morgenstond). Some 44% transformed primarily by cultivation, plantations, mines, urbanisation and by building of dams. Cultivation may have had a more extensive impact, indicated by land-cover data (Mucina and Rutherford, 2006).

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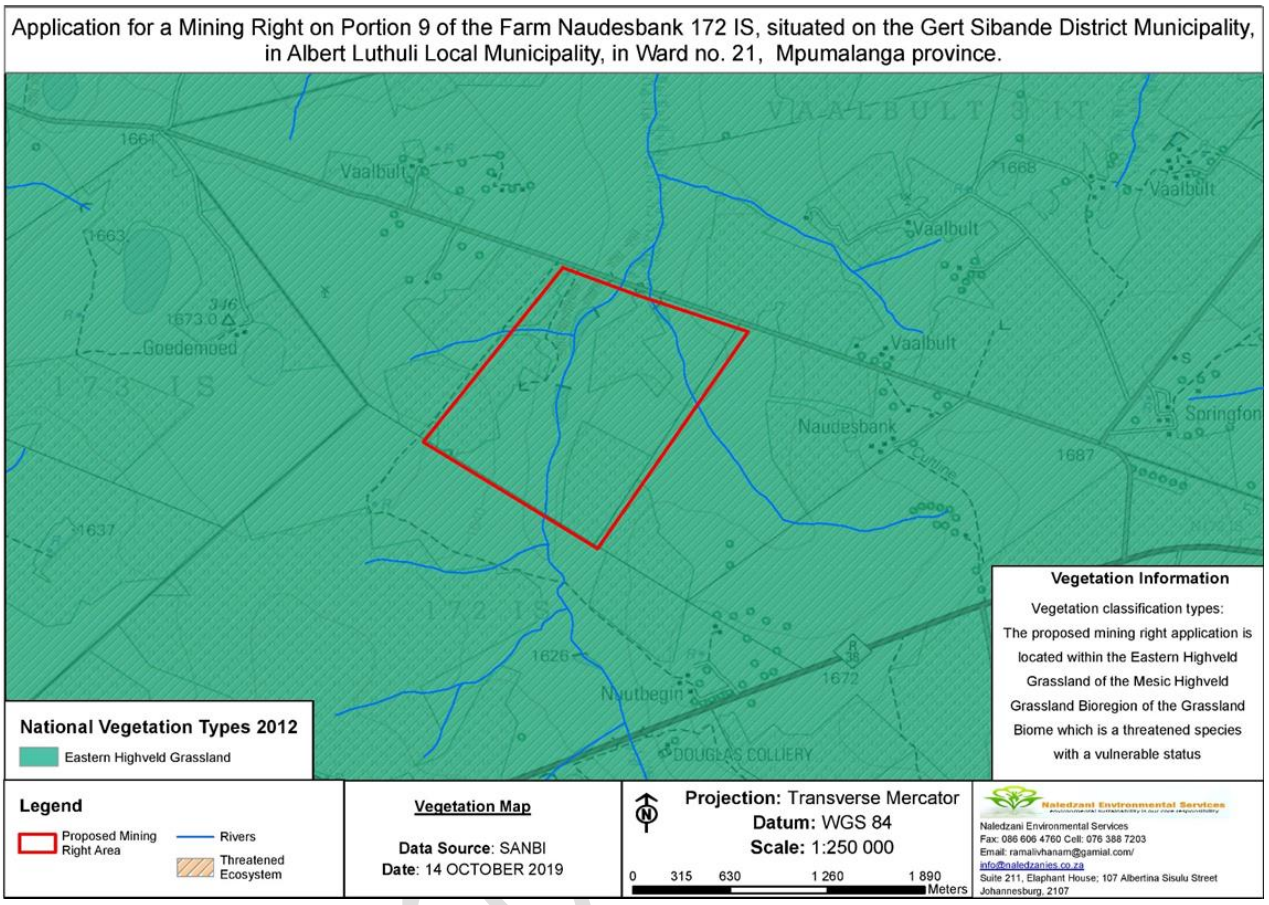

Figure 29: Broad vegetation classification map for the site

15.2 Terrestrial threatened ecosystem

The South African National Biodiversity Institute (SANBI), in conjunction with the Department of Environmental Affairs (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 in determining the status of threatened ecosystems:

2. Irreversible loss of natural habitat;

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3. Ecosystem degradation and loss of integrity;

4. Limited extent and imminent threat;

5. Threatened plant species associations;

6. Threatened animal species associations; and

7. Priority areas for meeting explicit biodiversity targets as defined in a systematic conservation plan.

In terms of section 52 (1) (a), of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), 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 terms of four categories; *Critically Endangered* (CR), *Endangered* (EN), *Vulnerable* (VU), or *Protected*. The purpose of categorizing these ecosystems is to prioritize conservation areas in order to reduce the rates of ecosystem and species extinction, as well as preventing further degradation and loss of structure, function, and composition of these ecosystems. It is estimated that threatened ecosystems make up 9.5% of South Africa, with critically endangered and endangered ecosystems accounting for 2.7%, and vulnerable ecosystems 6.8% of the land area. It is therefore vital that Threatened Terrestrial Ecosystems inform proactive and reactive conservation and planning tools, such as Biodiversity Sector Plans, municipal Strategic Environmental Assessments (SEAs) and Environmental Management Frameworks (EMFs), Environmental Impact Assessments (EIAs) and other environmental applications (Mucina *et al.,* 2006*)*. According to data sourced from South African National Biodiversity Institute (SANBI), the proposed project is situated within as Vulnerable classified ecosystem (**Eastern Highveld Grassland**).

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15.3 METHODOLOGY AND REPORTING

The information provided in this terrestrial biodiversity report is based mainly on the observations that were made during the field survey and a review of the available reports that contain known and predicted biodiversity and wetland information regarding the study area. A wide range of spatial data sets were interrogated and relevant information was extracted for the study area. A basic ecological sensitivity analysis was performed to identify areas of special interest or concern. The various approaches used and aspects taken into account are detailed below:

- **General**

A desktop survey utilising aerial images and photography was undertaken to assemble background information regarding the different features and vegetation type present within the proposed project footprint. The site was then assessed on the 02nd October 2019 in order to record the true floristic reflection of the study area.

- ***Vegetation***

The PRECIS list of plants recorded in the quarter degree grid squares (2629BB) were obtained from SANBI. This list was consulted to verify the record of occurrence of the plant species seen on the site. A desk-top study of the habitats of the red-listed and orange-listed species known to occur in the area was done 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 standardized 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.

- **Fauna survey**

Most mammals and reptiles are either very secretive, nocturnal, hibernate (reptiles), migrate (birds) or prefer specific habitat so sampling and identification was limited.

- **Mammals**

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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 using mammal sightings, burrows, holes and verified by mammal book (Skinner and Chimimba, 2005). No trapping was conducted during the field survey. The mammals which were observed are cows. A full disception is

- ***Sensitivity Map***

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

8. **Low -** Units with a low sensitivity where there is likely to be a negligible impact on ecological processes and terrestrial biodiversity. This category is reserved specifically for areas where the natural vegetation has already been transformed, usually for intensive agricultural purposes such as cropping. Most types of development can proceed within these areas with little ecological impact.

9. **Medium** - Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact such as erosion low. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.

10. **High -** 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 within these areas is highly undesirable and should only

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proceed with caution as it may not be possible to mitigate all impacts appropriately.

11. **Very High -** Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are essentially no-go areas from a developmental perspective and should be avoided at all costs.

Methodology Adapted in Assessing the Impacts

The significance of the impacts will be assessed considering the following descriptors:

Table 10: Impact assessment table

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*).

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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		

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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:

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

The significance of the ecological impact is therefore 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 as shown in the Table 11 below.

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.

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High	61-100	Where the positive impact will improve the environment relative to baseline conditions.

15.4 RESULTS OF THE ASSESSMENT

- **Plant species of concern**

From the survey one species of concern, *Khadia carolinensis (*Recorded on the rocky outcrop*),* was recorded on site. Under the Act, "No person may (a) cut, disturb, damage, destroy or remove any protected tree; or (b) collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister." The Act does not distinguish between dead and live trees, and so removal of dead wood is also against the law. Only two of the provincially protected plants (As Per the Mpumalanga Nature Conservation Act, Act 10 of 1998) was encountered during site survey this include *Brunsvigia radulosa and Haemanthus humilis*

Other provincially species that are known to occur in the bigger area but not encountered during site survey include *Gladiolus papilio, Gladiolus permeabilis, Watsonia pulchra, Disa versicolor* and *Eulophia hians*.

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Figure 30: *Khadia carolinensis* on the sheetrock

- **Vegetation units on site**

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

12. Cultivated/disturbed area,
13. Vegetation associated with watercourses (riparian and moist grassland),
14. Untransformed grassland with sheetrock and
15. Natural (untransformed) grassland.

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

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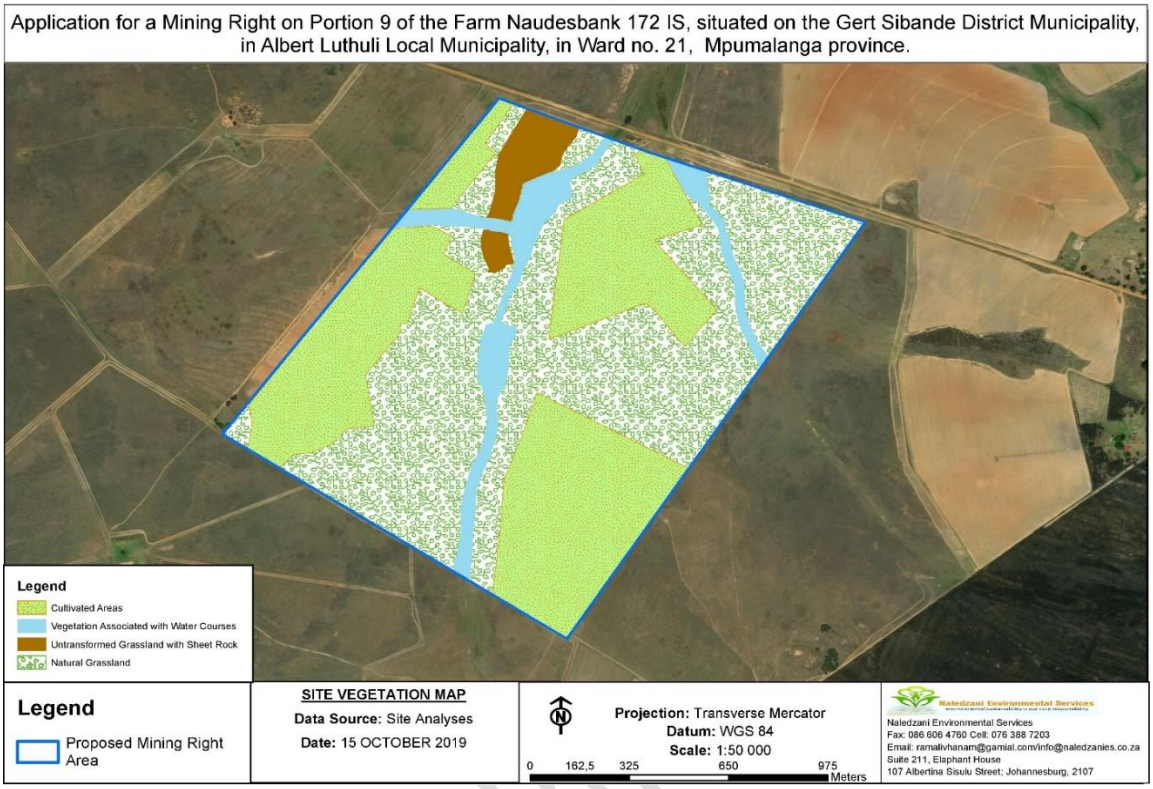

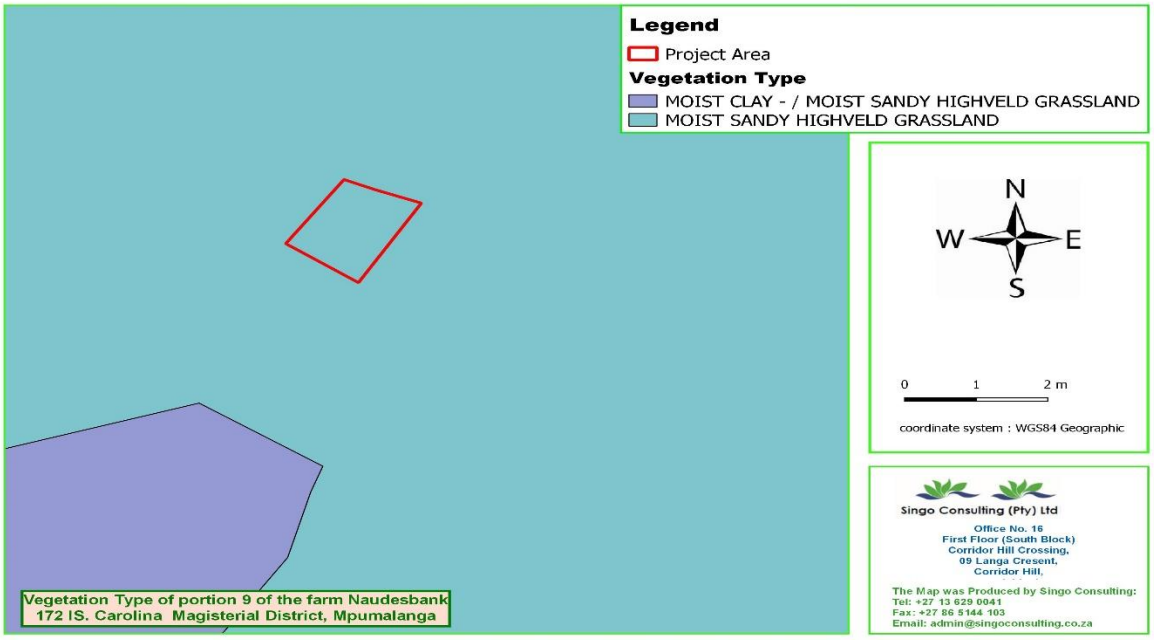

Figure 31: On site vegetation maps

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1. Cultivated/disturbed area

This is the vegetation where the area is cultivated or used for harvesting fodder for the land-owner's cow. 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 *Eragrostis curvula, Hyparrhenia hirta, Melinis repens and Panicum repens*. Forb and herbs species include *Bidens pilosa, Datura stramonium, Tagetes minuta, Argemone Mexicana* and *Cosmos bipinnatus*.

Figure 32: harvesting fodder for the land-owner's cow

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❖ ***Sensitivity aspects***

16. Due to the complete transformation of currently cultivated fields these areas have negligible or low ecological functioning.

17. No endemic, Red Data or protected species were recorded in the cultivated lands and the probability of such species occurring in this vegetation community is considered low.

18. Accordingly, the conservation importance of cultivated land is considered low.

Figure 33: Indication of the cultivated area

1. Vegetation associated with watercourses

This vegetation occurs along the wetland and drainage lines on site. Some of the plant species recorded within this vegetation unit include *Hemarthria altissima, Agrostis lachnantha, Arudinella nepalensis, Imperata cylindrical, Leersia hexandra, Sporobolus pyramidalis, Andropogon eucomus, Ischaemum fasciculatum, Paspalum distichum, Andropogon appendiculatus, Paspalum dilitatum, Paspalum scrobiculatum, Setaria*

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sphacelata, Potamogeton thunbergii, Centella asiatica, Nymphoides thunbergiana, Watsonia densiflora, Cycnium tubulosum, Cyperus compressus, Cyperus denudatus, Cyperus laevigatus, Cyperus longus, Typha capensis, Isolepis sepulcralis, Pycreus nitidus, Kyllinga erecta, Eleocharis dregeana, Schoenoplectus corymbosus.

Figure 34: vegetation occurs along the wetland and drainage lines on site

- ***Sensitivity aspects***

19. This vegetation unit in the study area has an ecological functioning of High;

20. The suitability of this community for Red Data/protected species is considered medium although no red data or protected species was recorded;

21. 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.

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22. Provides habitat for aquatic animals as well as water source for other animals

Figure 35: Vegetation associated with watercourses on site

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Figure 36: One of the wetlands occurring on site.

1. Sheetroock grassland

Rocky outcrops are usually characterized by high biodiversity due to the spatial heterogeneity owing to the range of differing aspects (north, south, east, west and variations thereof), slopes and altitudes all resulting in differing soil (e.g. depth, moisture, temperature, drainage, nutrient content), light and hydrological conditions. This vegetation is dominated by *Diospyros lycioides.* Other plant species include such as *Asparagus laricinus, Felicia filifolia, Helichrysum caespititium, Cyanotis lapidosa and Crassula setulosa, Aristida junciformis, Eragrostis plana, E. racemosa and Melinis repens.* Two fern species were recorded on the sheetrock (*Pellaea calomelanos and Cheilanthus hirta*). Xerophytic species typical of sheetrock habitat include *Selaginella dregei, Cyperus rupestris, Khadia carolinensis and Crassula capitella* and *Crassula vaginata.*

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- ***Sensitivity aspects***

23. This vegetation unit in the study area has an ecological functioning of High due to the suitability of Red Data/protected species is considered high;

24. The conservation importance of this community is considered high.

Figure 37: Sheet rock on site

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Figure 38: *Pellaea calomelanos* on the sheetrock

1. Natural/ untransformed grassland

This vegetation covers approximately 55 to 60% of the site. Much of the Natural Habitat represented in the project area comprises Untransformed and occurs in areas where the grassland is still natural and never been disturbed. Dominant floral species in this community include *Eragrostis plana, Themenda triandra and E. racemose*. Other species include *Eragrostis lehmanniana, Aristida congesta, Melinis repens, Melinis nerviglumis, Alloteropsis semialata, Aristida junciformis, Cymbopogon pospischilii, Eragrostis chloromelas, E. gummiflua, Cynodon dactylon and Heteropogon contortus.* Forbs and geophytes are reasonably diverse and include species such as *Helichrysum rugulosum, Hypochaeris radicata, Ipomoea oblongata, Acalypha villicaulis, Hilliardiella*

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oligocephala, Indigofera hilaris, Eucomis autumnalis subsp. clavata and Ledebouria ovatifolia were recorded scattered in the grassland.

- ***Sensitivity aspects***

25. The open grassland has an ecological functioning of medium;

26. The suitability of this community for Red Data/protected species is considered medium to high due to the presence of provincially protected plants.

Figure 39: indication of the dry natural grassland still occurring on site

- ***Alien invasive plants***

Declared weeds and invaders have the tendency to dominate or replace the herbaceous layer of natural ecosystems, thereby 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.

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Some invader plants may also 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 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) four categories of problem plants are identified as:

27. **Category 1a** plants are high-priority emerging species requiring compulsory control. All breeding, growing, moving and selling are banned.

28. **Category 1b** plants are widespread invasive species controlled by a management programme.

29. **Category 2** 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.

30. **Category 3** plants are ornamental and other species that are permitted on a property but may no longer be planted or sold.

Table 12 lists the alien species as well as the various NEMBA categories for the alien species that have been recorded in the study. Their presence will have to be confirmed by a site walk through (site survey).

Table 12: Alien species recorded in the study area.

Scientific name	NEMBA Category
Acacia mearnsii	2
Agrimonia procera	1b
Amaranthus hybridus	
Bidens pilosa	
Datura stramonium	1
Hibiscus trionum	

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Rumex acetosella	
Salix babylonica	2
Solanum elaeagnifolium	1b
Solanum nigrum	
Solanum sisymbriifolium	1b
Verbena bonariensis	1b
Xanthium strumarium	1b

Figure 40: *Salix babylonica* as one of the invader plant species recorded on site

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- **Description of the CBAs**

Critical Biodiversity Areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for 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 CBA's is to inform land-use planning and the land-use guidelines attached to CBA's 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. CBA's can also be used to inform protected area expansion and development plans. The use of CBA's here follows the definition laid out in the guideline for publishing bioregional plans (Anon, 2008):

31. "**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".

32. "**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."

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

Table 13: A framework for linking spatial planning categories (CBAs) to land-use planning and decision-making guidelines based on a set of high-level land biodiversity management objectives.

CBA category	Land Management Objective
PA & CBA 1	**Natural landscapes**: 33. Ecosystems and species fully intact and undisturbed 34. 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, then targets will not be met. 35. These are landscapes that are at or past their limits of acceptable change.
CBA 2	**Near-natural landscapes**: 36. Ecosystems and species largely intact and undisturbed. 37. 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. 38. These are landscapes that are approaching but have not passed their limits of acceptable change.
Ecological Support Areas (ESA)	**Functional landscapes**: 39. Ecosystems moderately to significantly disturbed but still able to maintain basic functionality. 40. Individual species or other biodiversity indicators may be severely disturbed or reduced. 41. These are areas with low irreplaceability with respect to biodiversity pattern targets only.

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Other Natural Areas (ONA) and Transformed	**Production landscapes**: manage land to optimize sustainable utilization of natural resources.

According to the Mpumalanga conservation plan majority of the site is located within a disturbed area and this is due to the cultivation that is taking place on site with the remainder of the site classified as a CBA. All of the natural grassland, the rocky outcrop and the vegetation associated with watercourses within the project area falls within Critical Biodiversity Areas (CBAs) according to the Mpumalanga Biodiversity Sector Plan (MBSP). These are the most sensitive habitats in the project area and represent the areas where impacts on ecology would be most significant. Sensitive areas will be buffered out and as most of it is situated where coal in not present thus, the areas with no coal will be excluded to ensure that sensitive areas are not negatively impacted.

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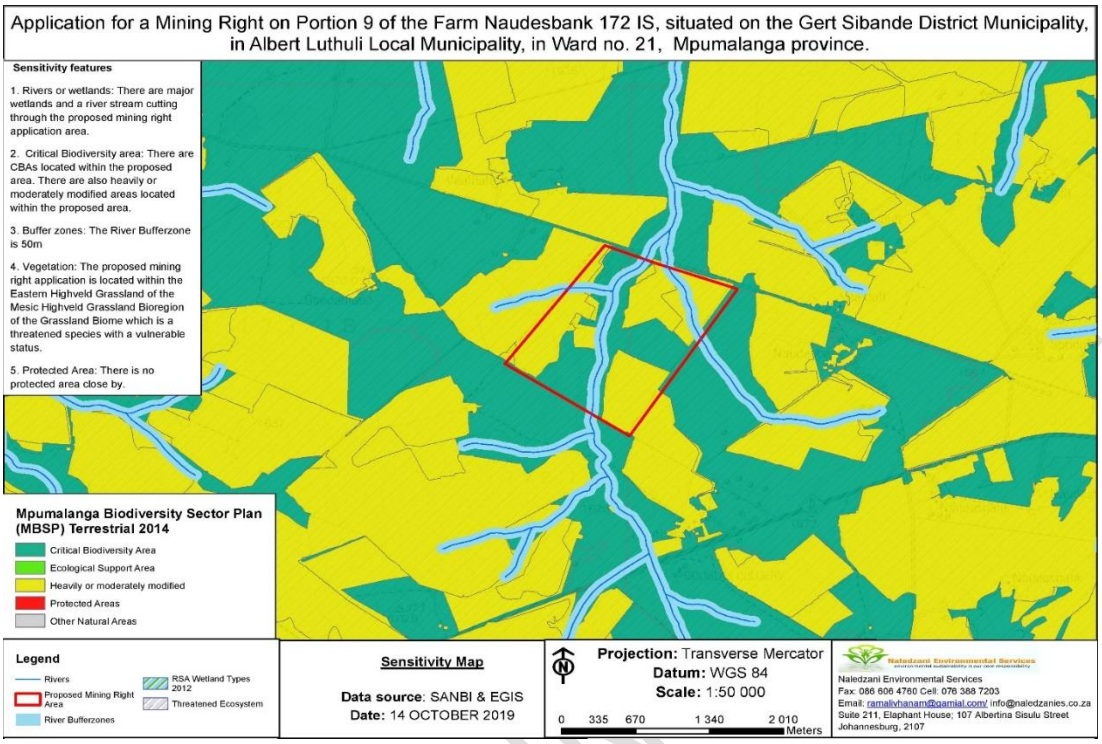

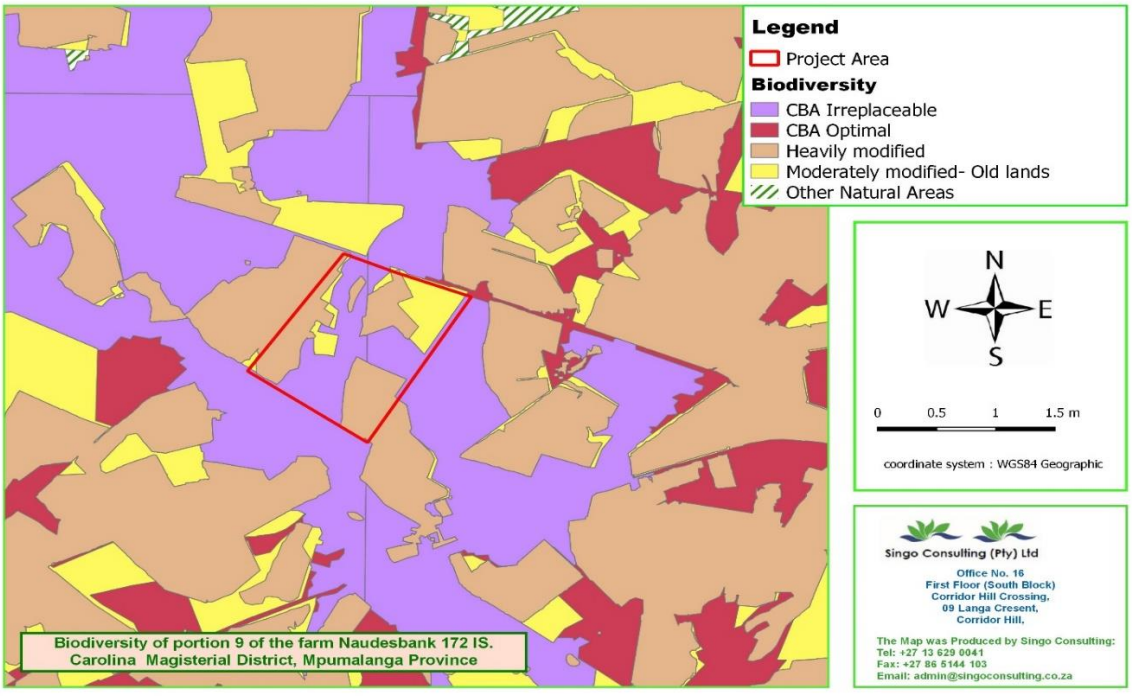

Figure 41: Sensitivity Maps

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- **Mammals**

This faunal survey focused mainly on mammals, and birds of the study area. The survey focused on the current status of threatened animal species occurring, or likely to occur within the study area, describing the available and sensitive habitats. Faunal data was supplemented by previous surveys conducted in similar habitats, literature investigations, and historic data. Different habitats were explored to identify any sensitive or endangered species. Mammal names are as used by Stuart & Stuart (1998) & Skinner & Chimimba (2005), and bird names by Hockey et al. (2005). *Amblysomus hottentotus*, *A. septentrionalis, Atilax paludinosus* and *Potamochoerus larvatus* have previously been recorded within the vicinity of the project area but were not confirmed during site assessment.

Table 14: Lists faunal species recorded during the site visit.

Scientific name	Common name
Bos taurus	Cow
Cryptomys pretoriae	Highveld Mole-rat
Cynictis penicillata	Yellow mongoose
Galerella pulverulenta	Small gray mongoose
Galerella sanguinea	Slender mongoose
Lepus saxatilis	Scrub Hare
Procavia capensis	Rock Hyrax
Sylvicapra grimmia	Common duiker

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Figure 42: Cows grazing on site

- **Avi-fauna**

Birds can be viewed as good ecological indicators, since their presence or absence tends to represent conditions pertaining to the proper functioning of the ecosystem. Bird communities and ecological condition 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 however none were observed during the field surveys.

Desktop assessment showed that about 136 bird species have been confirmed within the QDGCs. The area considered during the desktop study is thus 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

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accommodate a certain degree of habitat degradation and transformation (Harrison *et al.*, 1997). Other species are extremely habitat specific and have to 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). Therefore, the vegetation description used in the Bird Atlas does not focus on lists of plant species, but rather on factors which are relevant to bird distribution.

Alopochen aegyptiaca, Anas erythrorhyncha, Anas smithii, Anas undulata, Dendrocygna bicolor, Netta erythrophthalma, Oxyura maccoa, Plectropterus gambensis, Thalassornis leuconotus, Scleroptila levaillantii, Pternistis swainsonii, Pternistis natalensis, Coturnix, Numida meleagris and Bubulcus ibis are some of the bird species seen during site assessment. Full ecology study will be presented during the EIA Phase.

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Figure 43: Francolins's (*Scleroptila levaillantii*) eggs found on the cultivated area

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Figure 44: Egyptian Goose and South African Shelduck in the wetland on site

Figure 45: Burrows that can be used by grass-owls

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16. SOILS, LAND USE AND LAND CAPABILITY

The project falls under soil type or association with class 1 to 4, undifferentiated structureless soil as stated in the soil classification map. The dominating land-use on site is Cultivation (Maize), fodder harvesting and waterbodies. See Images Below.

SOILS, LAND USE AND LAND CAPABILITY

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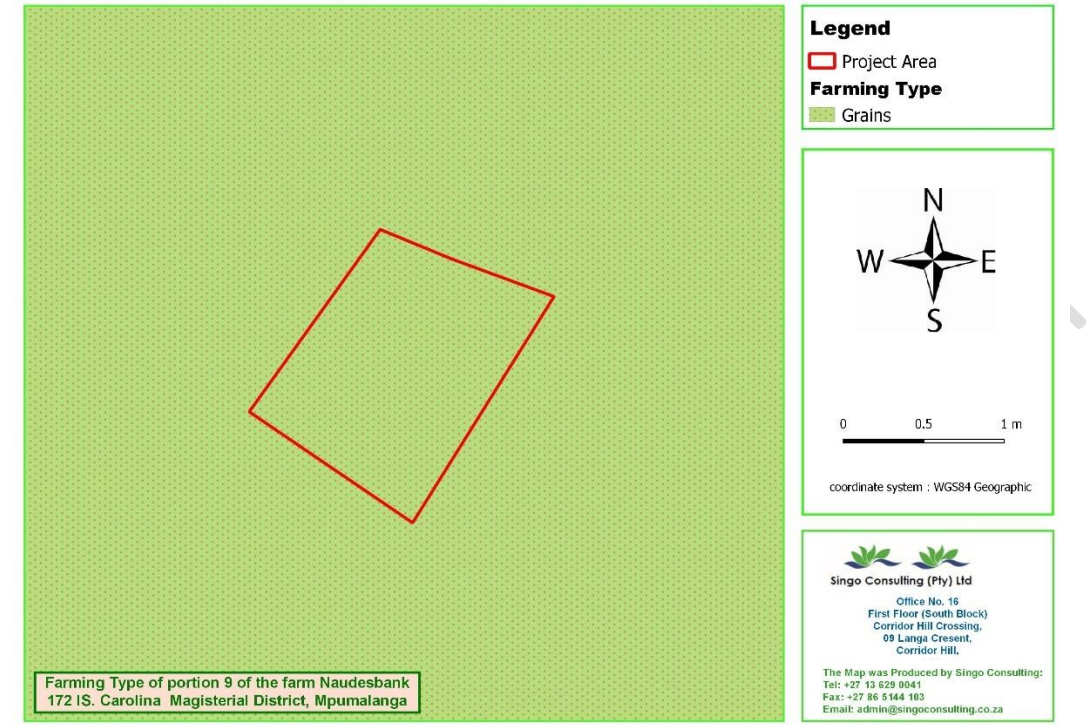

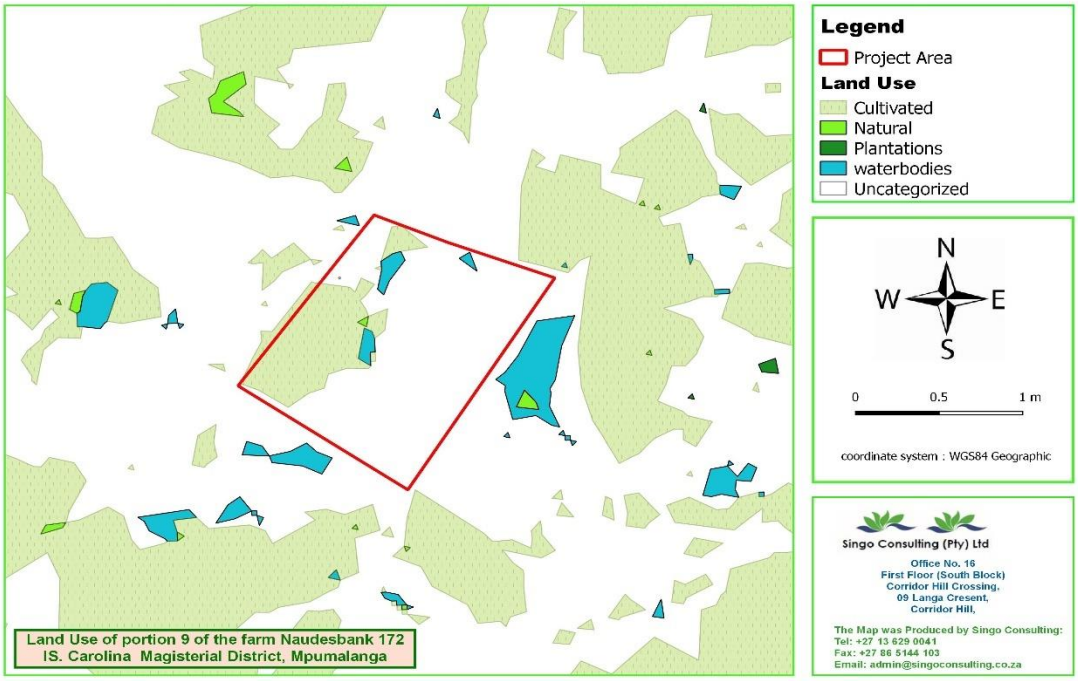

Figure 46: Land use and capacity on site.

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17. HERITAGE STUDY

- **Historical Background**

Historical sites also occur in the study area. Historical sites include historical farming sites and historical mining sites. The farming related sites usually consists of farmsteads and farm cemeteries, either belonging to the landowners or their labourers (Pistorius 2006). Historical mining related sites that exist in the broader study area include old Albion Colliery north east of the study area, dating to the 1940's (van de Walt 2014).

The Late Iron Age Nguni communities engaged in the Indian Ocean Trade exporting ivory and importing consumables such as 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). It was the arrival of the Dutch and the English traders that opened Delagoa Bay to more trade did the Nguni engaged in extensive trade with the international traders (Huffman 2007). From the late 1700s, trade in supply of meat to passing ship had increased substantially to an extent that by 1800 meat trade is estimated to have surpassed ivory trade. At the same time population was booming following the increased food production that came with the introduction of maize that became the staple food. Naturally, there were signs that population groups had to compete for resources especially along the east coastal regions. The KwaZulu Natal coastal region has a special place in the history of the region and country at large.

This relates to the most referenced Mfecane (wandering hordes) period of tremendous insecurity and military stress which eventually affected the entire Southern Africa including the modern-day Mpumalanga area. Around the 1830s, the region also 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 at least 1821. Various marauding groups of displaced Sotho-Tswana

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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 Eastern Bankveld between Pretoria and Witbank (Bergh 1999: 10-11; 109).

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

- **SAHRIS Database and Impact assessment reports in the proposed project area**

Several archaeological and heritage studies were conducted within broader project area and their vicinity since 2002 and these presents the nature and heritage character of the area. In the Ermelo area there are also Heritage Impacts assessments that have been done in the Emerlo area. Van Wyk Rowe (2014) did impact assessment of the Portion 2 of farm, Langverwacht 293 in Ermelo.

The results of this HIA recorded unmarked burials which the worker (Joseph Madonsela) at the farm alerted the archaeologist and hence consultations are important when doing fieldwork. However, there were no other archaeological sites that were recorded in the study. Roodt (2012) did impact assessment for the proposed Overvaal coal mining in farms Vlakfontein 266IT; Weltevreden 289IT, Mooiplaats 290IT, Adrianople 296IT, Buhrmansvallei 297IT in Ermelo. The study recorded some features that are associated with historic farming activities. Celliers (2013) did phase 1 impact assessment on portion 22 of the farm Witpunt 267IT in Ermelo. The survey yielded graves, farm worker dwellings and no archaeological material was recorded during the survey.

G and Heritage Consultants (2011) did a study for the proposed extension of the Camden Ash Disposal facilities in Ermelo. The results of the study only recorded burials in the study

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area and there were no archaeological signatures that were found during the study. Another consultant Digby Wells Environmental (2013) did surveys in a number of farm portions for the proposed Kusipongo Resource Mining Project in Ermelo. The study recorded stone walls that were deemed of very low significance and also burials were identified. Jaco van der Walt (2014) did a study at Highveld Haven filling station close to Ermelo and no archaeological sites were recorded in the study but there was a cemetery that was recorded.

- **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 per se, even though several other places in the general area such do have intangible heritage.

17.1 RESULTS OF THE FIELD STUDY

The main cause of impacts to archaeological sites is direct, physical disturbance of the archaeological remains themselves and their contexts. It is important to note that the heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position. The severe impacts are likely to occur during clearance, construction of access roads and other amenities for the mine as well as foundations of buildings, indirect impacts may occur during

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movement of mining equipment and vehicles. The excavation and clearance of top soil will result in the relocation or destruction of all existing surface heritage material.

Similarly, the clearing of access roads will impact material that lies buried 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. It is important to note, that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed Mining Right Application sites.

Further, archaeological sites and unmarked graves may be buried beneath the surface and may 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 (see appended Chance Find Procedure). The study concludes that the impacts to archaeological resources will be negligible since the site has previously been cleared for corn fields and associated infrastructure such as irrigation infrastructure and farm roads. The following section presents results of the field survey.

17.1.1 Archaeological Heritage Sites

Previous Phase 1 AIA and HIA studies conducted around the project area (e.g Mlilo 2019) highlighted the potential for recovering LIA sites especially the Carolina area 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 such as agriculture and associated infrastructure.

The proposed mining right site is located within a heavily disturbed landscape characterised by approximately 85% of the land being ploughed and approximately 15% or less being for grazing livestock with few patches of thick bushes, farm tracks, power

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

Based on the field study results and field observations, the authors concluded that the receiving environment for the proposed mining development is low to medium potential to yield 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.

17.1.2 Burial grounds and graves

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, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Archaeological and historical burials are usually identified when they are exposed through erosion and earth moving activities or infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.

The field survey recorded one burial site associated with abandoned historical farm stead. The burial site is located within the proposed mining right application site at GPs coordinates S26° 05' 466".and S29° 56' 896" (see figure 1). The burial site is fenced and well secured by a sandstone block wall similar to the farm house vernacular architecture.

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There are two graves marked by tombstones and inscribed twin headstone. The graves are for the previous farm owners and it is not clear if the current farm owner is related to the previous owners. Both graves are older than 60years old and qualify to be protected by Section 36 of the NHRA. As such they cannot be altered or relocated without a burial permit from SAHRA Burial Grounds and Graves Unit. The procedure for obtaining the relevant burial permit will be provided should it become necessary to relocate the affected graves.

Burial grounds and gravesites are accorded the highest social significance threshold (see Table 15). They have both historical and social significance and are considered sacred. Wherever they exist or not, they may not be tempered with or interfered with during any proposed development. It is important to note that the possibility of encountering human remains during subsurface earth moving works anywhere on the landscape is ever present. Although the possibility of encountering previously unidentified burial sites is low at the mining right application area, should such sites be identified during subsurface mining, they are still protected by the NHRA and the Human Tissue Act.

The images displayed on the table below are;

- A= Showing burial site NMRASBS1 secured by a rectangular sandstone wall.
- B= Showing the entrance gate which is partially broken. Note that the broken entrance gate is an indication of lack of care and that the affected family are no longer residing in the project area.
- C= Showing two graves within burial NMRASBS1 covered by tall grass. Note the cracking of tombstones and uncleared tall grass is an indication of a burial site that is forgotten.
- D= Showing the twin inscribed tombstone which provides vital information about the deceased and their custodians.
- E= Showing the back elevation of the stone enclosure housing Burial site NMNRABS1.

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Table 15: Graves encountered on site

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17.1.3 Buildings and Structures older than 60 years

Four broad categories of manmade spaces and construction works occur in farmsteads in order to serve the needs of early farmers, these include buildings for housing people, produce and equipment, structures for manufacturing processes and structures for housing stock and farm activity areas such as threshing floors and working areas.

The study identified ruins of vernacular stone building and structures on one abandoned farmstead typical of stone architecture found in the Southern Districts of the Mpumalanga Province (Naude 2000). The site is located at GPs coordinates S26° 05' .429"and S29° 57.' 011". Similar stone architecture is also found in the Free State and the Karoo (Naude 2000). The buildings and stock kraal are built of local sandstone blocks. Very little is known about the Mpumalanga vernacular architecture which is associated with both rural and urban tradition (Naude 2000). The farmstead has been redundant for a long time and the buildings and structures have slowly disintegrated due to vandalism and abandonment. This led to structural failure of the building and structures. The recorded historical buildings and structures include a farm house, stone cattle kraal, feedlot and windmill.

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The ruined 5 roomed house was built of sandstone blocks and lime mortar and wooden frames. The study could not establish the roof type because the roof was vandalised. A section of the ruined farm house was extended in recent times using backed bricks (see Table below). The farm house has been partially destroyed; the entire roof was destroyed. Although the walls are still standing, they are no longer structural sound, large cracks are visible and due to exposure to rain and hot temperatures the remains walls have been weakened. Generally, the farm house is in a poor state of conservation although sandstone walls are quite impressive.

The rectangular stock kraal was built of sand stone and supporting pillars. The sandstone stock kraal is located at GPs coordinates S26° 05'. 466".and S29° 57.' 004". It has an exceptionally wide entrance which suggest that it was used for cattle. Like many of these stock kraals spread over Mpumalanga they suffer from structural decay. Sections of the stone walls are collapsing as a result of abandonment; however, some walls are still intact and very impressive (see Plate 25). The walls are very impressive although they have been repaired over the years. It is not clear if the current farmer continued to use the kraal in recent times. The kraal is typical of vernacular stone kraals dotted throughout this region. Generally, the stock kraal is also in a poor state of conservation.

The windmill is typical of several that are still in use by farmers across the region. The windmill has been vandalised; however, it still maintains its historical fabric. The windmill is associated with a small feedlot which is still intact. The windmill is located at GPs coordinates S26° 05.' 502".and S29° 56' 992" and S26° 05.' 502".and S29° 56' 976".

Based on information obtained from the associated burial site, the farmstead and associated structures are older than 60 years. Although the buildings and structures might have been renovated and altered over years of occupation, they still retain their historical fabric and therefore still protected by Section 34 of the NHRA. The buildings are of heritage significance and must not be destroyed without a demolition permit from the PHRA. The HIA full specialist assessment will be available during the EIA phase.

Table 16: Buildings and Structures older than 60 years

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18. SOCIAL ASPECTS

The study area is located in Ward 21 of Albert Luthuli Local Municipality (ALLM) within Gert Sibande District Municipality (GSDM), Mpumalanga Province. The demographics, households, economics, education and service delivery aspects for Ward 21 are discussed 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) and Municipal IDP.

The socio-economic analysis is based on a desktop study of existing socioeconomic information and development strategies contained in the governmental national, regional and local databases (Le. Statistics South Africa: Census 2001/2011 and Community Survey 2016), Integrated Development Plans (IDP) and Census data from the Municipal IDP). The tables below depicting the social background and service delivery (population, dwelling type, toilet facilities, water access, refuse removal, energy sources and education) of the Gert Sibande District Municipality/ Chief Albert Luthuli Local Municipality within which the mine is situated.

18.1.1 Population & Development Analysis/Socio-Economic Analysis

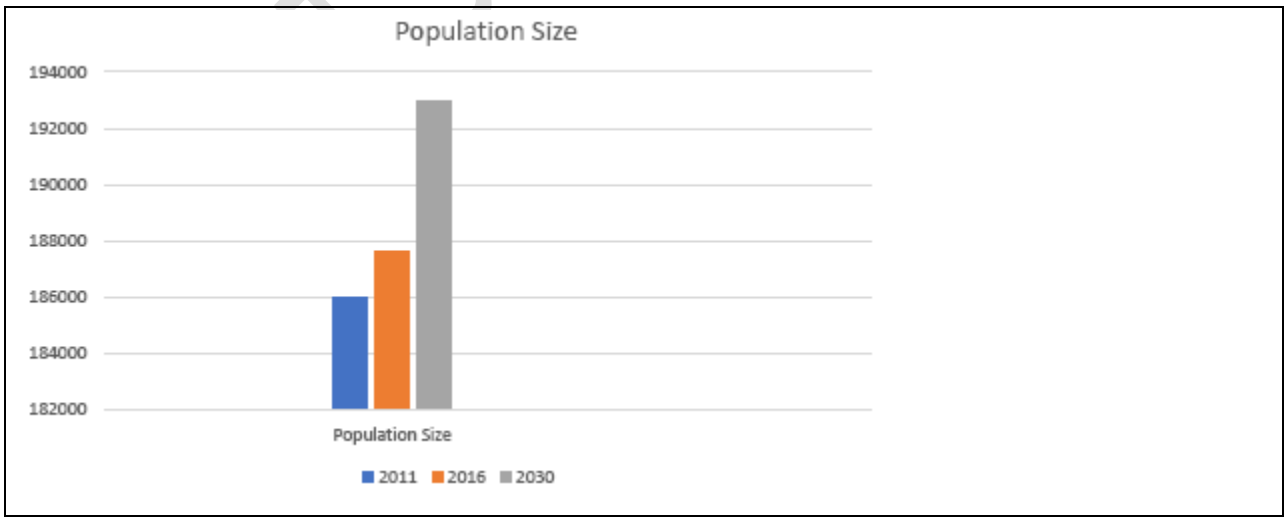

Figure 47: Population Size of Chief Albert Luthuli (Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

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According to census, the population size was 186 010 in 2011 and increased to 187 630 in 2016. Should the current growth trend continue, it is projected that the population size will rise to 192 952 in 2030.(Refer to figure 3 above)

(Figure 48 below captures distribution of the population by age and gender in the Chief Albert Luthuli Local Municipality.)

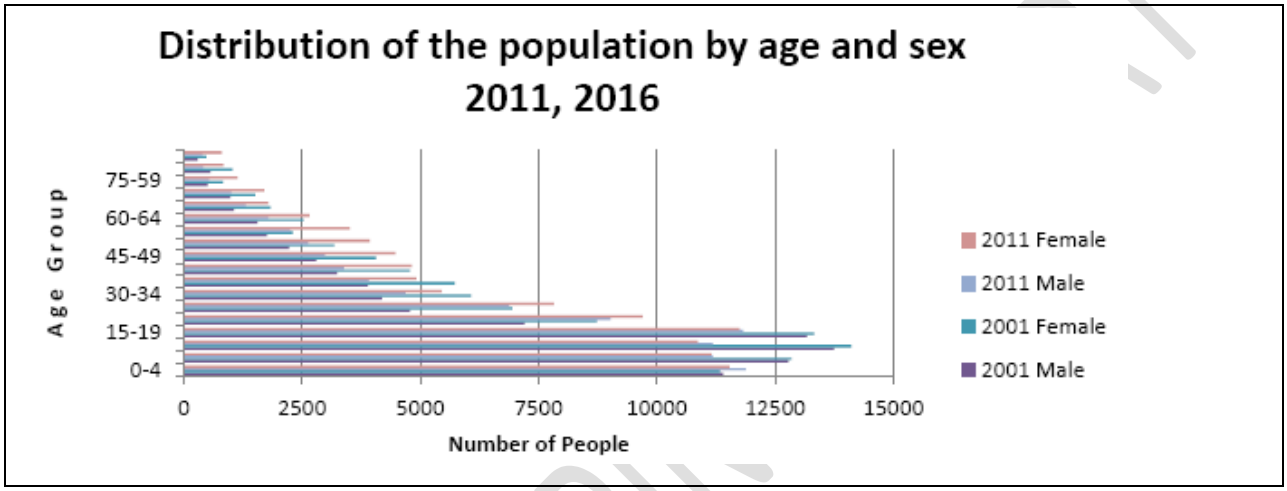

Figure 48: Population by age and gender (Source: StatsSA)

In terms of gender the municipal population comprises 47% males and 53% females. Females have a longer life expectancy than males as can be seen in the population pyramid, which shows that there are greater numbers of females than males in the age groups from 50 years and older. The sex ratio for the Municipality's population is 88 males per 100 females.

In Terms of Age, the municipality's population is young with 73% of the population below the age of 35 years. Individuals within the 0-14-year-old group comprise 25% and the 15-34 age group 41% of the population. The 35 to 59 age group comprises 26% and those 60 and over 8%. The economically active age group from 15 to 59 years includes 67% of the population. The population dependency ratio is 71/100 and this indicates that 71 persons either young or old depend on 100 persons of working age. However, it must be noted that when employment rates are low the economic dependency of young, old

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and unemployed on each working person will be higher than the population dependency rate.(Chief Albert Luthuli 2019-2020 Final IDP)

18.1.2 Economy and employment

From the table below, it can be deduced that unemployment within the Chief Albert Luthuli municipal area is larger than the number of people employed. The population of non-economically active stands at 29.0% whereas the economically active percentage lies at 15.75% . (Chief Albert Luthuli 2019 – 2020 Final IDP)

Table 17: Employment Status

Employment Status	Number of People	Percentage of Population
Employed	29 141	15.75
Unemployed	15 975	8.6%
Discouraged work seeker	9 282	5.0%
Other not economically active	53 944	29.0%

(Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

Table 18: Labour Indicators

	No. of People	Percentage of population	Share of District Figure	Ranking (Best1) (Worst 18)
Working age population (15-64 years)	108 342	58.2%		
Economically active population (EAP/Labour force)	45 115	24.3%		
Number employed	29 141	15.7%	11.2%	
Number unemployed	15 975	8.6%	14.6%	

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Unemployment Rate(%)		35.4%		12

(Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

According to Chief Albert Luthuli 2019 – 2020 Final IDP, it was recorded in StatsSA that in 2011 16% of the population is employed with 58% in the economic productive years (15-64 years) and 34% are discouraged work seekers or not economically active. The percentage of employment in formal sector was 65,6%, and in the informal sector 21,9%. The proportion of population in low-skilled employment is 44%.

MBG Mining and Industrial Suppliers (Pty) Ltd can assist the municipal area in attaining socio-economic growth in the mining sector.

18.2 Types of Living Spaces

According to Statistics South Africa Censuses 2001, 2011, Community Survey 2016 and the 2019 – 2020 Chief Albert Luthuli LED, the number of households increases exponentially. The population of the Chief Albert Luthuli municipal area has remained more or less average with no drastic increase, instead there was a decline in the Stats SA 2001 Census from 187 751 to 186 010 in 2011.

Table 19: Socio- Economic Profile -Types of Households

	Census Data 2001	**Census Data 2011**	**Community Survey 2016**
Population	187 751	186 010	187 630
No. of Households	41 209	47 705	53 480

(Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

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18.3 Basic Service Delivery

According to the Chief Albert Luthuli 2019 – 2020 IDP, the municipality supplies water, sanitation, electricity, waste removal, firefighting, and sport and recreation services to provide in the basic needs of its residents; institutions (schools, hospitals etc.); businesses and offices; industries (farming, mining, manufacturing, tourism, etc.).

The delivery of basic services is essential in improving the quality of life and sustainable development of communities. Government is committed to providing access to water, sanitation and electricity as basic services to address the infrastructural backlog. Government's development programmes were beginning to show tangible results, in that access to basic services has improved substantially since 1994.

The demand for basic service delivery is very high, and the Municipality is unable to meet the ever-growing demand with the available resources. The number of households is highest around towns and settlements and is rapidly declining in the rural areas. The Municipality is doing well in the provision of some basic services. It shows progress in three critical basic services, being water, sanitation and electricity, which are embraced by the Sustainable Development Goals.

In contrast to this, is the solid waste removal service, which contributes adversely to global warming because the rate of litter that is not collected poses a challenge to the wellbeing of the people and the environment, but the Municipality is steadily improving. The reasons that lead to the slow improvement are the financial factor as well as the rural nature of the Municipality. (Chief Albert Luthuli 2019 -2020 Final IDP)

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Table 20: Households with Minimum Level of Basic Services

Proportion of Households with Minimum Level of Basic Services	Percentage(%)
Electricity service connection	92%
Water – available within 200m from dwelling	97%
Sanitation – households with at least VIP services	80%
Waste Removal – kerbside collection once a week	27%
Percentage of total households receiving basic water service daily	74%

(Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

18.3.1 Water and Sanitation

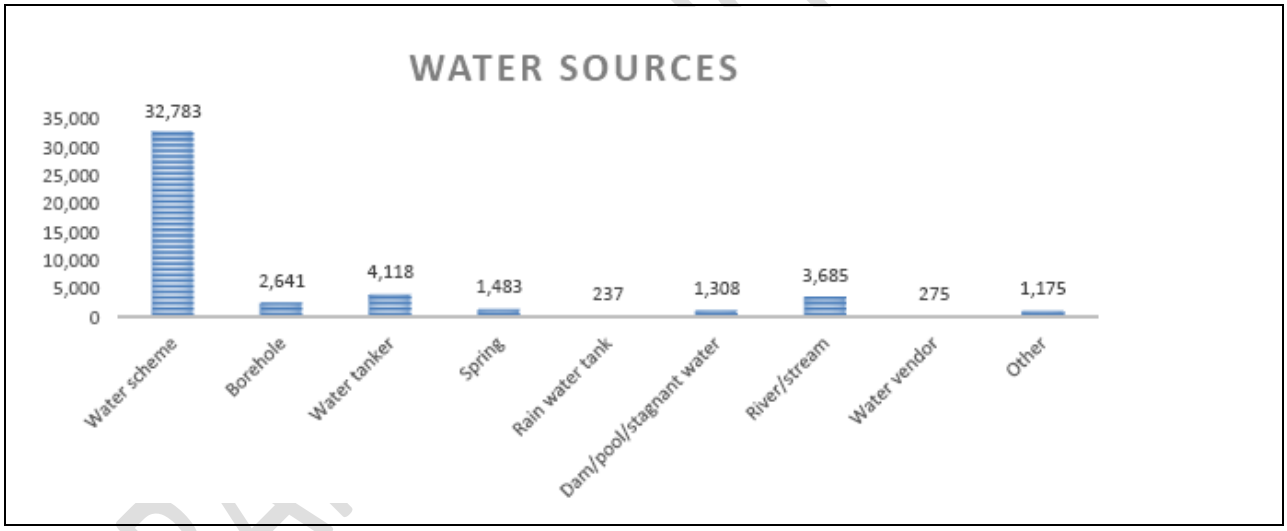

Figure 49: Water Sources (Source: Chief Albert Luthuli 2019 – 2020 Final IDP

The above figure illustrates where settlements access water within the municipality.

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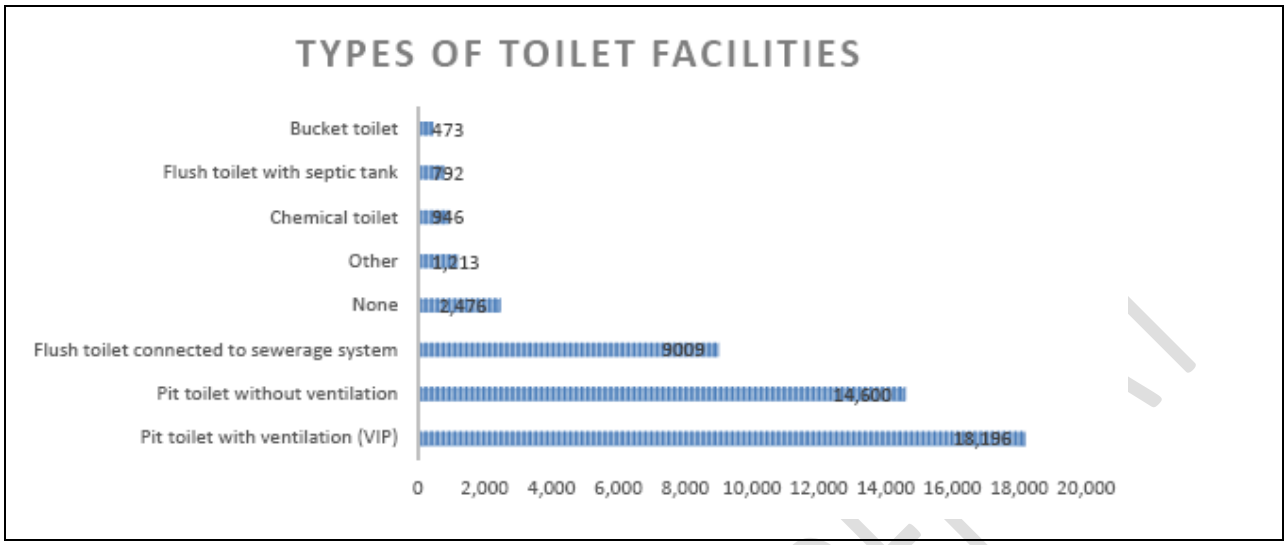

Figure 50: Toilet Facilities (Source: Stats SA CS 2016)

According to the Chief Albert Luthuli 2019 – 2020 IDP, the types of sanitation provided by the Municipality are:

- Waterborne sanitation in urban settlements, with the challenge of sewer blockages due to inadequate or rationing of water; and
- Ventilated toilets system (VIP), which has a short lifespan; about 23% of households receive this service in an acceptable standard, but over 65% receive it at a minimal level. Even though there is a challenge with the definition of what a standard was, it can be loosely accepted that any person who uses any other system than waterborne sewer is below the standard.

The Municipality faces budget constraints in relation to the sanitation service - the fact that less than 30% of households are receiving decent sanitation is a serious concern, given the fact that in terms of water supply, more than 77% of households receive water through piped water. If the Municipality were to convert the 77% of households receiving water to sanitation, it would have been in a position to increase its revenue base, because this is trading service. (Chief Albert Luthuli 2019 – 2020 Final IDP)

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18.3.2 Electricity

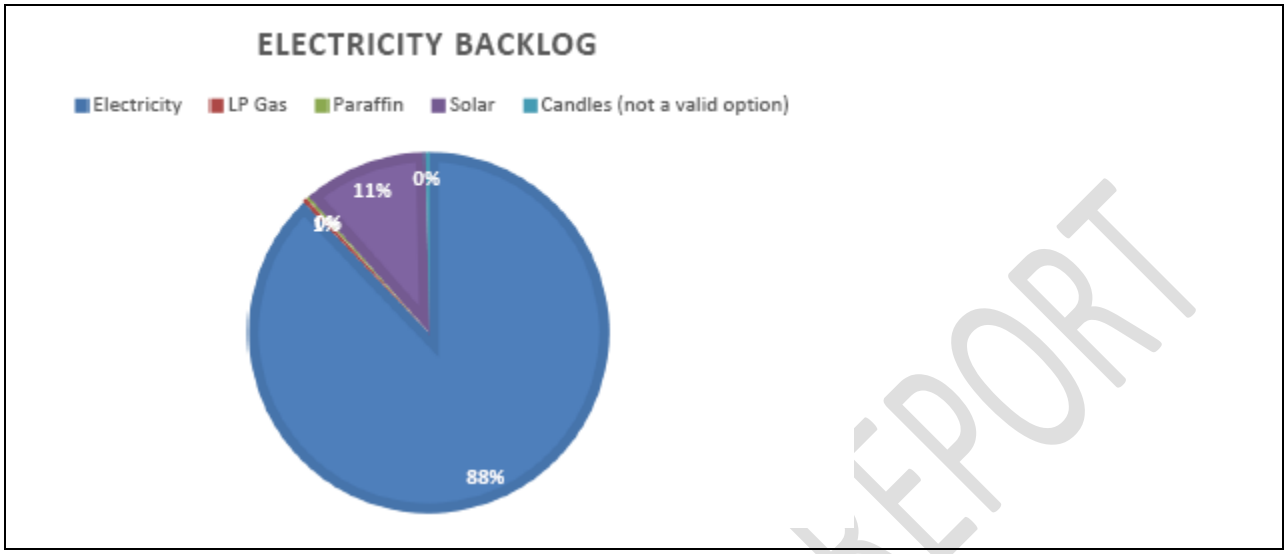

Figure 51: Electricity Backlog/Fuel used for Lighting (Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

According to the Chief Albert Luthuli IDP, the municipality is committed to the provision of safe, affordable and reliable electricity to the community. Electricity is supplied in the municipal serviced area (Carolina, Silobela and Emanzana town); while Eskom is the sole distributor in the rest of the other municipal area.

Despite the increase in access to electricity, households prefer to use electricity for lighting rather than for cooking and heating. The use of electricity for cooking and heating was observed in less than 50% households and is not uniform, meaning even households with electricity choose not to use it for all their energy needs. Wood is the leading source of energy for cooking and heating. Statistics SA 2011 indicates that 5,978 households do not have electricity. The Municipality made some strides to address the backlog(Refer to figure 9 above). Currently only 4 206 households do not have access to electricity. In addition to the above, it should be noted that 51 383 households were connected to electricity in 2016 and there was an improvement of 96% in 2017 leaving 1 902 household without electricity in 2017. (Chief Albert Luthuli 2019 – 2020 Final IDP.

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18.3.3 Waste Management

According to the Chief Albert Luthuli 2019 – 2020 IDP, the municipality consists of 53 480 households in which 12 909 (24 %) households receives kerb site refuse removal with the backlog of 40 571 (76 %). The refuse removal service is conducted to the following areas Carolina, Silobela, Emanzana, Elukwatini, Ekulindeni and Empuluzi. The refuse removal services for households and areas without access is augmented with the provision of communal skip bins which are placed on strategic points at various wards of the municipality. The department has recently dispatched additional seven communal skip bins to expand the service in areas of Elukwatini and Empuluzi. (Chief Albert Luthuli 2019 – 2020 Final IDP)

Table 21: Refuse Removal

Households with Weekly Refuse Removal		
SA Census 2011	Community Survey 2016	Backlog
10 360	12 909	40 571

According the municipal IDP, out of the 53 480 households present within the municipal area, only 12 909 we serviced in the CS 2016.

18.3.4 Roads and Storm Water

According to the Chief Albert Luthuli IDP, the municipality has a total road network of 643km. 132km is paved and in the villages, there are no drainage systems and roads need to be re-gravelled. The Municipality has limited resources with regard to personnel (assisted by EPWP employees), vehicles, yellow plant, and equipment due to financial constraints.(Chief Albert Luthuli 2019 – 2020 Final IDP).

MBG Mining and Industrial Suppliers (Pty) Ltd and the Chief Albert Luthuli Local Municipality can work hand in hand in addressing the areas of deficiency.

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18.4 Education

Form the IDP we learn that Chief Albert Luthuli Municipality is predominantly a municipality whose population does not have tertiary education. Of the total population of the area; only 5% has university degree qualification; 33% have matric, 30% with some secondary education. 15% of the population has primary education, and 15% do not have any education.(Refer to Figure 52 below)

This impacts the municipality's capacity to meet its mandate of providing sustainable service because of the scar professionals. The municipality sources their professionals from outside its boundaries meaning that Mbombela and Steve Tshwete benefit as they offer the best social amenities to entice skilled personnel into their areas.

Furthermore, the low skills retention affects the economy directly as more than half the population has no education qualification competitive with the job market, it means that there is a high poverty and dependency rate. (Chief Albert Luthuli 2019 – 2020 Final IDP).

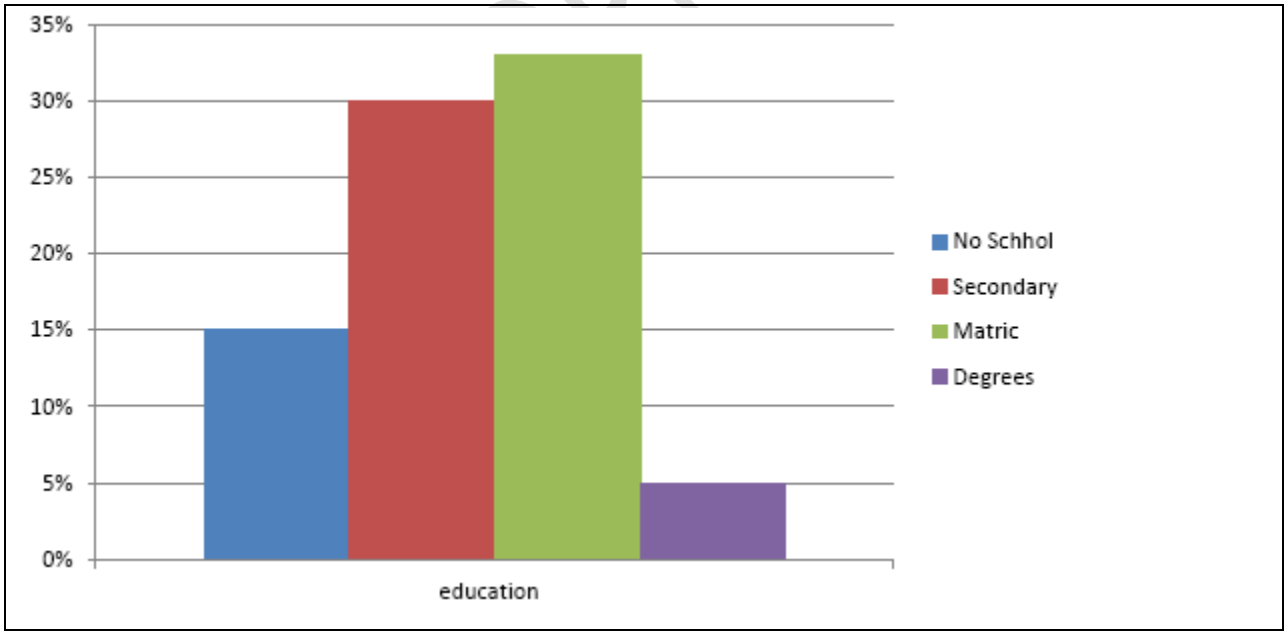

Figure 52: Overall educational attainment (Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

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18.5 Health Status

18.5.1 HIV/AIDS

According to the Municipality, 43.2% of the requires treatment for HIV and food to support the use of the treatment. Strategies to prevent HIV infections are in place but need to be increased. Chief Albert Luthuli has identified 3 key issues relating to HIV, namely:

- Focus on programmes that will minimize the risk
- Facilitation of programmes with Provincial counterparts to address issues of HIV/AIDS.
- The municipality is running awareness programmes from the Office of the Executive Mayor, coordinated through the Department of Community Services and Public Safety. (Chief Albert Luthuli 2019 – 2020 Final IDP)

Figure 51 illustrates the HIV Prevalence in municipalities. From the Figure we can deduce the number of infections deceased slightly.

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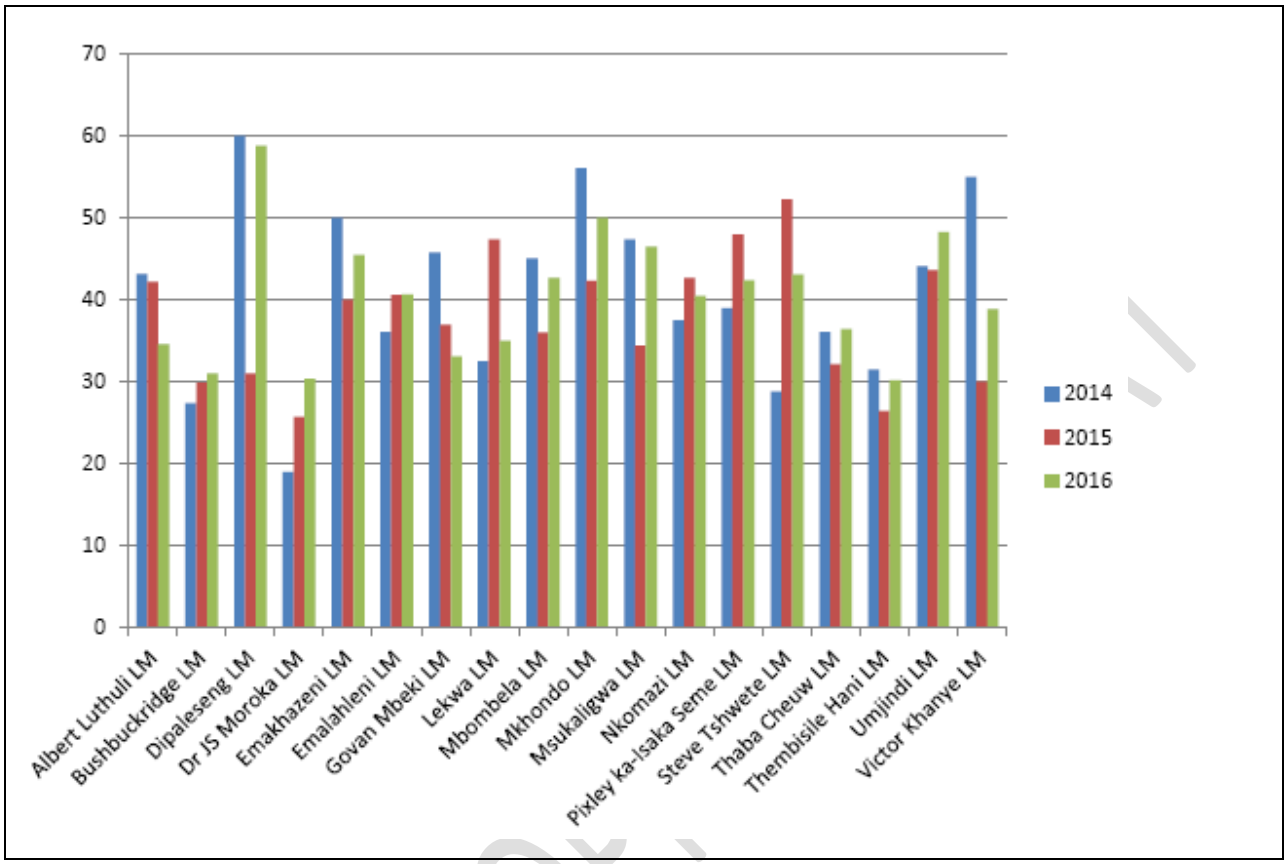

Figure 53: HIV Prevalence by Sub-District from 2014 – 2016 (Chief Albert Luthuli 2019 – 2020 Final IDP)

18.5.2 Teenage Pregnancy

According to the Chief Albert Luthuli 2019 – 2020 IDP, the factors associated with teenage pregnancy vary from socio-cultural factors such as fulfilling family and gender norms, rites of passage, patriarchy and masculinity, and peer pressure - where teenage pregnancy is regarded as "cool". Teenage pregnancy may also be caused by the sugar daddy's phenomena, where an older man dates younger girls.

The rate of teenage pregnancy continues to be on the rise albeit campaign run by the municipality in conjunction with the department of health, NGOs, CBOs and Faith-based organizations. More than half of pregnancies registered with the ante-natal department is ascribable to teenagers from 13 – 19.(Chief Albert Luthuli 2019 – 2020 Final IDP)

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18.5.3 Alcohol Abuse

According to the Chief Albert Luthuli 2019 -2020 IDP, surveys showed that 34.9% of youth had used alcohol in the past month and 28.5% had engaged in binge drinking; 23.9% had used alcohol in the past month, and 25.6% had engaged in binge drinking in the past month.

Lower levels of education and unemployment are associated with higher levels of binge drinking among current drinkers with the most prevalent age for drinking in South Africa between 18-35 years of age. (Chief Albert Luthuli 2019 – 2020 Final IDP).

18.6 Income Profile

The proportion of the population in low-skilled employment is 44%. The average household income is R4 000 per month and 19% of households earn less than R800 per month. The low average household income is directly linked to the low employment rate (StatsSA 2011). The portion of households with no income is 15%. The average income inequality of the poorest 40% of the population is 10% (2011).(Chief Albert Luthuli 2019 – 2020 Final IDP)

18.6.1 Key Economic Activities

Table 22: Economic Drivers

Sector	Activities	Contribution to Employment	Contribution to Economy
Community Services	Public administration, government departments / agencies, municipalities; membership of organizations; recreation/culture/sport; washing/dry-cleaning of textiles and fur products; hairdressing/beauty treatment; funeral and related activities	28.8%	37.1%

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Trade/Retail	Wholesale and commission; retail trade; repair of personal household goods; sale/maintenance/repair of motor vehicles/motorcycles; hotels/restaurants/bars/canteens/ camping sites/ other provision of short-stay accommodation	21.4%	13.6%
Agriculture	Establishments primarily engaged in farming activities, including commercial hunting and game propagation, and forestry, logging and fishing. Types of primary production: Micro enterprise broiler producers; small holder vegetable producers; small scale fruit growers; dry land maize and sugar beans farming; cattle farming. Secondary activities: sawmills, game farming	16.8%	11.2%
Mining	Extracting, beneficiating of minerals occurring naturally, including solids, liquids, crude petroleum, gases; underground and surface mining, quarries, operation of oil and gas wells and all supplemental activities for dressing and beneficiating for ores and other crude materials	7.6%	7.9%
Construction	Site preparation, building of complete constructions or parts thereof, civil engineering, building installation, building completion, renting of construction or demolition equipment with operators	4.9%	2.9%

(Source: Chief Albert Luthuli 2019 – 2020 Final IDP)

From the above table community services (37.1%), trade (13.6%) and agriculture (11.2%) within Chief Albert Luthuli municipal area were the biggest contributing sectors to the

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economy. Mining and Construction were the least contributing sectors to the economy of the Province. With the proposed mine, the mining sector can increase in its contribution to the economy.

❖ IMPACTS ASSESSMENT

➢ 9.1 METHODOLOGY

Direct, indirect and cumulative impacts of the issues that will be identified during the specialist investigations will assessed in terms of these 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 (First Table) – determines whether the potential impact is positive (positive gain to the environment), negative (negative impact on the environment), or neutral (i.e. no perceived cost or benefit to the environment);

2. Spatial scale of impacts Second Table) – determines the extent of the impact on a scale of localised to global effect. Potential impact is expressed numerically on a scale of 1 (site-specific) to 5 (global);

3. Temporal scale of impacts (Third Table) – 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 (Fourth Table) –quantifies the impact in terms of the likelihood of the impact occurring on a percentage scale of <5% (improbable) to >95% (definite); and

5. Severity of impacts (Fifth Table) – quantifies the impact in terms of the magnitude of effect on 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.g. 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).

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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)	-

Rating	Description	Quantitative Rating
Very Low	**Site Specific** – impacts confined within the project site boundary	1
Low	**Proximal** – impacts extend to within 1 km of the project site boundary	2
Medium	**Local** – impacts extend beyond to within 5 km of the project site boundary	3
High	**Regional** – impacts extend beyond the site boundary and have a widespread effect - i.e. > 5 km from project site boundary	4
Very High	**Global** – impacts extend beyond the site boundary and have a national or global effect	5

Rating	Description	Quantitative Rating
Very Low	**Project duration** – impacts expected only for the duration of the project or not greater than 1 year	1
Low	**Short term** – impacts expected on a duration timescale of 1 to 2 years	2
Medium	**Medium term** – impacts expected on a duration timescale of 2-5 years	3
High	**Long term** – impacts expected on a duration timescale of 5-15 years	4
Very High	**Permanent** – impacts expected on a duration timescale exceeding 15 years	5

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 5-35%.	2
Possible	Likelihood of the impact arising is estimated to be 35-65%	3
Probable	Likelihood of the impact arising is estimated to be 65-95%.	4
Highly Probable	Likelihood of the impact arising is estimated to be > 95%.	5

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Rating	Description	Quantitative Rating
Very Low	Negligible – zero or very low impact	1
Low	Site specific and short term impacts	2
Medium	Local scale and / or short term impacts	3
High	Regional and / or long term impacts	4
Very High	Global scale and / or permanent environmental change	5

These five criteria are combined to describe the overall significance rating (Sixth Table below). 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 Seventh Table below and assigned a particular colour code in relation to its severity.

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

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

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of ratings ascribed below:

- **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; and
- **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; or
- **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.

19. IDENTIFICATION OF IMPACTS

Potential impacts resulting from the proposed Naudesbank Coal Mine identified during this scoping phase using input from the following sectors:

- Views of interested and affected parties (thus far);

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- Existing information based on literature reviews and desktop assessments (EAP and specialist inputs);
- Site visit with the project team;
- Guidelines; and
- Legislation.

The following potential impacts were identified:

- Ground and Surface Water contamination (including Acid Mine Drainage);
- Disturbance of Geology and Soils;
- Land uses and capability;
- Socio-economic Impacts;
- Waste Products;
- Flora and Fauna Impacts;
- Traffic Impacts;
- Impacts on watercourses including wetlands;
- Dust and Air Quality Impacts;
- Noise Impacts;
- Visual Impacts;
- Blast and Vibration Impacts;
- Heritage and cultural resource impacts; and
- Paleontological Impacts.

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);
- Aquatic ecology and surface water assessment;
- Floodline determination;
- 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;

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- Agricultural Input assessment;
- Visual Impact Assessment;
- Traffic Impact Assessment;
- Waste classification;
- Rehabilitation management plan;
- Heritage Impact Assessment; and
- Paleontological Desktop Assessment.

19.1 POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITIES/ DEVELOPMENT AND ALTERNATIVES WILL HAVE.

Currently, a comprehensive impact assessment cannot be conducted for the anticipated impacts; however, the anticipated impacts can be discussed, and an indication provided whether it will be positive or negative (Table 23).

Table 23:Anticipated impacts are discussion.

Impact	Status of Impacts Prior to Mitigation	Proposed Mitigation/ Improvement Measures
Surface and Groundwater		
Hydrology patterns	Negative	• Make use of permeable materials for pavements and walkways. • The planned reduction in catchment size will be managed to ensure that there will not be a dramatic reduction in catchment size.
Water quality	Negative	• Baseline water quality needs to be established. • Ongoing water monitoring during the construction phase

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		and post-mining to demonstrate compliance and ensure reactive measures in case of pollution events. • Clean and dirty water separation must be undertaken and clean water areas must be maximised. Reuse of inpit/dirty water needs to be maximised.
Ground and Surface water contamination	Negative	• Prevention of contaminated surface runoff which might impact to the water resource used by downstream users. • All hazardous chemical must be stored in a bunded facility. Handling of such chemicals must be undertaken on a nonpermeable surface. • All hydrocarbons, lubricants and explosives should be adequately stored and bunded off to prevent any contamination to the groundwater during an accidental spill. • All water that may collect in an area used for the storage of hydrocarbons must pass through an oil water separator before been discharged as dirty water. • Spillages on open soil must be contained and removed and treated as hazardous waste.

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		• Emergency response plan to be put in place if spillages occur. • Regular inspection should be conducted of storage facilities • Implement effective concurrent rehabilitation of the opencast pit area. • Long-term management of mine affected water including potential decant to form part of the mine's water management strategy.
Potential reduction of catchment yield of the aquifers through dewatering	Negative	• Conduct regular monitoring of 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 should have berms that are vegetated in order to separate dirty and clean water systems, and 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. • Monitoring of surface water resource pre-mining and during construction must be implemented as per the monitoring programme.

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Destruction of wetlands and watercourses	Negative	• Construction of infrastructure located close to local streams should take place in the dry season, when possible. • Minimise the planning of mining activities within 100 m or 1:100 year flood event of watercourses. • Mining activities undertaken within a watercourse or buffer area as determined by wetland specialist will result in application of a water use licence.
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 the mining operations. • Vegetation clearing on slopes should be minimised and where necessary, appropriate stormwater management should be put in place to limit erosion potential of exposed soil. • No harvesting of indigenous tree species for firewood should be permitted.

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		• An environmental induction for all staff members must be mandatory to discuss the potential of fire e.g. only smoking in designated areas, no open cooking fires etc.
Displacement of flora and fauna species of conservation concern (SCC)	Negative	• SCC should either be relocated or protected in situ, depending on the species under question and the decision of the competent authority. • Set aside areas allowing continued existence of SCC • The layout design for the proposed mine should be adjusted to exclude sensitive areas. • Keep the footprint of the disturbed area to the minimum and designated areas only. • An environmental induction for all staff members must be mandatory to discuss these impacts such as the presence of SCC which may not be damaged, caught or removed without a permit.
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 should be controlled.

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		• 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	• An environmental induction for all staff members must be mandatory in which specific issues related to the killing and/or disturbance of faunal species should be avoided. Several staff members should complete a snake handling course in order to safely remove snakes from designated areas. • Road mortalities should be monitored by both 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

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		system where staff takes note of 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). Finally, mitigation should be adaptable to the onsite 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 should monitor live animal observations in order to

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		monitor trends in animal populations and thus 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 within them. • Where possible, barriers around excavation sites should be erected to prevent fauna from falling into the excavations. • The area surrounding the bulk sampling operation needs to be demarcated and fenced off to restrict animals from moving into this area, which will reduce fauna mortalities.
Geology and Soils		
Land use change which will affect the soil and land use capability both during construction phase and post-mining operations. Loss of agricultural soils and land expected.	Negative	• Should the No-Go alternative not be considered, mining activities should be located on low-medium agricultural potential land to minimise impacts. • Compensate landowners. • Rehabilitate areas disturbed by mining with the intention to return land to arable land where feasible. If not, other land uses at the time (decommissioning phase) deemed socially, economically or environmentally applicable should be considered.

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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.
Social		
Recruitment strategies for the mine	Positive	N/A
Advantage to previously	Positive	N/A

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disadvantage individuals		
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
Economical 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 machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers where possible. • Noisy machinery to 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 daylight hours when ambient noise levels are highest.

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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 be of a matt finish to reduce reflection. • Infrastructure should be located away from sensitive and elevated areas.
Location of stockpiles, pollution control dams and discard dumps	Negative	• Locate away from roads and settlements as far as possible. • Topsoil stockpiles will need to be vegetated as soon as possible, to reduce the risk of erosion and decrease the visual disturbance. • Height of stockpiles to be kept as low as possible to reduce visual impact. • Plant vast growing indigenous trees around the dams to enhance sight.
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	• The HIA investigation is identifying resources and sites

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		to be avoided or removed/ relocated. The specialist recommendations will be required.
Paleontological sites disturbed / destroyed	Negative	• The HIA investigation is identifying resources and sites to be avoided or removed/ relocated. The specialist recommendations will be required.
Cultural places disturbed / destroyed	Negative	• The HIA investigation is identifying resources and sites to be avoided or removed/ relocated. The specialist recommendations will be required.
Traffic		
Increased traffic volumes on the existing road networks	Negative	• Speed limits must be implemented on site as well as safety controls. • Construction of 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 (example bridge crossings).
Blasting and Vibration		
Blasting and Vibration	Negative	• Pre-blast survey of all structures identified surrounding the mining area.

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		• 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 prediction of ground vibration. • Investigate the possibility of alternative methods to blasting.
Safety		
Blasting	Negative	• Areas to be clearly demarcated and signs to be erected indicating 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 assessment studies will be conducted. The recommendations will be implemented.
Air Quality		
Dust pollution		• The removal of vegetation will be minimised during stripping to reduce the effects of dust pollution as a result of exposed soil.

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	Negative	• Water or dust control agents should 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 should be vegetated to sustain biological components as well as 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.

19.2 MITIGATION MEASURES

The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development. This will be assessed and discussed in more detail during the EIA phase.

19.3 MOTIVATING THE PREFERRED SITE

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

20 PLAN OF STUDY

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

20.1 THE OBJECTIVES OF THE IMPACT ASSESSMENT PHASE WILL BE TO

- 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;
- Alternative activities and locations will be determined and assessed 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; and
- Provide the decision-making authorities with sufficient and accurate information in order to make a sound decision on the proposed development.

20.2 TASKS TO BE UNDERTAKEN DURING THE IMPACT ASSESSMENT PHASE

The Impact Assessment Phase has four key elements, as follows:

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- **Specialist Studies:** Specialist studies identified on this the Scoping Phase, and any additional studies that may be required by the authorities, will be undertaken as the initial phase of the EIA. The relevant specialists will be appointed to undertake the various assessments. Specialists gather baseline information relevant to the study being undertaken 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.
- **Environmental Impact Assessment Report (EIAR):** The main purpose of this Report is to gather environmental information and evaluate the overall impacts associated with the project, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIAR also 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 30 days. 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 (DMR) for review. This report will assist the DMR in making an informed decision.

- Environmental Management Programme (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 law binding document, and once approved cannot be amended without permission from the DMR.
- Public Participation Process: 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

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I&APs and the authorities during the review period, and also provides relevant responses to these comments.

20.3 DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED INCLUDING THE OPTION OF NOT GOING AHEAD WITH THE ACTIVITY

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

- 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, and
- The need for equitable distributional consequence.

A comparative assessment in fulfilment with the above listed criteria, of all alternatives identified will be undertaken as part of the Impact Assessment Phase.

20.4 DESCRIPTION OF THE ASPECT TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

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The following specialist studies based on mentioned aspects will be assessed further during the EIA phase investigation to be undertaken:

- Soil, Land Capability and Land Use;
- Surface Water;
- Geohydrology;
- Cultural and Heritage Resources;
- Paleontological Impacts;
- Economic Impacts;
- Social Impacts;
- Air Quality;
- Waste Classification;
- Closure (Rehabilitation);
- Noise;
- Terrestrial ecology;
- Visual Impacts;
- Traffic Impacts; and
- 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

20.5 PROPOSED METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING THE PROPOSED METHOD OF ASSESSING ALTERNATIVES

Refer to section 9.1 for more details. (Edit)

20.6 THE STAGES AT WHICH THE COMPETENT AUTHORITY WILL BE CONSULTED

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Competent authorities will be consulted during the initial notification period, the scoping phase, and during the EIA phase. A scoping phase meeting will be held with the DMR and DWS, although initial contact has been made. Additional Authority meetings are scheduled during the scoping phase. The purpose of the Authority meeting would be to explain the project in detail to authorities and clarify the process anticipated for. Stakeholders which are included are the District and Local Municipalities, Ward Councillors, and others during this Scoping Phase.

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; and
- The environmental authorisation decision making and appeal process stage.

20.7 PARTICULAR TO THE PUBLIC PARTICIPATION PROCESS WITH REGARDS TO THE IMPACT ASSESSMENT PROCESS THAT WILL BE CONDUCTED.

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

20.7.1 Steps to be taken to notify interested and affected parties

A detailed description of the PPP conducted for the scoping phase is described on section 7 and Appendix 5. I&APs were notified of the proposed application via newspaper advertisement, emails, site and public notices, registered letters and facsimiles. The PPP will be undertaken in accordance with the NEMA process and the 2014 Regulations (as amended). A minimum of 30 days will be provided to the public to register as I&AP's and to provide initial comments, and 30 days will be provided to comment on the draft Scoping Report. The information submitted by I&AP's will be utilised during the Impact Assessment and compilation of the EIAR. Should the Final Scoping Report be accepted by the competent authority, an EIA process will be undertaken.

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During the EIA phase I&APs, stakeholders and the competent authorities will be notified of the process to be undertaken (similar way as described in Section 7 above and as outlined in the NEMA regulations (2014, as amended), will be provided an opportunity to comment on the draft EIAR which will include specialist studies and attend a public meeting.

20.7.2 Details of the engagement process to be followed

The process of identifying and contacting landowners, stakeholders and I&APs commenced when I&APs were notified as part of site and public notices, newspaper adverts, emails, registered letters and distribution of the Background Information Document (BID). Landowners and their contact details was identified through the prospecting phase register from the client, direct consultation and/or Title Deed search for the properties falling within the proposed study area. Proof of notifications and documentation pertaining to the PPP will form part of the public participation records in the Scoping and Environmental Impact Assessment phase.

As mentioned above, during the EIA phase I&APs will be afforded the following opportunities to participate in the project:

- I&APs will be requested via notifications to provide their comments on the project, notified when the draft EIAR will be 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 30 days at the same public places in the project area that the Scoping Report will be made available, sent to stakeholders who request a copy.

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 about the decision of the competent authority within 14 days of receiving written letters and will specify any further process that is to be undertaken such as the appeal process.

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20.7.3 Description of the information to be provided to Interested and Affected Parties

The following information but not limited to this will be made available to I&APs:

- **Background Information Document:** The aim of the BID is to inform all Interested and Affected Parties about the proposed project and process to be followed during the scoping and EIA phase which includes the undertaking of PPP and environmental impact assessment process for the compilation of the Environmental Impact Assessment, Environmental Management Programme and Waste Management Licence for the proposed mining activities;

- The site plan, scale and extent of activities to be authorised;

- Draft Scoping Report which will include:

- The plan of study;

o list of activities to be authorized according to NEMA, NEM:WA and NWA;
o indication and discussion of the impacts of activities to be authorised;
o the proposed specialist studies that will be undertaken as part of the project;
o the proposed mining methods to be used;

o discussion of alternatives including location, process and methodology as well as the No-Go alternative; and

o 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 which will include the results from the specialist assessments will also be made available for public review and comment for a period of 30 days; and
- Information will also be made available as requested by the Interested and Affected Parties throughout the process.

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20.8 DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEN DURING THE EIA PROCESS

As discussed in detail in the above sections and summarised below, the following tasks will be undertaken as part of the EIA phase of the project:

- Finalisation of the legislative context within which the activities are located and document how the proposed activity complies with and responds to this;
- Finalisation of the activities triggered under NEMA and NEM:WA based on the specialist assessments and the final design layout and specifications;

- Identification of the location of the development footprint within the preferred site based on impact and risk assessment process inclusive of cumulative impacts and a ranking process 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 within 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 inform identified preferred alternatives; and 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 Public Participation Process;
- Compilation of the draft EIA report and EMPr, and once the consultation, review and commenting period has finished the finalisation of the EIA report and EMPr which will be submitted to the competent authority for review and final decision making.

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20.9 MEASURE TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS AND TO DETERMINE THE EXTENT OF THE RESIDUAL RISKS THAT NEEDS TO BE MANAGED AND MONITORED

Please refer to Table 23.

21 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

21.1 COMPLIANCE WITH THE PROVISION OF SECTION 24(4)(A) AND (B) READ WITH SECTION 24 (3) (A) AND (7) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998) THE EIA REPORT MUST INCLUDE THE:-

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

This is dependent on the results of the Social Impact Assessment which will also be addressed in the Social and Labour Plan. Full details will be made available during the EIA phase after the specialist studies have been conducted and consultation with the community, stakeholders and other I&APs. The proposed Naudesbank Coal Mine will provide employment opportunities, skills development, social development programmes, community upliftment and economic injection to the local area. Furthermore, impacts including visual, traffic, service delivery, land use changes and security and safety will be assessed and discussed during the EIA phase.

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

A Heritage Specialist has been appointed and the results of the assessment will be made available in the EIA phase.

21.2 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), provides that an investigation must be undertaken of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences

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or impacts, including the option of not implementing the activity. Alternatives have been discussed in Section 6 of this draft Scoping Report and will be addressed in detail during the EIA phase once the specialist assessments and comments received from I&APs, stakeholders and the competent authorities have been received.

22. 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 and, as a result, 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 geohydrology studies have been conducted thus far. Descriptions of the environmental, economic and social environments are based on desktop assessments 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 up-to-date 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 finalization of the Mining Works Programme and design layout;

- A detailed impact assessment cannot be done at present as the levels of confidence are considered too low until detailed specialist input and comments from the I&APs are obtained which will be presented and discussed in more detail during the EIA phase;

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UNDERTAKING

The EAP herewith confirms

a) The correctness of the information provided in the reports

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

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

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

-END-

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APPENDICES:

APPENDIX 1: DMR CORRESPONDENCE

APPENDIX 2: LANDOWNER LETTER AND CORRESPONDECE

APPENDIX 3: PROOF OF NOTIFICATION (EMAIL); AND RESPONSES RECEIVED FROM STAKEHOLDERS.

APPENDIX 4: CURRICULUM VITAE

APPENDIX 5: PUBLIC PARTICIPATION PROCESS (COMMENT FORMS, LIST OF REGISTER I&APS)

APPENDIX 6: PROOF OF PLACEMENT OF SITE NOTICES AND NEWSPAPER ADVERT

APPENDIX 7: BACKGROUND INFORMATION DOCUMENT (BID)

APPENDIX 8: SITE CONDITIONS (PICTURES)

APPENDIX 9: PROOF OF DRAFT SUBMISSIONS