



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

DMR Ref: KZN 30/5/1/1/2/10807 PR

FOR PUBLIC REVIEW

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: Ke Nyaka Bona Ka Mahlo Trading

TEL NO: 071 647 6822

FAX NO: 084 550 6723

POSTAL ADDRESS: 433 Caldine Drive, Schoongezicht, Nkangala Witbank, 1053

PHYSICAL ADDRESS: 433 Caldine Drive, Schoongezicht, Nkangala Witbank,

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1. IMPORTANT NOTICE

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- a. determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- b. identify the alternatives considered, including the activity, location, and technology alternatives;
- c. describe the need and desirability of the proposed alternatives,
- d. through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- e. through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

3. LIST OF ABBREVIATIONS & ACRONYMS

DMR- Department of Mineral Resources

EA- Environmental Authorisation

EAP- Environmental Assessment Practitioner

EIA- Environmental Impact Assessment

EMPr- Environmental Management Programme Report

EP- Environmental Practitioner

IDP- Integrated Development Plan

MPRDA- Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

NEMA- National Environmental Management Act, 1998 (Act 107 of 1998)

NEMAQA- National Environmental Management Air Quality Act, 2004 (Act 39 of 2004)

PPP- Public Participation Process

SANS- South African National Standards

SHE Manager- Safety, Health and the Environmental Manager

WML- Waste Management Licence

4. EXECUTIVE SUMMARY

This document concentrates on the proposed prospecting rights application for coal, in the area that falls under the Dunhauser Magistrate District.

The proposed prospecting project will cover an area of 18626.75036 hectares and is located at the following farms:

- Portion 1, 2, 3, 4, 8, 9 & Remaining Extent of ALLETTA 4350 GT,
- Portion 7 of MORGENSTOND 3347 GT,
- Portion 1 & Remaining Extent of MOUNTAIN TOP 8954 GT, Remaining Extent of ST CUTHBERTS 12444 GT.

The proposed area is along the R621, towards Dundee, which have a relatively small economic activity, but it is largely driven by the existing coal mining activities.

The commencement of the proposed prospecting project will result in the undertaking of activities that are considered as listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended. In terms of the above-mentioned legislation, an integrated application for an environmental authorisation and waste management licence was submitted to the KZN Department of Mineral Resources in DMR Ref: 30/5/1/1/2/ 10807 PR) and it was accepted on 24th of October 2018.

The application was granted, hence a basic environmental assessment must be undertaken in support of the environmental authorisation application for the proposed listed activities. In view of the above, Ke Nyaka Bona Ka Mahlo Trading appointed Basia Environmental Consultant, as an independent Environmental Assessment Practitioner, to undertake and manage the environmental authorisation application and the environmental impact assessment for the proposed Prospecting project.

The Department of Environmental Affairs (DEA) has identified the need for the alignment of environmental authorisations and has promulgated a single environmental management system under NEMA whereby the DMR has become the competent authority for the authorisation of mining-related projects under the NEMA Environmental Impact Assessment (EIA) Regulations. This will result in simultaneous decisions in terms of NEMA, the National Environmental Management Waste Act (Act No. 59 of 2008) (NEM:WA) and other environmental management Acts.

Before a coal mine can be planned and built, a number of tests and surveys must be conducted to ensure that the project is economically viable, technically feasible, and environmentally sound. The proposed prospecting project will consist of non-invasive and invasive (drilling sampling) activities.

The stakeholder engagement process, as part of the Environmental Authorisation process, was conducted in terms of NEMA (as amended) which provides clear guidelines for stakeholder engagement during an EIA. One of the general objectives of integrated environmental management set out in Section 23(2) of NEMA is to ensure the “adequate and appropriate opportunity for public participation in decisions that may affect the environment”.

The stakeholder engagement process is primarily aimed at affording Stakeholders and Interested and Affected Parties (I&APs) the opportunity to gain an understanding of the project. In addition, the purpose of consultation with the landowner, affected parties and communities is to provide them with the necessary information about the proposed project so that they can make informed decisions as to whether and to which degree the project will affect them. In addition, the purpose of consultation with the Stakeholders and I&APs is to provide the competent authority with the necessary information in order for them to make informed decisions.

Before an EAP submits a final report they must have given registered I&APs access to, and an opportunity to comment on the report prior to the submission of the final report to the competent authority for approval.

Stakeholders are therefore invited to participate in the public review period of the Draft BAR, which will take a period of 30 days. After the public review period, the report will be updated with comments received from stakeholders as well as comments received during the public participation meeting.

The updated Final BAR will be submitted to the competent authority (DMR) not later than the 6 March 2019. The DMR will consider the findings in consultation with various authorities and make a decision whether environmental authorisation should be granted for the proposed prospecting project.

This document which concerns the assessment of environmental impacts and a programme for the management of impacts of the proposed activities at the prospecting project, was compiled in terms of the EIA Regulations, 2017.

5. STRUCTURE OF THE BASIC ENVIRONMENTAL ASSESSMENT

Table 1: *Structure of the bar*

EIA Regulation requirement	Section addressed	Page
a) Details of – (i) The EAP who prepared the report and; The expertise of the EAP, including a curriculum vitae;	PART A -Section 3 (a)	1i
b) The location of the activity, including – (i) The 21-digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name;	PART A -Section 3 (b) Appendix C	2
c) A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	PART A -Section 3 (c) Appendix D	2
(d) A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered and being applied for; and (ii) description of the associated structures and infrastructure related to the development;	PART A -Section 3 (d)	3
(e) A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	PART A -Section 3 (e)	15
(f) A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;	PART A -Section 3 (f)	16
(g) A motivation for the preferred development footprint within the approved site;	PART A -Section 3 (g)	17
(h) Full description of the process followed to reach the proposed preferred alternatives within the site;	PART A -Section 3 (h)	18
(i) details of the development footprint alternatives considered;	PART A -Section 3 (h) (i)	18

EIA Regulation requirement	Section addressed	Page
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	PART A -Section 3 (h) (ii)	19
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	PART A -Section 3 (h)(iii)	21
(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	PART A -Section 3 (h)(iv)	31

EIA Regulation requirement	Section addressed	Page number
(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and	PART A -Section 3 (h)(v)	61
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	PART A -Section 3 (h)(vi)	83
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	PART A -Section 3 (h)(vii)	85
(viii) the possible mitigation measures that could be applied and level of residual risk	PART A -Section 3 (h)(viii)	86
(ix) if no alternative development locations for the activity were investigated, the motivation for not considering such; and	PART A -Section 3 (h)(ix)	86
(x) a concluding statement indicating the preferred alternative development location within the approved site;	PART A -Section 3 (h)(x)	86
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including-	PART A -Section 3 (i)	86
(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and		
(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;		
(j) an assessment of each identified potentially significant impact and risk, including-	PART A -Section 3 (j)	88
(i) Cumulative impacts;		
(ii) The nature, significance and consequences of the impact and risk;		
(iii) The extent and duration of the impact and risk;		
(iv) The probability of the impact and risk occurring;		

(v) The degree to which the impact and risk can be reversed;		
(vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and		
EIA Regulation requirement	Section addressed	Page number
(vii) The degree to which the impact and risk can be mitigated	PART A Section 3 (j)	88
(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	PART A -Section 3 (k)	92
(l) an environmental impact statement which contains-	PART A -Section 3 (l)	93
(i) a summary of the key findings of the environmental impact assessment:	PART A -Section 3 (l)(i)	93
(ii) map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	Appendix D	135
(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	PART A -Section 3 (l)(iii)	94
(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as	PART A -Section 3 (m)	94
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	PART A -Section 3 (n)	95
(o) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	PART A -Section 3 (o)	95
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	PART A -Section 3 (p)	95
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;	PART A -Section 3 (q)	96
(r) an undertaking under oath or affirmation by the EAP in relation to:	PART A -Section 3 (r)	96
(i) the correctness of the information provided in the reports;	and	an
(ii) the inclusion of comments and inputs from stakeholders and I&APs;	PART B – Section 2	d

(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and		130
(iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;		
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	PART A -Section 3 (s)	96
(t) any specific information that may be required by the competent authority; and	PART A -Section 3 (t)	97
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	PART A -Section 3 (u)	99
EMPr Regulation requirement	Section addressed	Page number
(a) Details of – (i) The EAP who prepared the EMPr; and (i) The expertise of the EAP to prepare an EMPr, including a curriculum vitae	PART B -Section 1 (a)	100
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	PART B -Section 1 (b)	100
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site indicating any areas that any areas that should be avoided including buffers	Appendix D	135
(d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development	PART B -Section 1 (d)	100
(i) planning and design;		
(ii) pre-construction activities;		
(iii) construction activities;		
(iv) rehabilitation of the environment after construction and where applicable post closure; and		
(v) where relevant, operation activities;		
(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	PART B -Section 1 (e)	111
(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to-	PART B -Section 1 (f)	116
(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;		

(i) comply with any prescribed environmental management standards or practices;		
(i) comply with any applicable provisions of the Act regarding closure, where applicable; and		
(i) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;		
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph	PART B- Section 1 (g)	g)
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph	PART B- Section 1 (h)	122
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	PART B- Section 1 (i)	122
(j) the time periods within which the impact management actions contemplated in paragraph	PART B- Section 1 (j)	124
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph	PART B- Section 1 (k)	124
EMPr Regulation requirement	Section addressed	Page number
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	PART B- Section 1 (l)	127
(m) an environmental awareness plan describing the manner in which-	PART B- Section 1 (m)	127
(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and		
(i) risks must be dealt with in order to avoid pollution or the degradation of the environment; and		
(n) any specific information that may be required by the competent authority.	PART B – Section 1 (n)	129

PART A

**SCOPE OF ASSESSMENT AND BASIC
ASSESSMENT REPORT**

CONTACT PERSON AND CORRESPONDENCE ADDRESS

(i) Details of the EAP

Name of the Practitioner	Tshia Malehase
Tel No	079 263 0597
Fax No	086 226 4397
Email address	malehaset@gmail.com
Company Name	Basia Environmental Consultant
Postal Address	Unit 10 Oakview, 40 Lynn Road, Karenpark Ext 42, Akasia, 0182

(ii) Expertise of the EAP

(1) The qualifications of the EAP

Mr. Tshia Malehase holds a M.Tech in Environmental Management from the Tshwane University of Technology and have more than 8 years in the different aspects of Environmental Science (please see Appendix A: EAPs Details)

(2) Summary of the EAP's experience

Mr. Tshia Malehase is an Environmental Assessment Practitioner with extensive experience in a wide-range of environmental related projects, processes and applications. He holds a M. Tech in Environmental Management and is registered with the South African Council of Natural Scientist Profession (SACNASP). He has undertaken environmental compliance (including basic assessments, water use license applications, social and environmental management systems, mining permits and prospecting right applications) and public participation processes. Please refer to Appendix A for Malehase's CV which provides a detailed list of projects which illustrate Mr Malehase's competence in carrying out the EIA process.

a) Location of the overall Activity

Table 2 : *Location of overall activity*

Farm Name	farm Portion 1, 2, 3, 4, 8, 9 & Remaining Extent of ALLETTA 4350 GT, Portion 7 of MORGENSTOND 3347 GT, Portion 1 & Remaining Extent of MOUNTAIN TOP 8954 GT, Remaining Extent of ST CUTHBERTS 12444 GT.
Application area (Ha)	1826.75036 Ha
Magisterial district	Dannhauser
Distance and direction from nearest town	8 km North West of Dundee, KwaZulu Natal
21 digit Surveyor General Code for each farm portion	N0GT0000000043500000 N0GT0000000043500001 N0GT0000000043500002 N0GT0000000043500003 N0GT0000000043500004 N0GT0000000043500007 N0GT0000000043500008 N0GT0000000043500009 N0GT00000000334700007 N0GT00000000895400000 N0GT00000001244400000

Table 3: *Details of the farms*

Farm Name	Farm No.	Portion	Extent (Ha)	Land Owner	Title Deed No
ALLETTA	4350	1		Mr Ntuli	The farm is still under land claims, the owner requested not to provide us with any information until the
		2			
		3			
		4			
		8			

		9			land claim process is finalised, however he is in support of the proposed project.
MORGENSTOND	3347	7		Mr Schoeder	No cooperation was received, he said he doesn't want any company in his property, he only allows related to Buffalo coal
ST. CUTHBERTS	12444			Mr L.J Feriera	Promised to send the consent letter
MOUNTAIN TOP	8954	1		Mangele C.M/ Izwelethu Community Trust	A consent letter has been received

b) Locality map

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

The proposed prospecting project is located within the Dunhauser Magistrate District. The proposed area is along the R621 towards Dundee. The larger portion of the proposed area is at Dannhauser Local Municipality which is located within the administrative boundaries of Amajuba District Municipality (ADM). It is the smallest municipality within the District Municipality and covers an area of approximately 1516 km². The smaller portion of the proposed area falls under Endumeni Local Municipality (see Figure 2). The main towns are Dannhauser, Hattingspruit, Inverness, Kilegethe, Klipbank, Milford, Normandien, Nyanyadu, Rutland, Tendeka and Witteklip.

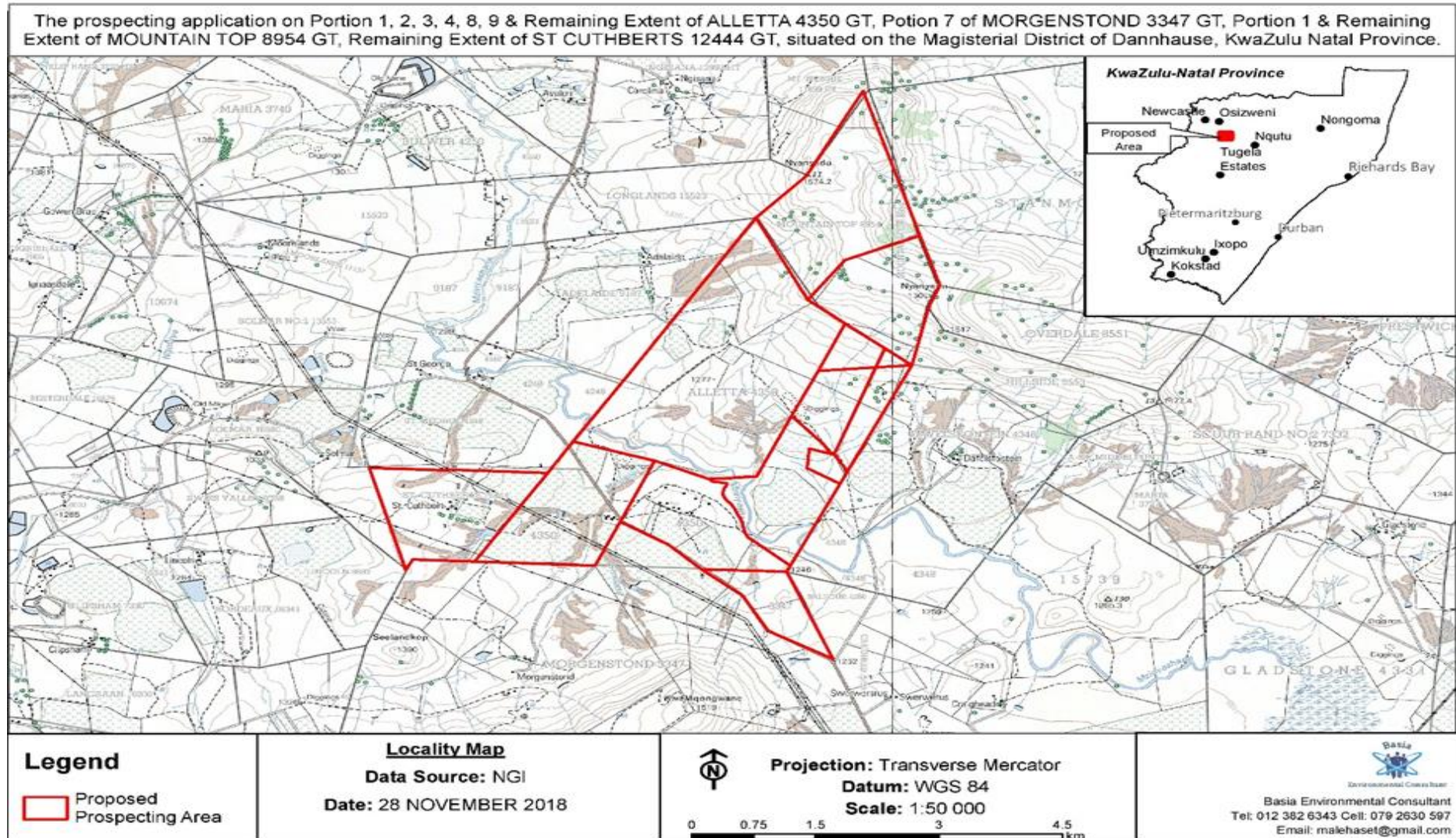


FIGURE 1: LOCALITY MAP OF THE PROPOSED AREA

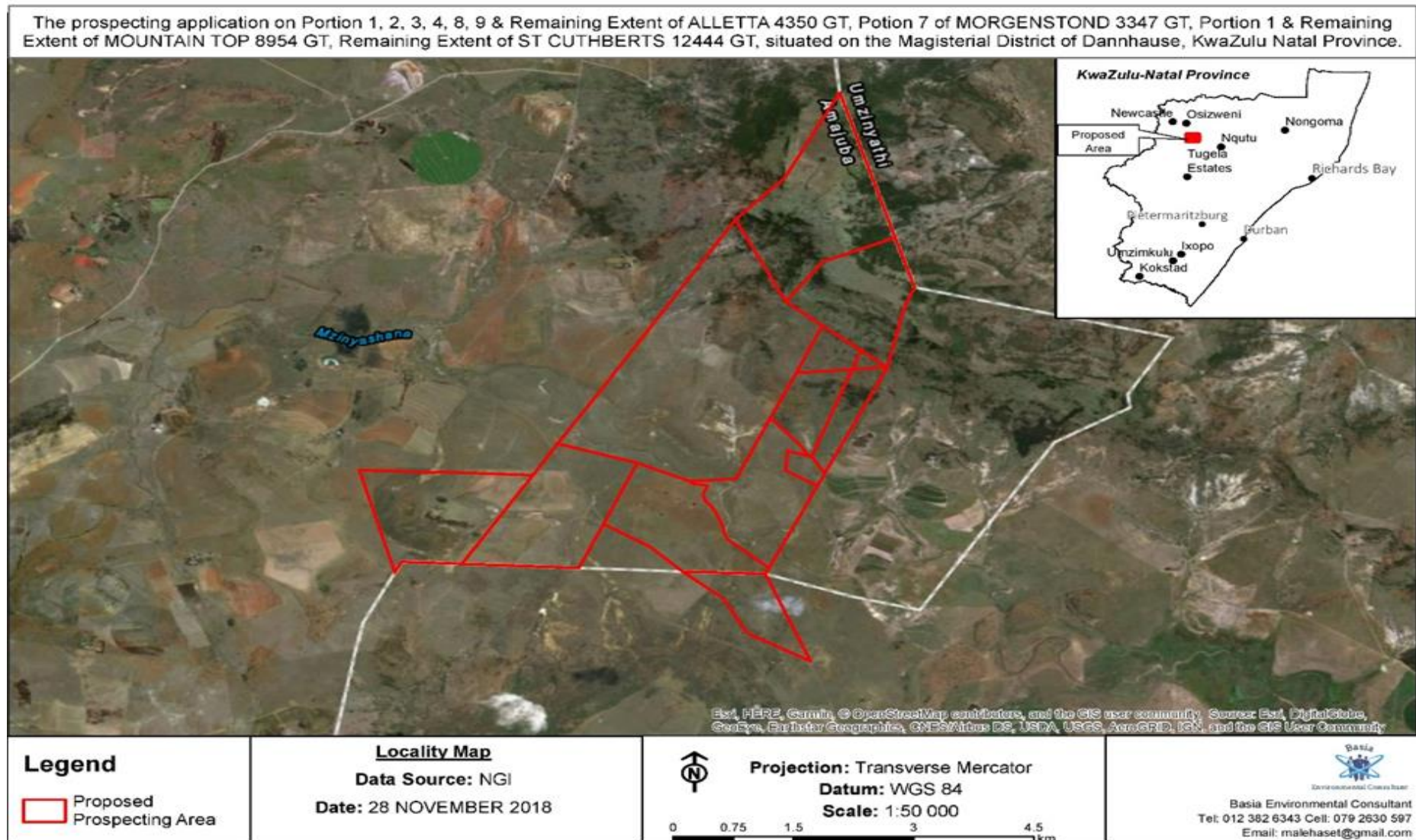


Figure 2: Locality map showing the boundary of Umzinyathi and Amajuba district municipalities

c) Description of the scope of the proposed overall activity

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

The Ke Nyaka Bona Ka Mahlo trading proposes to prospect coal on a 1826.75036 ha land, which will have a lifespan of approximately 5 years.

The application is for a prospecting right in respect of coal using drilling method. Prospecting is the first stage in the potential utilisation of a mineral deposit by searching for ores or other valuable minerals (coal). The detailed coal potential of the area is relatively unknown, and as such exploration work will commence from a very basic level.

The initial prospecting activities will be non-invasive and restricted to a desktop study, which will include a literature survey, plus aerial photograph and satellite image interpretation, ground validation of targets, and geophysical surveys.

Subsequent phases will be of the invasive-type, typically drilling, a combination of Reverse Circulation (RC) drilling and core drilling (also known as diamond core drilling), aimed at collecting suitably representative samples for analytical and physical test-work at suitably accredited laboratories.

A summary of the project phases and requirements is provided below:

Phase 1: Desktop Study and Walkover Survey (Non-invasive)

The Desktop Study will include a literature survey based on existing information, the interpretation of aerial/satellite images, ground validation of targets as well as geophysical surveys. Available geological and geophysical data will be compiled from the following sources:

- Recent high-resolution aerial photography;
- Gravity data;
- Airborne radiometric data;

- Aeromagnetic data;
- Regional soil geochemistry data;
- Regional geological mapping; and
- LandSat imagery.

Purpose:

- Identification of areas with the best coal bearing potential;
- To maximize the use of existing data and local experience;
- Propose a number of feasible sites; and
- Create a conceptual drilling model for future prospecting activities.

Following the Desktop study, a site geological mapping exercise will be undertaken i.e. “Walkover survey”. “Walkover survey” refers to a visual, non-intrusive, assessment of an area associated with site for the purpose of mapping geological exposures and identifying test positions, access restrictions and existing sources of construction materials. Thus, areas with potential coal outcrops identified during the desktop study will be visited and verified.

The non-invasive prospecting work will take approximately 6-12 months to be finalised.

Products will be:

- Previous geological information
- Geological maps demarcating
- Initial Samples and analysis with the report

Phase 2: Invasive prospecting, Reverse Circulation Drilling:

The prospecting drilling campaign will be aimed at defining the extent of mineralisation and will demonstrate geological continuity of the mineralized zone across the area of investigation.

RC drilling works by blasting air down an outer drill pipe using a high-performance air compressor at the surface. An air-driven hammer at the end of the drill stem pounds a tungsten-iron drill bit against the rock, pulverising and breaking fragments away. The drill bit, stem and pipe continuously rotate as the rock is being hammered. Jets of air are forced up the drill hole on the side of the drill bit. Jets of air are forced up the drill hole on the side of the drill bit.

Rock dust and fragments known as cuttings or chips are carried by the strong airflow up through the middle of the bit into an inner drill pipe. The air current is so strong that rock material can be brought to the surface from hundreds of metres down. When it reaches the surface, the dust and chips are fed into a cyclone splitter that slows the air flow down and divides the sample into small and large samples which are collected in bags.

During this drilling programme samples are collected every meter and logging will be done by a qualified geologist who will record the lithology. Apart from ore resource calculations, the drilling information will be used to construct ore thickness, overburden thickness and basement elevation contour plans.

Samples collected are submitted to the laboratory for analysis. The spoil is collected and later used to fill the borehole again during rehabilitation.

An average area of 100 m² is required for RC Drilling. It is anticipated that approximately 200 RC boreholes will be drilled.

The following main activities are associated with RC Drilling:

- Establishment of access roads;
- Site preparation including:
- Provision of temporary chemical toilet facilities;
- Positioning of the drilling rig and compressor;
- Diesel delivery;
- RC drilling;

- Waste disposal; and
- Rehabilitation of sites.

The estimated costs associated with the drilling of 200 RC boreholes (including rehabilitation of the area) to a depth of 150 m equates to about R9 000 000 (R300/m drilled). The timeframe for drilling of the boreholes will take 24- 36 months.

Field work reports such as, cross sections from trenching and pitting, logs from drilling and maps from excavations

- Sampling analyses
- Bulk samples and their analyses
- Geological model of the area
- Expertise reconciliation (mine engineers, coal geologist) and preliminary mine design
- Deposit/ore body classification and report writing

Trenching, Pitting, Auguring or Drilling

- 10 trenches to 2m depth: 5 B-horizon soil samples; 5 bedrock samples;
- 50 pits 3m depth: 1 B-horizon soil sample; 1 bedrock sample
- 50 auger holes 10m depth: 1 B-horizon soil sample; 1 bedrock sample
- 10 drill holes to 100m depth: 5 rock samples in the mineralized zone of the borehole
- Bulk sampling – 5 tonnes of mineralized bedrock
- Analysis and tests of samples to determine the quantity and deportment of Coal and Limestone

Should delineation and initial evaluation of the deposit indicate a sufficient size and grade to warrant further evaluation, an appropriate core sampling program will be undertaken in order to establish grade and confirm its viability for mining. Core drilling, also referred to as diamond drilling will be undertaken during this phase. Drilling is done by means of the wireline core recovery method, which entails a drill rig machine operating on at the collar position where the diamond core gets retrieved from the drill hole. During core drilling a roughly cylindrical piece of subsurface material is removed and brought to the surface for analysis.

An average area of 100 m² is required for Core Drilling. It is anticipated that approximately 60 core boreholes will be drilled. Samples will be submitted for metallurgical testing.

The following main activities are associated with Core Drilling:

- Establishment of access roads;
- Site preparation including:
- Provision of temporary chemical toilet facilities;
- Positioning of the drilling rig and compressor;
- Sump preparation;
- Diesel delivery;
- Water consumption;
- Core drilling;
- Waste disposal; and
- Rehabilitation of sites.

Depending on the timeline involved in the programme several drill rig machines could be deployed and operate at the same time. The rate of drilling and the depth required to be drilled determine the time a drill rig machine spends at a location. Results from this phase will be used to inform the plan and schedule of the subsequent drilling campaign. Please refer to Figure 4 for an illustration of a typical core drilling site.

The estimated costs associated with the drilling of 60 boreholes at a depth of 100 m equates to R5 4000 000 (R900/m drilled).

A multi-disciplinary team of specialists will review the results from the samples analysed to develop detailed geological and grade resource models and estimates. The economic viability will be determined, and results documented as part of a feasibility study.

The project geologist will monitor the programme, consolidate and process the data and amend the programme accordingly. This is a continuous process throughout the programme and will continue even when no prospecting is done on the ground. Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

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

The prospecting process will exclude bulk sampling and will include 200 RC drilling boreholes and 60 Core Drilling boreholes. The samples from boreholes will be taken to the laboratory for further processing. The proposed prospecting operation is anticipated to last for a period of approximately 5 years.

The exact location and extent of soil sampling, and possible borehole drilling sites cannot be determined at this stage. The locations are dependent on the results of the initial phases.

Once the final locations of the drilling activities have been determined, the applicant must submit a plan indicating the final locations of drilling activities to the following:

- The DMR;
- The Department of Water and Sanitation (DWS); and
- Affected landowners.

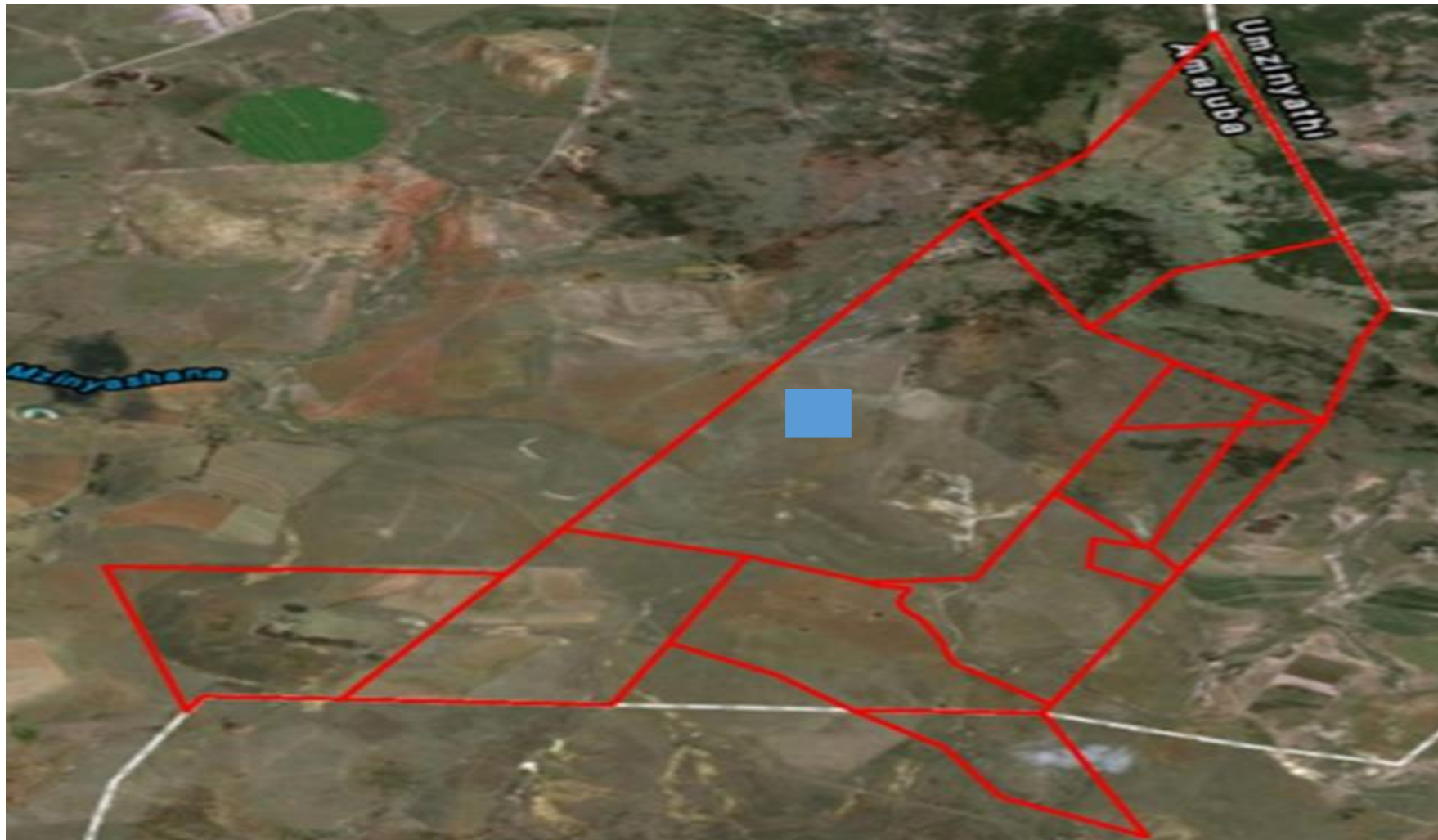
Should it be found that the coal reserves in certain areas are economically viable for mining, a separate mining right environmental authorisation process will be required to be undertaken.


TABLE 4 : PROJECT PHASES AND REQUIREMENTS

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skills required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe ((in months) for the activity)	Outcome (what is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g geologist, mining engineer, surveyor, economist etc)
1	Non-invasive Desktop study including a Literature Survey, Aerial Photograph and Satellite Interpretation	Geologist				
	Geological Mapping	Geologist	1-6 months	Report	6 months	Geologist
2	Invasive prospecting, Reverse Circulation Drilling (RC Drilling)	Geologist	24-34 months	Detailed Geological and Grade Resource Models, Mineral	24 months	Geologist

				Resource Estimates to Indicated level of confidence		
3	Invasive: Core drilling	Geologist	37-50 months	Metallurgical testing and ensure the economic viability of the resource defined in phase 2 above	Month 14	Geologist
1	Reconnaissance work	Geologist	2 months	Geological maps	1 month	Geologist
1	Target generation	Geologist	2 months	Target generation maps	1 month	Geologist
2	Trenching, pitting, drilling and excavations	Labourers, drilling contractors, Geologist	10 months	Maps, cross sections, boreholes logs	2 months	Labourers, drilling contractors, Geologist
3	Sampling, laboratory work and analytical	Samplers, Lab technicians,	10 months	Analyses results	2 months	Samplers, Lab

		Mineralogist				technicians, Mineralogist
3	Sampling and testing	Labourers and Geologist	5 months	Analyses results	1 month	Labourers and Geologist
4	Infill work and report	Mine Engineers, Coal geologist and Accountant	5 months	Mine layout, mining block, production	1 month	Mine Engineers, Coal geologist and Accountant
1	EIA and EMP	Environmentalist	10 months	EIA Report	2 months	Environmentalist



 Infrastructure location in the proposed prospecting area

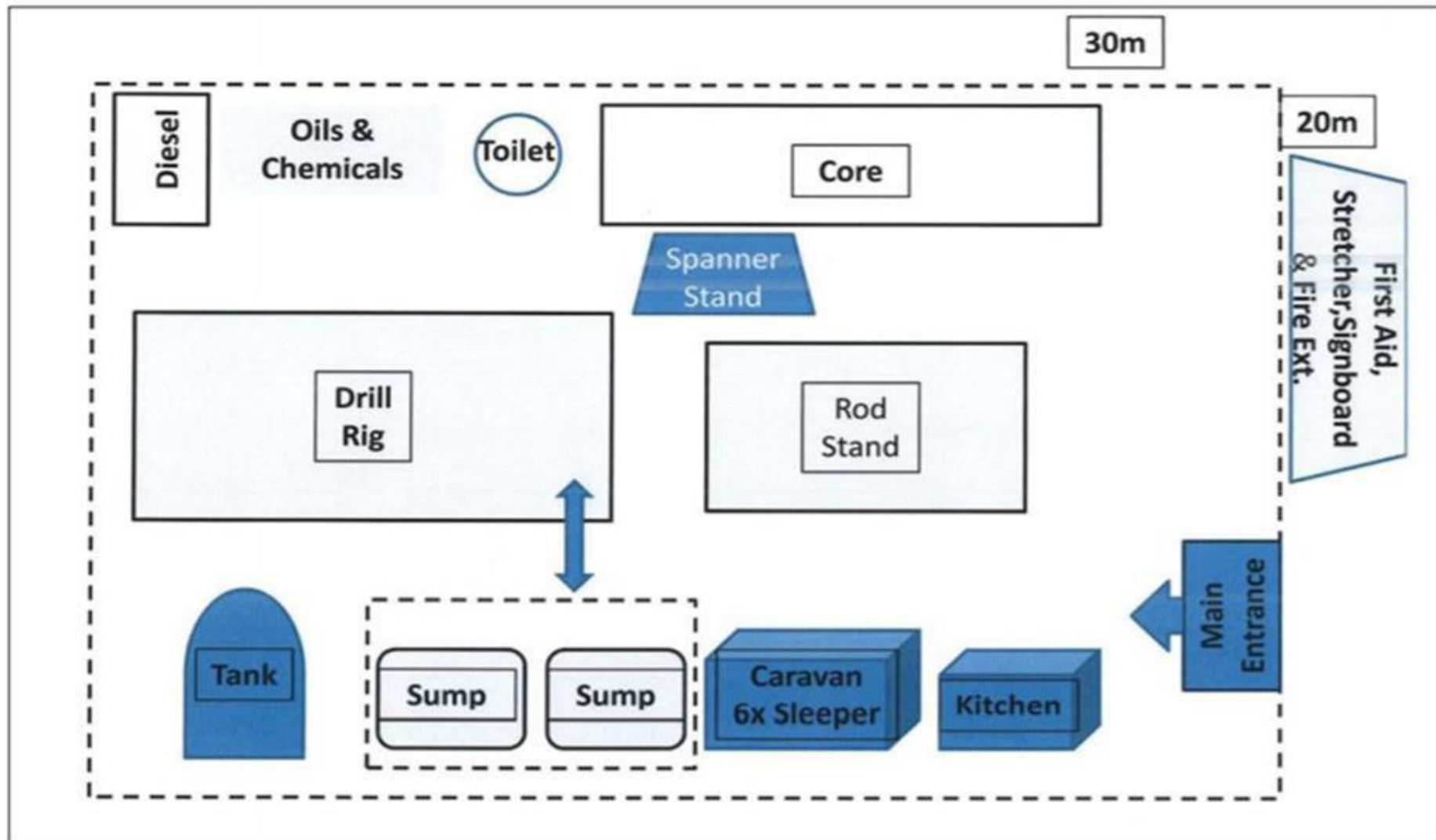


FIGURE 3 : Layout plan showing the facilities to be placed on the proposed site

(i) Listed and specified activities

Section 16 of the MPRDA requires, upon request by the Minister that an EMP be submitted and that the applicant must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that listed activities, which may potentially affect the environment negatively, must obtain an environmental authorisation from a relevant authority before the activities may commence.

Such activities are listed under the Environmental Impact Assessment (EIA) Regulations (2014 which has been amended in 2017) and consist of:

- EIA Process (Government Notice Regulation (GNR) 982);
- Listing Notice 1 GNR 983 – Basic Assessment process,
- Listing Notice 2 GNR 984 – Scoping and EIA process;
- Listing Notice 3 GNR 985 – Activities in specific identified geographical areas only.

GNR 982, 983, 984 and 985 have been amended in 2017 through GNR 324, 325, 326 and 327, respectively.

The purpose of these regulations is to avoid negative impacts on the environment, and where these cannot be avoided, ensure the mitigation and management of the impacts to acceptable levels, while optimising positive environmental impacts.

The proposed prospecting activity triggers activities listed in NEMA GNR 327: Listing Notice 1 as follows:

Activity 20: “Any activity including the operation of that activity which requires a prospecting right in terms of Section 16 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002), including associate infrastructure, structures and earthworks, directly related to prospecting of a mineral resource”

TABLE 5 : SUMMARY OF NEMA LISTED ACTIVITIES BEING APPLIED FOR

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc....etc....etc. E.g. for mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc....etc....etc.)	AERIAL EXTENT OF THE ACTIVITY Ha OR m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)
Prospecting	1358 Ha	Activity 20	GNR 983 Listing Notice 1
Drilling	0.2 Ha	Activity 20	GNR 983 Listing Notice 1
Site Camp	80m ²	Activity 20	GNR 983 Listing Notice 1
Ablution facilities	10m ²	Activity 20	GNR 983 Listing Notice 1
Accommodation	30m ²	Activity 20	GNR 983 Listing Notice 1
Equipment storage	50m ²	Activity 20	GNR 983 Listing Notice 1
Sample storage	40m ²	Activity 20	GNR 983 Listing Notice 1
Temporal Site offices	40m ²	Activity 20	GNR 983 Listing Notice 1
Access roads	40m ²	Activity 20	GNR 983 Listing Notice 1

(ii) Description of the activities to be undertaken

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

The following section presents detailed description of all the activities associated with the proposed prospecting application.

Prospecting:

Please refer above for a detailed description of the prospecting activities to be undertaken.

Establishment of Temporary Access Roads

There are various main and minor roads passing over the proposed project area. Some of these roads will be used to access the proposed prospecting project area. The proposed area is along the R621 towards Dundee.

Where sites cannot be accessed via existing roads, a temporary access roads (tracks) will be established.

Power

Diesel powered vehicles and machinery will be used for the proposed project.

Water Supply

It is currently not known whether there are any boreholes located on the site and whether access and supply will be granted by the affected landowners. It is anticipated that water will be brought onto site and trucked to the identified drill sites. Water bowsers will be deployed to the sites as and when required.

RC drilling in general does not require water while a continuous water supply is needed during core drilling. Portable on-site storage tanks will be installed for the water supply.

Additional water requirements relate to the potable water supply for employees and workers. A temporary vertical water storage tank for drinking water and general use by persons will be provided.

It is anticipated that water brought onto site, will be Local Municipality water.

Ablution Facilities

Sewage waste will be generated from the campsite and drilling sites. Portable chemical toilets will be used for the management of sewage waste generated on site.

Temporary Site Office Area

Temporary site office area will be erected at the drill sites.

Accommodation

No accommodation for staff and workers will be provided on-site and all persons will be accommodated in nearby towns (Dannhauser, Hattingspruit, Inverness, Kilegethe, Klipbank, Milford, Normandien, Nyayadu, Rutland, Tendeka and Witteklip). Workers will be transported to and from the prospecting site on a daily basis. Night security staff will be employed once equipment has been established on-site.

Blasting

No blasting will take place.

Waste Management

Hazardous Waste

Hazardous waste to be generated includes mineral residue, hydrocarbon wastes (oil and liquid fuel wastes) and sewage waste. Hydrocarbon waste will be collected in drums for storage. The removal of the drums or any other appropriate receptacle will be undertaken by a registered waste disposal company, for disposal at a registered licensed waste disposal site. The drums will be placed on protected ground.

Mineral residue will include cores, muds and drilling chips generated during the drilling of the exploration boreholes. The mineral residue will be removed from the site and disposed of at a registered waste disposal site.

Oil waste and liquid fuel waste include used oils from mine machinery and vehicles and diesel/petrol waste.

General Waste

General waste to be generated from the proposed project area will include domestic waste which includes old food, polystyrene, old stationary, discarded Personal Protective Equipment (PPE) and old clothing generated from the drilling and campsites. General waste will be collected in drums and disposed of at a registered domestic waste disposal site.

During the drilling activities, limited quantities of diesel fuel, oil and lubricants will be stored on site. The only dangerous good that will be stored in any significant amount will be the diesel fuel. No more than 30 m³ will be stored above ground in diesel storage tanks.

e) Policy and Legislative Context

TABLE 6: POLICY AND LEGISLATIVE CONTEXT

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT <i>(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</i>	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. <i>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</i>
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA)	Application for Prospecting in terms of Section 16	A prospecting right application was submitted to the DMR by the applicant on 31 August 2017.
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)	The project may trigger the requirements under Section 38 of the NHRA. However, the requirements for the permits have not yet been established.	The BAR and EMPr will also be submitted to the through the South African Heritage Resources Information System (SAHRIS) to determine whether or not any permits will be required
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)	This Basic Assessment Report (BAR) and EMPr	An application for an Environmental Authorisation was submitted to the DMR. The DMR requested the submission of the BAR and EMP

National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM: WA)	EMPr and environmental awareness plan	Waste management on site.
National Water Act, 1998 (Act No. 36 of 1998)	Borehole drilling on the site	The SANBI National Wetlands database shows that there are a number of wetlands in the prospecting area. There are also watercourses and drainage lines that may be affected by the project. In terms of the NWA, any activities undertaken within 500 m of a wetland or within 100 m of a watercourse require a Section 21 (c) and (i) Water Use Licence (WUL). Should the impacts of the activities be of low significance, the activities may also be Generally Authorised (GA).
Municipal Integrated Development Plans (IDPs)	Land Claims	One of the key issues identified by the IDPs is to facilitate the land claims.

f) Need and Desirability of the proposed activities

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

The mining industry is of great importance to the South African economy. South Africa has one of the world's largest coal reserves. Eskom currently relies on coal fired power stations to produce approximately 95% of the electricity generated in South Africa and until such time as alternative energy generation options can be implemented on a sufficiently large scale, Eskom is totally dependent on coal mining. The market for coal products is increasingly defined by generally accepted local and international standard quality products for which physical and financial markets exist for trading these standard coal products.

The definition of prospecting in terms of the MPRDA states: *"intentionally searching for any minerals by means of any method which disturbs the surface or sub-surface of the earth, including any portion of the earth that is under the sea or under other water..."* Prospecting is the physical search for minerals, fossils, precious metals or mineral specimens, which allows a company to survey or investigate an area of land for the purpose of identifying an actual or probable mineral deposit, before investments are made into the mining activities. Assessment of the geological information available has determined that the area in question may have coal reserves. In order to ascertain the above and determine the nature, location and extent of the coal reserves within the proposed prospecting area, it will be necessary that prospecting be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the coal.

The information that will be obtained from the prospecting to be done will be necessary to determine, should coal be found, how and where the coal will be extracted and how much economically viable coal reserves are available within the proposed prospecting area. This will allow the applicant to enter into further studies towards a Mining Right.

This prospecting activity has a potential to decrease level of unemployment rate in proposed areas and surroundings. This prospecting activity will bring revenue into the city and the province which will in turn boost the economy of the country. The project will also contribute in the supply of energy as coal is the primary source of energy in South Africa.

A process that ensures consultation with Interested and Affected Parties (I&APs) for the project has been undertaken. The stakeholder engagement process was conducted in a way to provide all interested and affected parties with an opportunity to comment on the project, with several platforms that allow public commenting opportunities being offered to the I&APs. All issues raised by the interested and affected parties have been recorded and addressed in the BAR and EMPr.

g) Motivation for the overall preferred site, activities and technology alternatives

The farms lies on Vryheid formation and is part of the Klip river Coalfield. The Klipriver Coal Field comprises Carboniferous and Permian sediments of the Dwyka Formation and Eccca and Beaufort Groups of the Karoo Sequence, which were deposited on an undulating, glaciated surface. No pre – Karoo rocks are exposed within the area, east of the coalfield. The tillite and fluvioglacial outwash shales of the Dwyka Formation outcrop to the north of the area. Eccca Group sediments and dolerite intrusions outcrop over almost the entire field. This group has been sub – divided, on lithological criteria, into Lower, Middle, and Upper stages. Lithostratigraphic names for these subs – divisions – Pietermaritzburg Formation, Vryheid Formation, and Volksrust Formation, respectively – have been proposed by Johnson et al (1975). Pietermaritzburg Formation with a maximum thickness of over 90 m (Visser et al., 1976) conformably overlies the Dwyka shales or, in the absence of Dwyka rests unconformably on basement. The blue – grey to black, micaceous shales, mudstones, and siltstones coarsen upwards, grading into the rhythmically alternating siltstones and sandstones of the lower Vryheid Formation. Eccca sedimentation was terminated by deposition, in deeper water, of blue – black shales and mudstones, with occasional argillaceous sandstone and limestone, of the Volksrust Formation. This has a maximum thickness of 183 m (Stear, 1920). Volksrust Formation shales outcrop along the Biggarsberg, on high ground around Dannhauser, Glencoe, and Newcastle and in small outliers on Mpate Mountain. The lowermost Beaufort beds outcrop in outliers along the Biggarsberg, the base of this group being marked by alternating sandstones and shales, very similar to those of Vryheid Formation.

Geological features

Apart from minor faulting, all tectonic disturbances can be ascribed to the dolerite sills which intruded the Eccra and Beaufort Groups about 128 to 190 Ma. In addition to faulting, dolerite intrusion has locally induced synclinal and anticlinal flexuring in the overlying sediments. Nine types of dolerite sill have been distinguished on petrological and chronological grounds, four major ones being, from oldest to youngest, Zuinguin, Utrecht, Ingogo, and Talana

Coal Seam

Only two coal seams, known locally as the Top and Bottom seams, have been commercially exploited. The Top Seam is to be equated with the Alfred Seam of the Vryheid Area and Bottom Seam with the Gus Seam. Thinning of the seams, both to the north and south of the Klipriver Coal Field is evident, although the seams thicken again northwards in the Volksrust – Perdekop area. In the northern part of the coal field the Top Seam is thickest and has been most extensively worked, while the central area, the Bottom Seam is thicker and contains better quality coal. To the south, in the Newcastle – Platberg area, the Top Seam is again of greater importance. The quality of the coal in both Top and Bottom seams is quite variable and changes in rank from bituminous to anthracite take place. Klipriver Coal Field is the generally high sulphur and phosphorus content of the coal



FIGURE 4 : Geological map

h) Full description of the process followed to reach the proposed preferred alternatives within the site

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

The invasive prospecting phase will be dependent of the results of the preceding phase. The location and extent of the drilling sites, soil sampling cannot be determined at this stage, therefore mapping of the specific prospecting activity site could not be undertaken at this stage. The final location of the intrusive drilling activities will be determined during Phase 1 of the Prospective Works Programme and will be aimed at avoiding areas with sensitive environments.

The stakeholder consultation process has not been finalised at this stage, and therefore not all the comments raised by the I&APs have been incorporated in this section. This will be updated as part of the final report.

(i) Details of the development footprint alternatives considered

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

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

The larger portion of the proposed area is at Dannhauser Local Municipality which is located within the administrative boundaries of Amajuba District Municipality (ADM). It is the smallest municipality within the District Municipality and covers an area of approximately 1516 km². The smaller portion of the proposed area falls under Endumeni Local Municipality (see Figure 2). The main towns are Dannhauser, Hattingspruit, Inverness, Kilegethe, Klipbank, Milford, Normandien, Nyanyadu, Rutland, Tendeka and Witteklip.

The proposed area is along the R621 towards Dundee has a relatively small economic activity but is largely driven by the existing mining activities. It is a typical farmsteads and rural settlement characterized by subsistence farming, an array of livestock farming and economic activities in the form of small-medium scale businesses e.g.

tuck shops, brickyards, fuel service station, etc. As a typical rural settlement a large number of the population is not employed. Residents of the area rely on the larger urban centres of Dundee, Dannhauser, and Newcastle for employment opportunities and higher order goods and services. Recently, the mining sector does provide employment, which is another contributing factor in terms of the economic development to the districts growth. This is because many mines are closing due to different number of reasons. Figure 1 shows the locality map of the proposed area.

A detailed description of the study area is provided on the Consultation report please see attached Appendix:B

The type of activity to be undertaken

The application is for prospecting rights and no alternatives were considered. The activity will be conducted in phases as described in Section (i) of this report. The prospecting phase of the Prospecting Works Programme will be dependent on the findings of Phase 1 of the process.

The design or layout of the activity

The location of the infrastructure will be determined based on the location of the prospecting activities, which will only be determined during Phase 1 of the Prospecting Works Programme, as well as the presence of sensitive environmental attributes such as wetlands, watercourses, protected flora and graves. All infrastructure will be temporary and/or mobile (Refer to Section d (ii) of this report.

The technology to be used in the activity

The proposed technologies have been chosen based on long term proven success in prospecting.

The operational aspects of the activity

No permanent services in terms of water supply, electricity, and or sewage facilities will be required. Temporary access roads will however be constructed in areas where there are no existing access routes. The activities will commence with Phase 1, during which desktop studies will be conducted. After the desktop studies, geological mapping will be undertaken to ensure that all the targets with coal outcrop identified

during the desktop study are not cultural features. This phase will also include planning for the drilling survey.

Phase 2 will entail the invasive prospecting drilling campaign where the extent of mineralisation will be defined and the geological continuity of the geological continuity of the mineralised zone will be determined. The drilling information will also be used to construct ore thickness, overburden thickness and basement elevation contour plans.

Phase 3 of the process will entail core sampling to establish the grade and viability of the coal for mining.

The option of not implementing the activity

The option of not implementing the activity will result in a loss of valuable information regarding the mineral status (coal) present on the affected properties. In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilise the reserves will be lost.

(ii) Details of the Public Participation Process Followed

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

The Public Participation Process (PPP) has been structured to provide I&APs with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concern at various stages throughout the EIA process. This process includes all I&AP's (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.).

The Public Participation Process (PPP) was conducted in terms of Chapter 6 of the National Environmental Management Act, 1998 (Act 107 of 1998).

The Public Participation Process conducted to date is summarised below, please refer to Appendix B for a detailed Stakeholder Engagement Report

TABLE 7: SUMMARY OF THE PPP UNDERTAKEN TO DATE

Task	Details	Date
I&AP notification		
I&AP identification	<p>An I&AP database was developed for the project by establishing the jurisdiction of organisations, individuals and businesses in proximity to the project site or within an interest in the proposed development.</p> <p>The database of I&APs includes the landowner, the adjacent landowners, relevant district and local municipal officials, relevant national and provincial government officials, and organisations. This database is being augmented via chain referral during the BA process and will be continually updated as new I&APs are identified throughout the project lifecycle. The current list of potential I&APs is attached in Appendix B</p>	Continuous process
Site notices	A3 Site notices were placed at strategic points to inform the general public of the proposed project and the PPP. Photos of the site notices have been included in Appendix B of the draft Basic Assessment Report (DBAR)	2-3 November 2018
Media Adverts	The New Castle newspaper was used to advertise the proposed project	9 November 2018
Comments received	The comments received from the landowners to date, are captured in the stakeholder engagement report	Continuous
Comment on DBAR	All the relevant stakeholders will be notified of the availability of the DBAR to provide their comments.	16 January 2019 to 16 February 2019

(iii) Summary of issues raised by I&Aps

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

TABLE 8: SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.					
Affected Parties					
Landowner/s					
Mr Ntuli (Alleta Farm)	x	03/11/2018	The farm is under land claims and his lawyer advised him not to commit on anything until the process is complete. However, he is for the prospecting project.	We will wait for the process to be completed. The estimated time is end of February 2019. We will the re-consult the landowner.	None
Manqele C.M/ Izwelethu Community Trust	x	7/11/2018	Permission granted to prospect on the farm	Acknowledged the permission	Appendix B (Appendix 6) of baseline information.

(Mountain Top Farm)					
Mr Ferriera (St. Cathbets Farm)	x	03/11/2018	The coal might not be present in his farm and some prospecting has been done centuries ago. But have no formal details. He agreed to provided a consent.	We acknowledged the advice and requested his consent to prospect. No consent letter has been received.	None
Mr Shroeder	x	13/11/2018	He is working with Buffalo Coal and he doesn't want any other company in his property.	Buffalo coal have no right on the affected farm portion and DMR should make a ruling.	Appendix B (Appendix 5) of baseline information.
Other I&AP					
Frank Talbot (Buffalo Coal)	x	/11/2018	The proposes area is where Buffalo coal have mining permits. Frank further assisted us with information of historic mining activities in the area.	After an intensive desktop study and overlaying of maps, it was established that the sites only share a boundary with buffalo coal sites.	none
Community and ward councillor	x	3/11/2018	No objections on the proposed project.	The applicant will be advised to consider local people first for any	Part A (f) of this report. Baseline information report

			Issues such as employment opportunities and poverty eradication were being raised. The community is off great hope that the mine can bring change to their socio-economic condition.	employment opportunities that may arise from the proposed project.	
Department of Water Affairs and Sanitation (DWS) KZN					
No comments received to date					
Amajuba District Municipality					
No comments received to date					
Dundee Farmers Association					
No comments received to date					
Endumeni Local Municipality					
No comments received to date					
Huttingspruit Farmers association					
No comments received to date					
Newcastle Local Municipality					
No comments received to date					
Amafa/ Heritage KZN					
No comments received to date					
KZN EDTEA					
No comments received to date					
Buffallo Coal					

No comments received to date
GCS water and Environmental Consulting
No comments received to date
Department of Rural Development and Land Reform
No comments received to date

(iv) The Environmental attributes associated with the alternatives

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

(1) Baseline Environment

The type of environment affected by the proposed activity

(its current geographical, physical, biological, socio-economic, cultural character)

Description of the receiving Environment and Regional Setting

The proposed area is along the R621 towards Dundee has a relatively small economic activity but is largely driven by the existing mining activities. It is a typical farmsteads and rural settlement characterized by subsistence farming, an array of livestock farming and economic activities in the form of small-medium scale businesses e.g. tuck shops, brickyards, fuel service station, etc. As a typical rural settlement a large number of the population is not employed. Residents of the area rely on the larger urban centres of Dundee, Dannhauser, and Newcastle for employment opportunities and higher order goods and services. Recently, the mining sector does provide employment, which is another contributing factor in terms of the economic development to the districts growth. This is because many mines are closing due to different number of reasons. Figure 1 shows the locality map of the proposed area.

The larger portion of the proposed area is at Dannhauser Local Municipality which is located within the administrative boundaries of Amajuba District Municipality (ADM). It is the smallest municipality within the District Municipality and covers an area of approximately 1516 km². The smaller portion of the proposed area falls under Endumeni Local Municipality (see figure 2: Locality map showing the boundary of UMzinyathi and Amajuba district municipalities). The main towns are Dannhauser, Hattingspruit, Inverness, Kilegethe, Klipbank, Milford, Normandien, Nyanyadu, Rutland, Tendeka and Witteklip

Geology

The site consists of a series of horizontally layered sedimentary units of the Vryheid formation located within the Eccca Group of the Karoo Supergroup. These sediments comprise successions of sandstones, shales, mudstones, carbonaceous shales and coal seams of the Permian Eccca Group, Karoo Supergroup. The Eccca Group overlies rocks of the Dwyka Group. The Vryheid Formation can be subdivided into a lower fluvial-dominated deltaic interval, a middle fluvial interval and an upper fluvial-dominated deltaic interval. These subdivisions correspond approximately to the “lower sandstones”, the “coal zone” and the “upper sandstones”. The sediments comprise coarse-grained to pebbly sandstones that transition into fine-grained sediments and coal seams. The coal seams originated as peat swamps developed on broad abandoned alluvial plains. The different lithofacies of the Vryheid Formation are mainly arranged in upward-coarsening cycles, which are deltaic in origin.

TABLE 9: TYPICAL GEOLOGICAL CROSS SECTION

Depth from (m)	Depth to (m)	Target zone
0	3	Overburden
3	25	Shale
25	46	Sandstone
46	128	Ingogo dolerite sill
128	220	Sandstone intercalated with shale
220	221	Top Coal Seam
221	223	Sandstone and shale parting
223	224	Bottom Coal Seam
224	Not determined	Sandstone intercalated with shale

Topography

The area between the watershed and the escarpment edge is characterised by relatively flat to steep terrain, with slopes varying from 0.76 to 15.2 %. The steep escarpment is characterised by sparse grassveld vegetation, and a few shrubs and small trees. Runoff from this area is likely to be high due to the shallow soils, steep terrain, and thin vegetation cover.

Climate

Dunhauser normally receives about 671mm of rain per year, with most rainfall occurring mainly during mid-summer. It receives the lowest rainfall (1mm) in June and the highest (133mm) in January. It receives the lowest rainfall (1mm) in June and the highest (133mm) in January. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Dannhauser range from 18.5°C in June to 26.2°C in January. The region is the coldest during July when the mercury drops to 2.1°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures. The variation in the precipitation between the driest and wettest months is 78 mm. The variation in annual temperature is around 10.6 °C (see figure below).

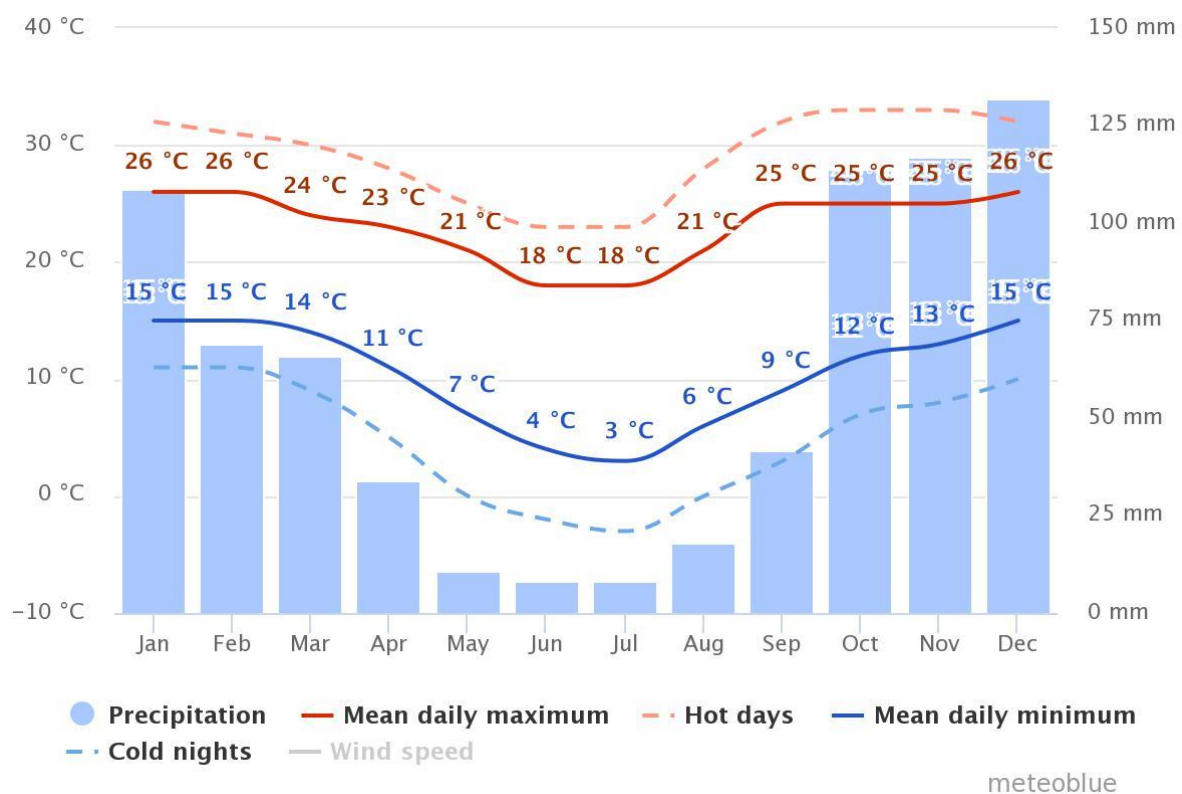


FIGURE 6: ANNUAL TEMPERATURE

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	21	20.5	19	16.5	13.2	10.3	10.2	13.2	16.1	18.4	19.4	20.7
Min. Temperature (°C)	14.6	14.2	12.8	9.2	4.9	1.7	1.6	4.6	8	11.1	12.5	13.8
Max. Temperature (°C)	27.4	26.8	25.3	23.9	21.5	18.9	18.9	21.9	24.2	25.8	26.4	27.6
Avg. Temperature (°F)	69.8	68.9	66.2	61.7	55.8	50.5	50.4	55.8	61.0	65.1	66.9	69.3
Min. Temperature (°F)	58.3	57.6	55.0	48.6	40.8	35.1	34.9	40.3	46.4	52.0	54.5	56.8
Max. Temperature (°F)	81.3	80.2	77.5	75.0	70.7	66.0	66.0	71.4	75.6	78.4	79.5	81.7
Precipitation / Rainfall (mm)	136	117	83	41	15	8	10	21	40	83	107	121

FIGURE 7: DANHAUSER WEATHER IN 2018

Land Use and Capability

Dannhauser Local Municipality

Land cover

The municipal area is largely covered by Grasslands, Natural bFreshwater and Bushlands. There are marginal urban settlements (Dannhauser Town, Durnacoal & Hattingspruit) that surround the CBD in a 10 km radius, while the rural settlement are more clustered in the north-east portion of the municipal jurisdiction. Apart from the settlements, the land is also used for commercial, industrial and mining activities.

Broad Land Uses

The current land use pattern in Dannhauser has evolved in response to the settlement pattern, the natural environment and the regional access routes. It also reflects the rural nature of the region within which Dannhauser Municipality is located. The following are the main land use categories in the area:

- Settlements
- Commercial farmlands
- Conservation'
- Mining

Land use patterns within each of these areas vary significantly, reflecting their historical development and evolution.

TABLE 10: *LAND USE AND AREA COVERAGE IN DANNHAUSER MUNICIPAL AREA*

Land Use	Area Coverage (m²)	% of Total Municipal Area
Commercial	157.980	7.12
Industrial	2392612	10.79
Residential	1820160.5	82.09

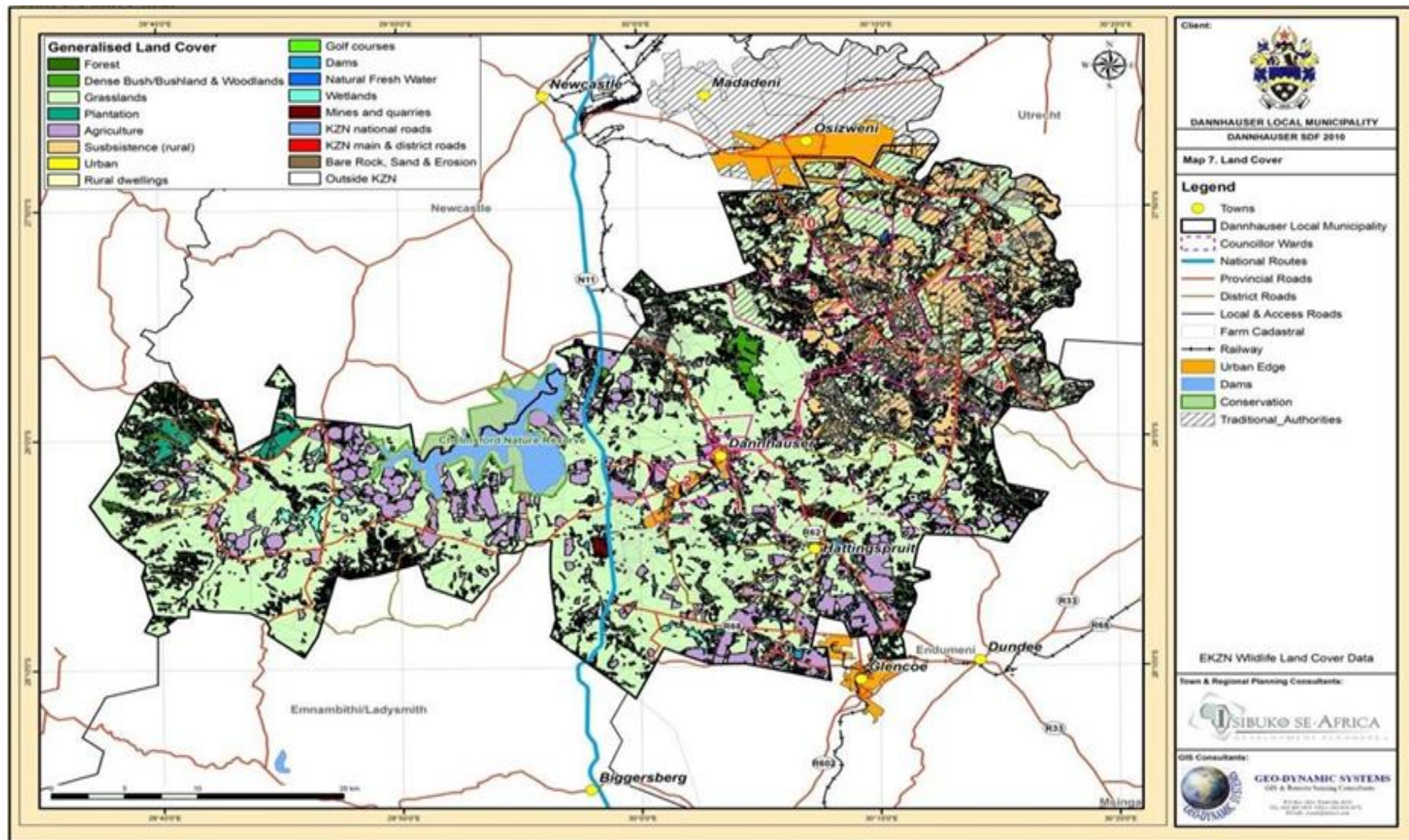


FIGURE 8: LAND COVER OF DANNHAUSER LOCAL MUNICIPALITY

Endumani Local Municipality

The land use of the Endumani Local Municipality is as follows:

- Mixed use town and surrounding townships

Dundee and Glencoe are the proclaimed towns. These serve as the main town for the municipal area with the highest agglomeration of commercial activities. These towns are surrounded by the associated townships of Sithembile and Sibongile.

- Rural town and surrounding and peri-urban settlements

Wasbank is a rural town with peri-urban settlements around it. This node should include community facilities, commercial and transportation infrastructure to support the residential needs located in the rural hinterland and they are to be developed in a manner that reflects or establishes a clear identity with the community that it serves and the landscape that it is situated in.

- Small rural villages and settlements

There are small rural villages and settlements which are spread-out unsystematically within administrative boundaries of Endumani Local Municipal jurisdiction. These villages and settlements have very few commercial and social activities within it. The kind of commercial activities are limited to small local convenient shops, taverns as well as small scale manufacturing activities (block making) and personnel services such as salons and small scale agricultural activities (ploughing field and food gardens). The balance of settlement is located either on the commercial farms or within a limited number of small rural settlements i.e. Maria Catholic Mission, KwaTelaphi, Burnside, Malonjeni, Tayside, Vechtkop and Uithoek.

- Commercial agriculture

The predominant land use in Endumani is agriculture. Cultivation is mainly characterized by large areas of commercial dry land activities and dispersed areas of irrigated agriculture. The most productive land occurs around Glencoe, while areas with high to moderately high productivity occur in the north-west. The agricultural activities in the area include the extensive beef/sheep farming, dry land cropping of maize, soya, groundnuts and sunflower. Field crops are irrigated where there is access

to irrigation. The area also has potential for wheat production. In terms of competitiveness, Endumeni is home to some provincial sector leaders i.e. the largest feedlot in KwaZulu-Natal (Crafcor) and the third largest dairy (Orange Grove). These two industry leaders both report a market opportunity for small producers in the form of an expanded demand for dairy products in Gauteng and a market for stock feed supply based on chop and mielies. The milling sector also has important upstream linkages to small scale mielie producers from both Endumeni and Nquthu. Based on a broad 'agri-potentials' or 'bio-resource' classification by the Department of Agriculture, all agricultural land within the municipal area has been categorized as having either good or poor agricultural potential. The system provides for 8 land capability ranging from prime arable land (Class I) to land which is unsuitable for any agricultural use (Class VIII).

- Environmental areas

The biodiversity assets within Endumeni LM include large natural areas, terrestrial ESA (Ecological support Areas and terrestrial CBA (Critical Biodiversity Areas). Large natural areas, which covers the majority of the municipal area, are more likely to remain intact with lower influences of "edge-effects" from adjacent land uses. Intact areas will support ecosystem processes and functionality, which in turn improves biodiversity conservation. Conversely, land use transformation and impacts from anthropogenic influences increase the probability of "edge effects" on important biodiversity areas.

- Tourism areas

Endumeni has few mobility tourism routes which includes the R33 and Battlefields. A number of farms that are located along these routes have diversified from traditional agricultural land uses to agritourism uses over the years. The municipality has a great variety of tourism assets and accommodation establishments (such as hotels, bed and breakfasts and guesthouses)

Surface Water

The Thukela River rises in the Drakensberg mountains very close to the border with Lesotho and meanders through central KwaZulu-Natal and discharges into the Indian Ocean. Mzinyashane river falls within the Thukela Water Management Area at the

Middle Buffalo River. Dundee, Sibongile, Hattingspruit and Washbankspruit towns are located at the Mzinyashane River catchment. Industries in the aforementioned town places a greater demand on the water from the river, also adding an impact on it and its tributaries. Mzinyashane river passing through the proposed land for prospecting for coal. Other identified areas that add an impact on the river water resources includes Newcastle, Dundee, Estcourt, Ladysmith, and Mandini (SAPPI). There are also several coal mines located near the river catchment and its tributaries. The catchment has a large rural population of 171 000, with a relatively high population density of 43 per km².

The prospecting application on Portion 1, 2, 3, 4, 8, 9 & Remaining Extent of ALLETTA 4350 GT, Portion 7 of MORGENSTOND 3347 GT, Portion 1 & Remaining Extent of MOUNTAIN TOP 8954 GT, Remaining Extent of ST CUTHBERTS 12444 GT, situated on the Magisterial District of Dannhauser, KwaZulu Natal Province.

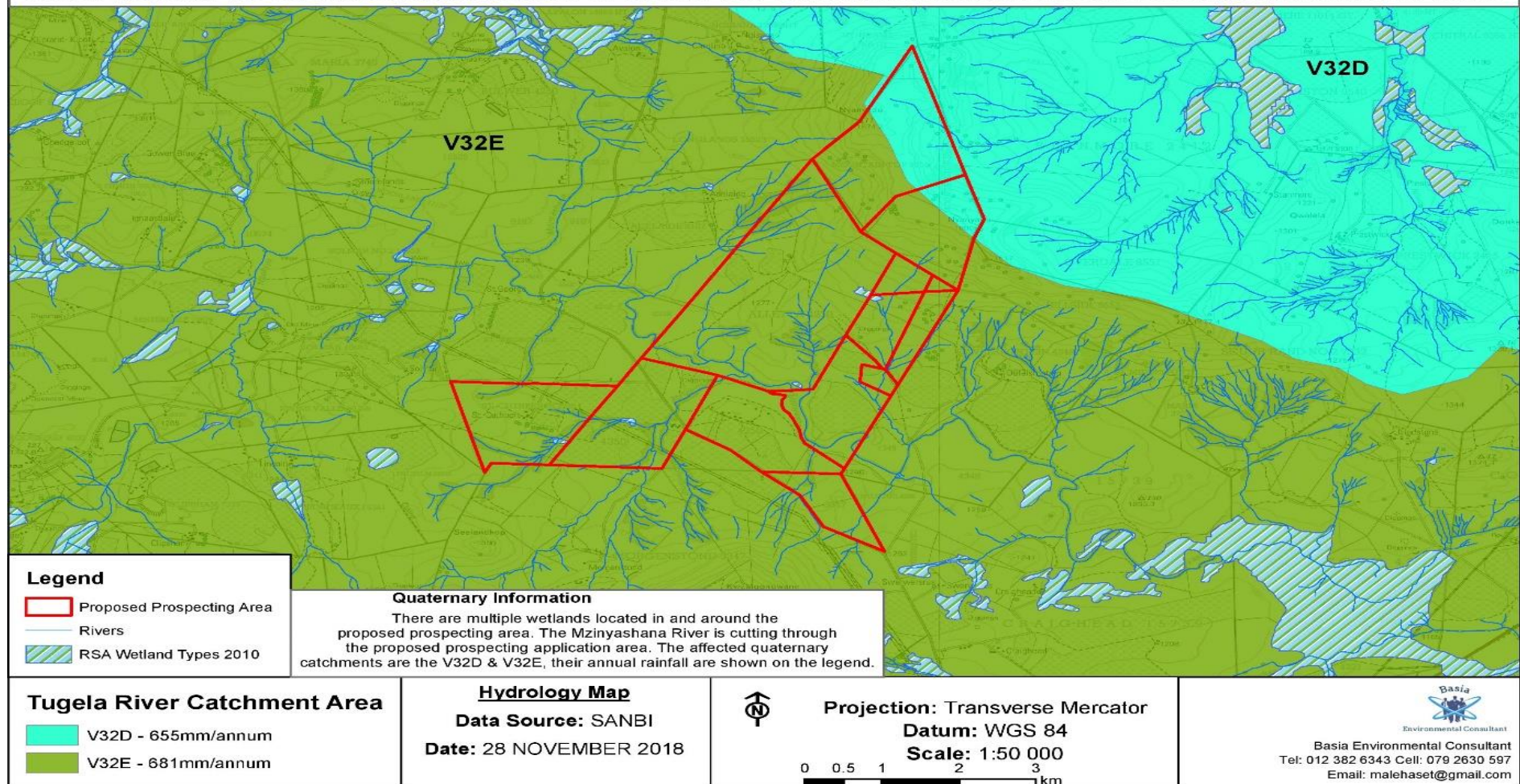


FIGURE 9: HYDROLOGY MAP

Biodiversity

Dannhauser Local Municipality

The Dannhauser municipal area is endowed with numerous environmental assets, which are of conservation and economic value. These include:

The Chelmsford Nature Reserve this is the only KZN Wildlife protected area reserve in the municipal area. It is a 6 014 ha reserve and is located around the Ntshingwayo Dam; Important Escarpments these are found along the western and southern boundary of the municipality and are identified as being of high conservation value; Important species sites these include the wetland e.g. Paddavlei (which is a habitat for the endangered White winged Flufftail), threatened plant species and grasslands;

Important ecosystems - the municipality falls within the Acocks Veld Type 66 (Natal sour sandveld) which is endemic to KwaZulu Natal. The area has a high incidence of Red Data species, forest patches and medicinal plants.

Reserve are protected due to high biodiversity concerns. These areas should not be allocated for any development (NDG Africa: 2010). Areas that are protected formally within the municipal area include areas around the Ntshingwayo Dam. In addition, the game ranch along the south-western boundary of the site is of conservation significance but is not a protected area. Other areas of high conservation significance include all the wetlands and areas up to 30m around these wetlands and 100m from the banks of all rivers within the various catchments. In addition, areas along the southern portion of the Chelmsford Nature

Endumeni Local Municipality

The biodiversity assets within Endumeni LM include large natural areas, terrestrial ESA (Ecological support Areas and terrestrial CBA (Critical Biodiversity Areas). Large natural areas, which covers the majority of the municipal area, are more likely to remain intact with lower influences of “edge-effects” from adjacent land uses. Intact areas will support ecosystem processes and functionality, which in turn improves biodiversity conservation. Conversely, land use transformation and impacts from anthropogenic influences increase the probability of “edge effects” on important biodiversity areas

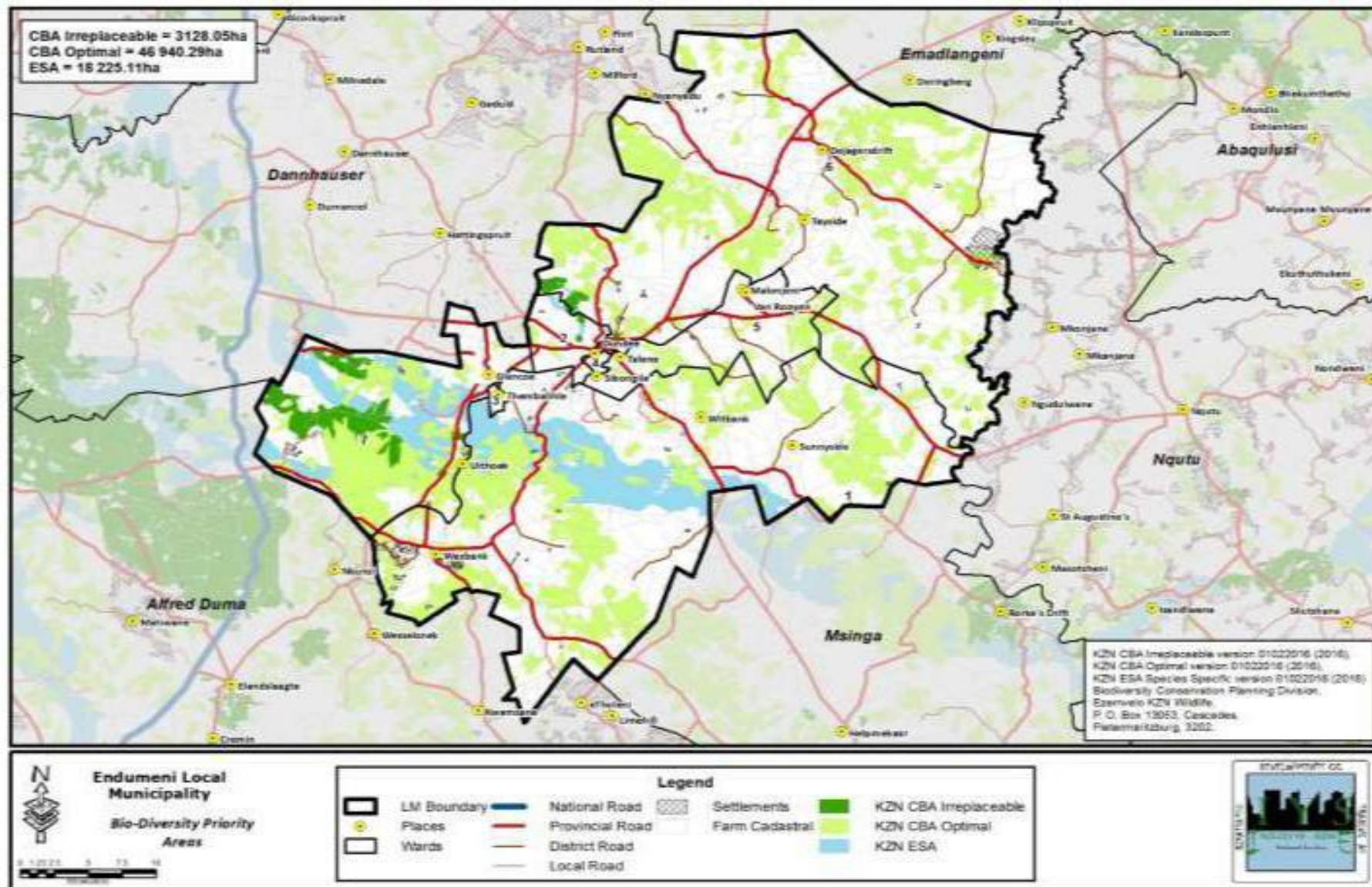


FIGURE 10: BIO-DIVERSITY PRIORITY AREAS

Heritage Resources

Endumeni Local Municipality

The area has a very rich history and heritage involving the battlesfield. The heritage resources are still in existence and these include the architectural styles, historical sites and monuments. The natural assets such as the landscape also present a mouthful amount of opportunities for the area in terms of tourism market. There is a need for these assets and resources to be maintained and conserved.

The principle of natural and built environment conservation needs to be adopted for the area such as Endumeni. The built environment includes the important buildings and structures that are of conservation value within the town. This is purely because, the area has an abundance of heritage resources in the form of buildings and monuments. These should be listed with Amafa aKwaZulu-Natal as the local monuments are deserves to be adequately protected from any vandalism, demolition or decay.

Dannhauser Local Municipality

Location of all cultural materials and other materials of heritage significance should be determined prior to or during the planning of developments. Amafa KwaZulu Natal needs to be a key stakeholder in all development planning processes. Furthermore, the Dannhauser municipal area is situated in relatively close proximity to the battlefields route. These routes may also be of heritage significance to the area (NDG AFRICA: 2010). The municipality has appointed a service provider to undertake a tourism resources assessment and strategy, the findings may or may not possibly impact on the listed cultural and heritage assets available within the jurisdiction.

Soils'

Edumeni Local Municipality

Endumeni Municipality comprises of a range of soil geology formations which includes Arenite, Shale and Dolerite. The geology of the site includes Arenites. Arenites is a sedimentary geological formation found in Karoo Basin region of Southern Africa. It is carbon-rich sedimentary deposit; owing to the high vegetation content of the original sediment i.e. some of the areas that have this type of geological formation contain

mineral occurrences for coal mining .Shale is a fine-grained, clastic sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments (silt-sized particles) of other minerals, especially quartz and calcite. The ratio of clay to other minerals content of the original sediment i.e. some of the areas that have this type of geological formation contain mineral occurrences for coal mining.variable. The study area is known for being underlined by the Vryheid formation of the Ecca Group, in geohydrology, the Ecca group is known for its high yielding capacity. Shale is characterized by breaks along thin laminae or parallel layering or bedding less than one centimeter in thickness, called fissilit

Dannhauser Local Municipality

Vast land in Dannhauser comprises of Arenite and small portions are covered in Dolerite and Shale. The major soil types covering Dannhauser Local Municipality are Loam Soil, Sandy Clay Loam, Silt Loam and Silty Clay soils (Amajuba District EMP:2010).

Socio-economic

Dannhauser Local municipality

- Population

The population of the Dannhauser Municipality was recorded at 105 341 people in 2016 compared to a total of 102 161 in 2011. This is evident of an increase of 3 180 people between 2011 and 2016. The population is distributed unevenly among the 13 municipal wards.

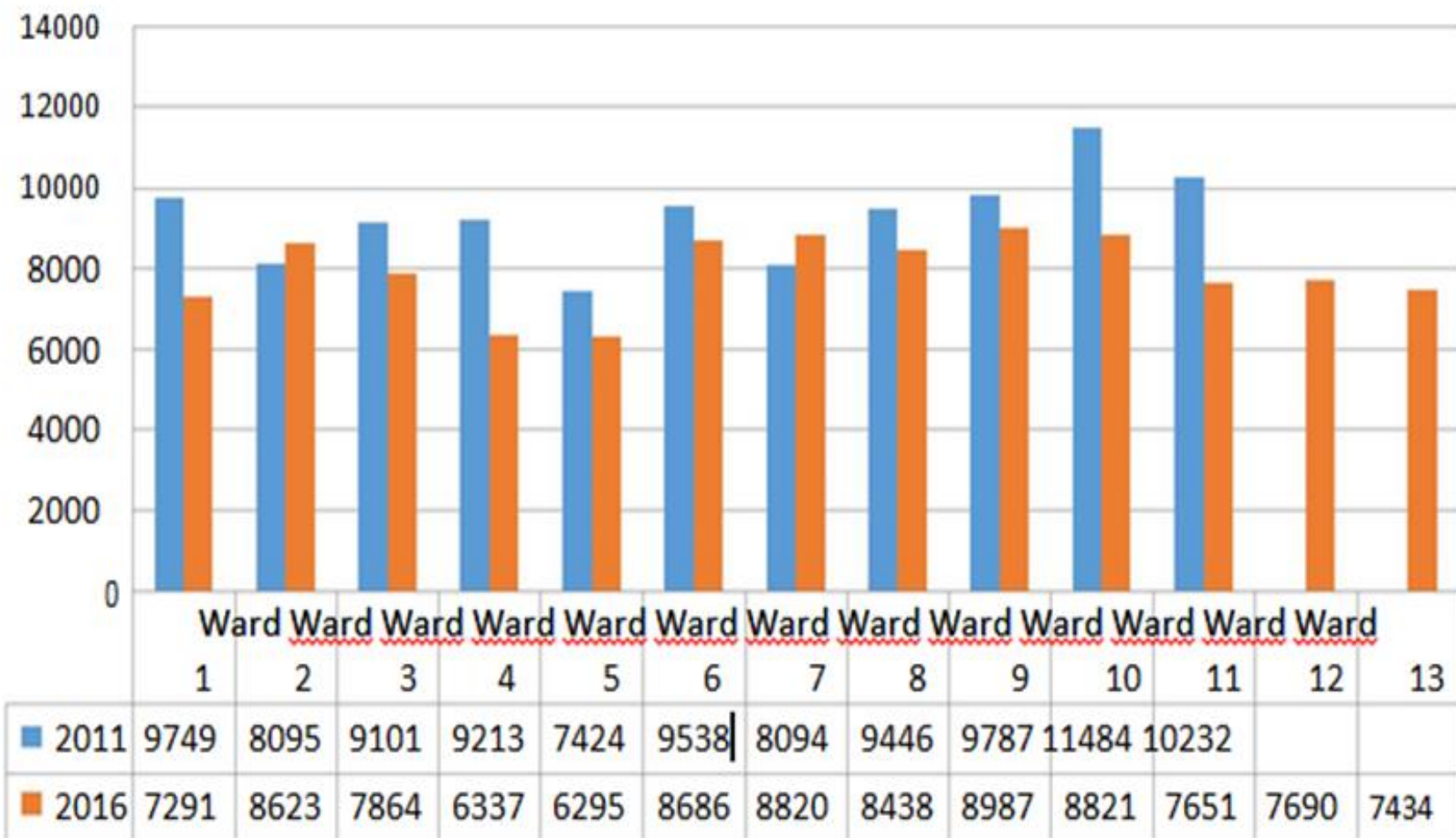


FIGURE 11: POPULATION DISTRIBUTION OF DANNHAUSER LOCAL MUNICIPALITY

Population densities are highest in the Traditional Council areas in the north-eastern portion of the municipal area and in Dannhauser Town. The town functions as a primary node (providing commercial service facilities, agricultural industries, industrial park, public social infrastructure economic infrastructure and government services). The local economy is largely defined by the mining and agricultural sectors, these currently contribute to minimal employment within the jurisdiction. Local residents rely on the larger urban centres of Dundee and Newcastle for employment opportunities and higher order goods and services.

The population growth within the jurisdiction can be attributed to a number of issues, including: receiving quality government services, immigration by residents moving from neighboring areas such as Newcastle, Emadlangeni and other municipalities, increased housing development by Human Settlements, availability of land for agricultural activities, etc.

If the positive growth rate persists, it is likely to encourage development in the area. The situation therefore warrants interventional measures that could encourage people to remain within the municipality to the municipality.

- Level of education

Education plays an important role in economic development. It provides skilled labour that is key in producing goods and services in an economy. In 2016, of the total population of 105 341, only 1.9% had obtained tertiary educational attainments and only 16.4% had matriculated. People with no schooling increased to 14.7% 2011. This can be attributed to a lower level of primary school enrolment that was experienced in the municipal area in 2014-2015. Only a handful of those who finish matric pursue further studies. It is important to address this challenge. There is a need to develop a program that will monitor or ensure that pupils that enroll in primary education are encouraged to complete secondary education and further their studies. Addressing this challenge is fundamental to creating a strong base that the municipality can use to stimulate economic growth and development.

- Economic

The following is a summary of the economic profile of the municipality

TABLE 11: ECONOMIC PROFILE

Type of Sector	1997	2003	2013
Primary Sector	55.9%	26.7%	36.0%
Agriculture	6.6%	10.8%	6.3%
Mining	49.3%	15.9%	29.7%
Secondary Sector	17.0%	21.1%	11.7%
Manufacturing	13.6%	18.3%	9.2%
Electricity	2.0%	1.0%	1.0%
Construction	1.4%	1.8%	1.5%
Tertiary Sector	27.1%	52.2%	52.3%
Trade	4.7%	7.6%	7.8%
Transport	4.3%	6.5%	5.6%
Finance	3.6%	7.7%	6.2%
Community Services	14.4%	30.5%	32.6%

As per Global Insight 2014, 2013 economic analysis publishing adopted by Provincial Treasury KZN in the Social-Economic Profile of Amajuba District in 2014; Dannhauser's Gross Domestic Product performance and contribution per economic sector to Kwazulu-Natal province was;

- Agriculture decreased from 10.8% in 2003 to 6.3% in 2013;
- Mining increased from 15.9% in 2003 to 29.7% in 2013;
- Manufacturing decreased from 18.3% in 2003 to 9.2% in 2013;
- Electricity remained constant at 1% from 2003 to 2013;
- Construction decreased from 1.8% to 1.5% from 2003 to 2013;
- Trade increased from 7.6% to 7.8% from 2003 to 2013;
- Transport decreased from 6.5% to 5.6% from 2003 to 2013;
- Finance decreased from 7.3% to 6.2% from 2003 to 2013; and
- Community Services increased from 30.5% to 32.6%'

The mining sector has greatly contributed to employment within the jurisdiction with a total upward movement of 13.8 % from 2003 to 2013. According to Census 2011 data from Stats SA the population of Dannhauser is 19 % are employed, 17 % are

unemployed but economically active while 64 % are unemployed but are not economically active.

Endumeni Local Municipality

- Population

The total population for Endumeni Local municipality was estimated at 64 862 people dispersed across six municipal wards in 2011, while in 2016 the population was estimated at 76 639 (see figure above). The total population grew by 15.6% (11 957) since 2011 and recorded an average annual population growth rate of 3.79 percent. The population is dominated by females accounting for 51 percent of the total population, this may be attributed employment opportunities that reside elsewhere outside of the municipal boundary which in most males are thus obliged to migrate out to get better chances of being employed

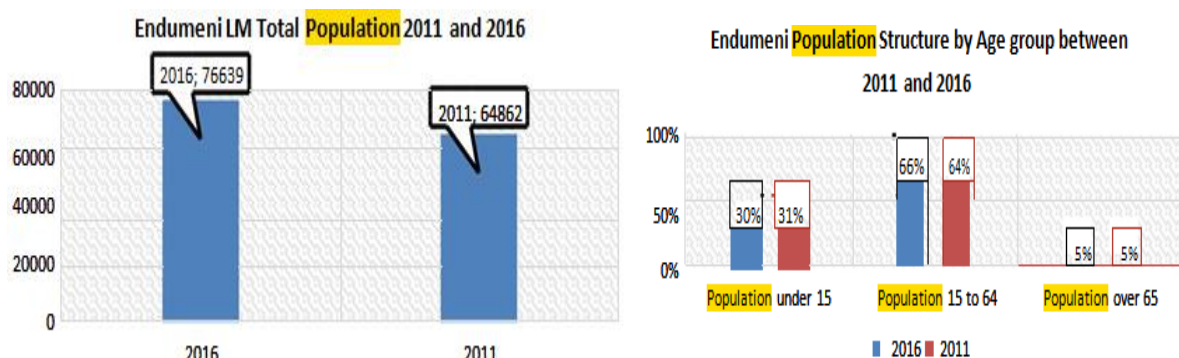


FIGURE 12: SIZE AND STRUCTURE OF THE ENDUMENI LOCAL MUNICIPALITY POPULATION

- Level of education

The municipality's population over age of 20 is relatively educated with only about 4 percent recorded as having no form of education, 40 percent who have matriculated and approximately 12 with higher education in 2016. This numbers aside from the population with no education have increased since census 2011 with the number of people with matric growing by approximately 8 percent and the 3 percent which suggests that the number of people with higher education by approximately 1.5 percent. The population with no formal schooling on the other hand had decreased by

approximately population over 20 may be eager to educate themselves and hence increases chances of being employed

- **Employment Levels**

The working age population has increased since 2011 by 2 percent to 2016 suggesting that there is great demand for employment creation to put these numbers to good use. The rest of the population is termed the dependent population mainly consisting of the population below 15 years and the population above 65 years accounting for approximately 30 percent and 5 percent respectively in 2016. Though relatively small when compared to other municipalities this suggests that 35 percent of the municipality's population is dependent with a dependency ratio of 53 suggesting that for every 100-independent people in the municipality 53 are dependent. grow the local economy district the other local municipalities these numbers are alarming especially the youth unemployment rate as the total population is fairly young, suggesting that more initiative are needed to ensure that this youth is put to production in order to further According to Stats SA census 2011 the municipality's official unemployment rate stood at 26 percent whilst the youth unemployment rate was estimated at 36 percent. Although relatively low when compared to the district the other local municipalities these numbers are alarming especially the youth unemployment rate as the total population is fairly young, suggesting that more initiative are needed to ensure that this youth is put to production in order to further grow the local economy

Description of the current land uses

Soil and land capacity

The soil agricultural potential of the area varies but may fall within six main ratings, ranging from high potential to very low potential land. However, the larger percentage of land, about 70% can be considered as moderate agricultural land, particularly with regards to crop production. Some portions are located on the steep, rocky slopes. The major soil types covering the proposed area are Loam Soil, Sandy Clay Loam, Silt

Loam and Silty Clay soils. Most of the area comprises of Arenite and small portions are covered in Dolerite and Shale rocks.

The grasslands are mainly found within the commercial farms and these serve as the grazing areas for livestock farming. Subsistence agriculture mainly exists within the traditional council areas. The predominant land use categories in the area include settlements, commercial farmlands, conservation and mining.

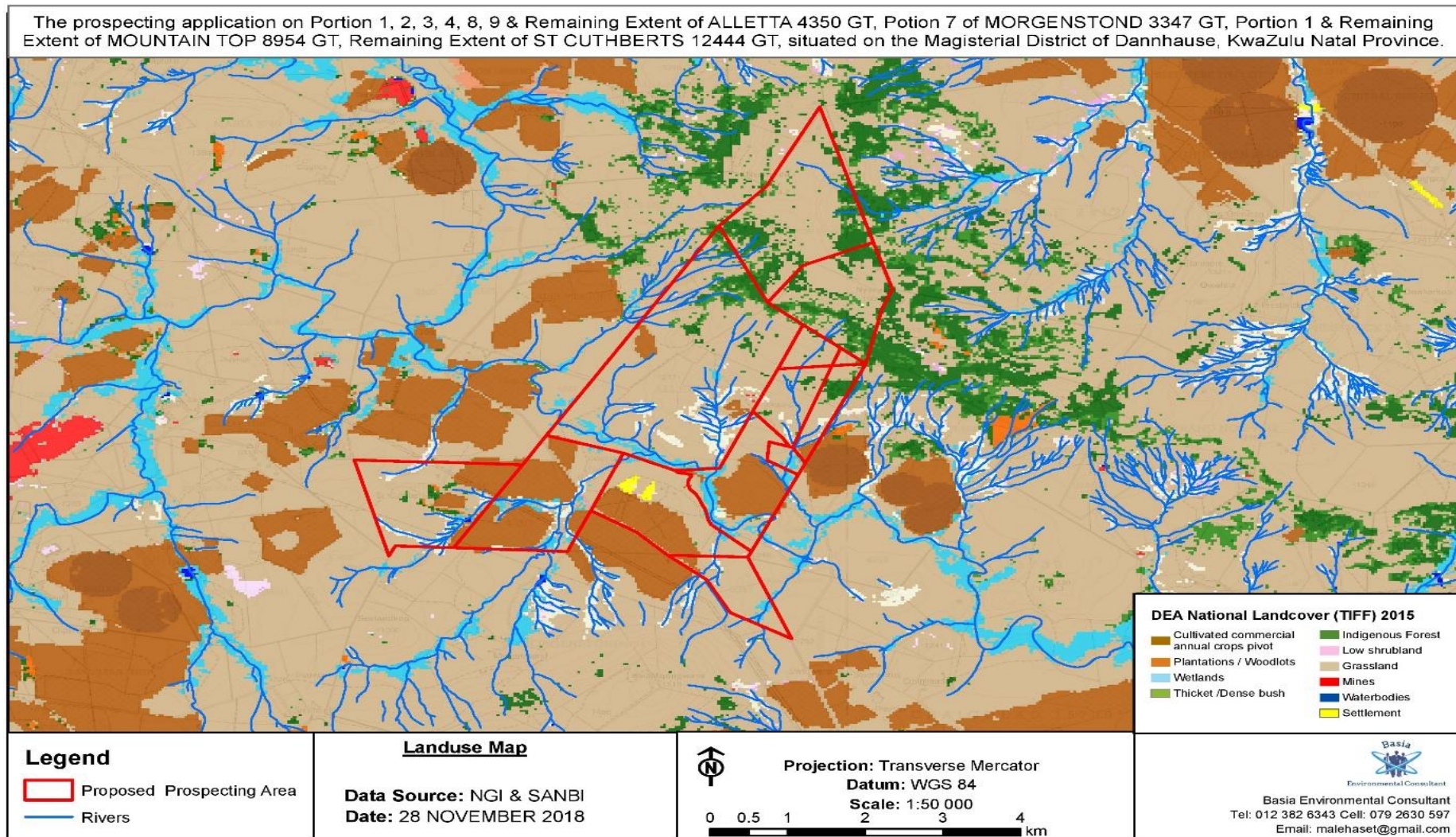


FIGURE 13: LAND USE MAP OF THE PROPOSED AREA

Fauna and Flora Assessment

Two biomes traverse in the Grassland and Savannah biomes. The dominant biome is the Grassland biome which accounts for more than 99% of the total area. Vegetation types within the area varies significantly but is dominated mainly by five vegetation types. These include the Northern KwaZulu-Natal Moist Grassland; KwaZulu-Natal Highland Thornville and the Low Escarpment Moist Grassland. No species of concern are expected on site

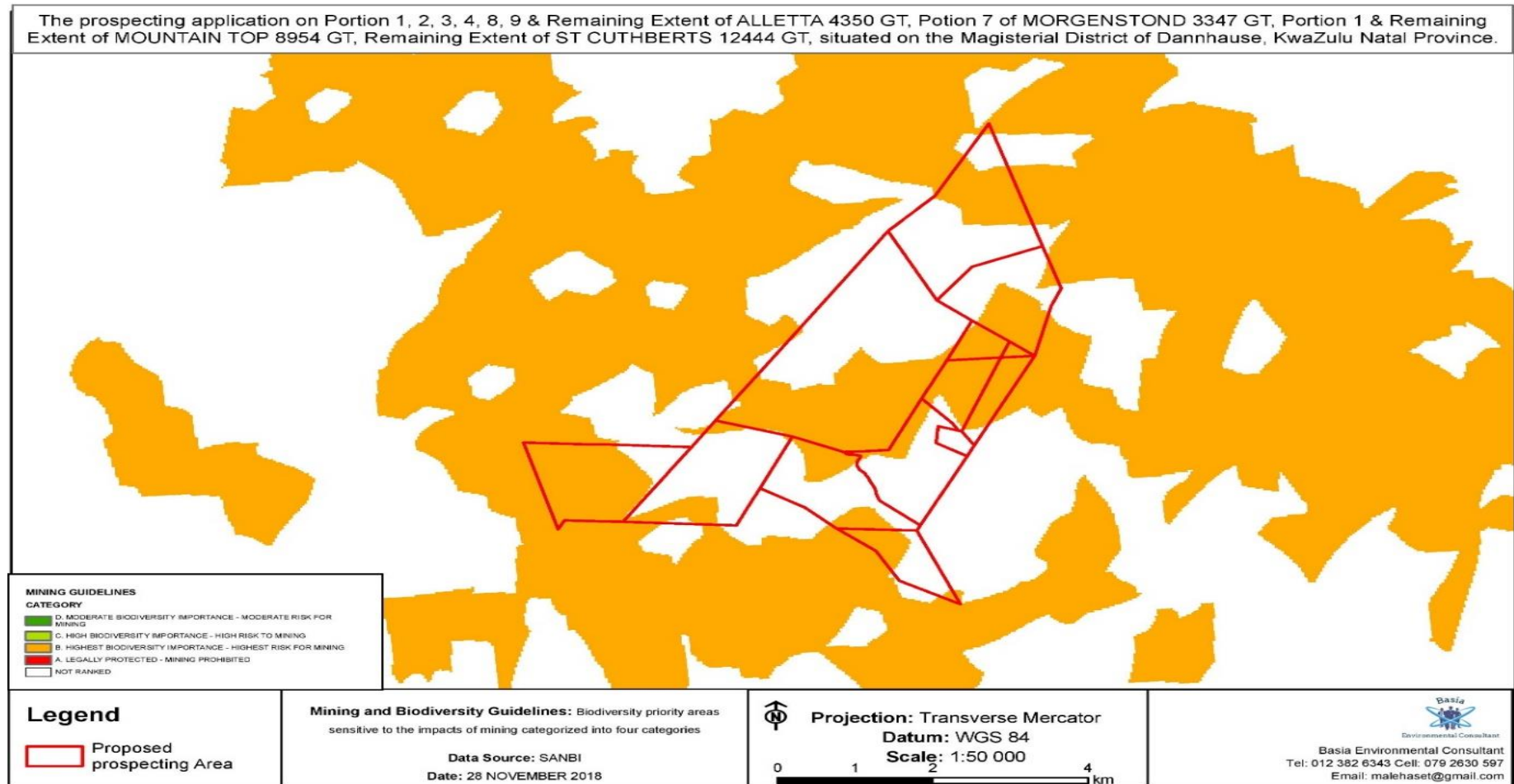


FIGURE 14: VEGETATION SENSITIVITY MAP

Description of specific environmental features and infrastructure on the site

The area is characterized by the meandering stream with several tributaries confluences, farm stead houses and livestock.

Environmental and current land use map

(Show all environmental, and current land use features)

The land use map is provided in the section above Figure 14.

(v) Impacts and risks identified including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts

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

TABLE 12: IMPACT ASSESSMENT TABLE FOR THE CONSTRUCTION PHASE

Environmental Aspect	Nature of potential impact/risk	Environmental Impact Significance Before Mitigation											
		Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance/risk	Risk Rating	
Social	Influx of job seekers will have a negative social impact on the landowners and land occupiers.	2	1	3	6	4	2	5	1	12	72	Moderate	
	Unauthorised access to private property outside of the demarcated areas will result in conflict with landowners.	2	1	3	6	4	2	5	1	12	72	Moderate	
	Increased traffic in the area will increase the likelihood of accidents on the roads, posing a health and safety issue for the land owners and land occupiers.	2	1	3	6	4	2	5	1	12	72	Moderate	

	The influx of job seekers in the area may result in an increase in petty crimes.	2	1	3	6	4	2	5	2	13	78	Moderate
	Possible boost in short term local small business opportunities.	3	3	3	9	4	2	5	1	12	108	Moderate
Ground water	Localised spillages of oils from machinery leaching to groundwater contamination.	2	1	3	6	4	2	5	1	12	78	Moderate
	Existing boreholes within the prospecting area may create conduits of flow to the groundwater unless sealed.	2	1	3	6	4	2	5	1	12	78	Moderate
Surface Water	Increase in silt load in runoff due to site clearing, grubbing and the removal of topsoil from the footprint area associated with the drill sites and associated infrastructure.	2	3	1	6	4	2	5	1	12	78	Moderate
	Potential deterioration in water quality due to the potential accidental spillages of hazardous substances.	2	3	2		4	2	5	1	12	78	Moderate

	Debris from poor handling of materials and/or waste blocking watercourses, resulting in flow impediment and pollution.	2	2	2									
	Contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality.	2	3	2	6	4	2	5	1	12	78		Moderate
	Increase of surface runoff and potentially contaminated water that needs to be maintained in the areas where site clearing occurred.	2	2	2	6	4	2	5	1	12	78		Moderate
Wetlands and Aquatic Ecosystems	Localised changes to the riparian areas as a result of vegetation clearing.	3	3	3	9	4	2	5	1	12	108		Moderate
	Loss of habitat and wetland ecological structure as a result of site clearance activities and uncontrolled wetland degradation.	3	3	3	9	4	2	5	1	12	108		Moderate
	Impact on the wetlands systems as a result of changes to the sociocultural service provisions.	3	3	3	9	4	2	5	1	12	108		Moderate

	Increased runoff due to topsoil removal and vegetation clearance leading to possible erosion and sedimentation of wetland and riparian resources.														
	Soil compaction and levelling as a result of construction activities and vehicle movement leading to loss of wetland and riparian habitat.	3	3	3		9	4	2	5	1		12	108		Moderate
	Impact on the hydrological functioning of the wetland systems.	3	3	3		9	4	2	5	1		12	108		Moderate
Heritage Resources Palaeontological Resources	The proposed project has the potential to impact on local graves within the area.	2	1	2		5	4	2	5	1					
	The proposed project has the potential to impact on sites of archaeological importance.	2	1	2		5	4	2	5	1					
	Drilling of exploratory boreholes has potential to impact on palaeontological resources	2	1	2		5	4	2	5	1		12	60		Moderate

Flora	Loss of localised biodiversity habitats within sensitive areas due to site clearance and establishment of drill sites.	2	1	2	5	4	2	5	1	12	60	Moderate
	Loss of localised floral species diversity including RDL and medicinal protected species due to site clearance and establishment of drill sites.	2	1	2	5	4	2	5	1	12	60	Moderate
	Potential spreading of alien invasive species as indigenous vegetation is removed and pioneer alien species are provided with a chance to flourish.	2	1	2	5	4	2	5	1	12	60	Moderate
Fauna	Vegetation clearance may result in loss of faunal habitat ecological structure, species diversity and loss of species of conservation concern.	2	1	2	5	4	2	5	1	12	60	Moderate
	Habitat fragmentation as a result of construction activities	2	1	2	5	4	2	5	1	12	60	Moderate

	of the access roads leading to loss of floral diversity.												
	Loss of faunal diversity and ecological integrity as a result of construction activities, erosion, poaching and faunal specie trapping.	2	1	2	5	4	2	5	1	12	60		Moderate
	Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.	2	1	2	5	4	2	5	1	12	60		Moderate
Air Quality	Possible increase in dust generation, PM10 and PM2.5 as a result of bulk earthworks, operation of heavy machinery, and material movement.	2	1	2	5	4	2	5	1	12	60		Moderate
	Increase in carbon emissions and ambient air pollutants (NO2 and SO2) as a result of movement of vehicles and operation of machinery/equipment.	2	2	2	6	4	2	5	1	12	78		Moderate
Visual	Scaring of the landscape as a result of the clearance of vegetation.	2	1	2	5	4	2	5	1	12	60		Moderate

	Visual intrusion as a result of the movement of machinery and the establishment of the required infrastructure.	2	2	2	6	4	2	5	1	12	78	Moderate
	Indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the site area.	2	2	2	6	4	2	5	1	12	78	Moderate
Noise	The use of vehicles and machinery during the construction phase may generate noise in the immediate vicinity.	2	2	2	6	4	2	5	1	12	78	Moderate
Soil, Land use and Land Capability	Localised chemical pollution of soils as a result of vehicle hydrocarbon spillages and compaction.	2	1	2	6	4	2	5	1	12	78	Moderate
	Localised clearing of vegetation and compaction of the construction footprint will result in the soils being particularly more vulnerable to soil erosion.	2	1	2	6	4	2	5	1	12	78	Moderate
	Localised loss of resource and its utilisation potential due	2	1	2	6	4	2	5	1	12	78	Moderate

	to compaction over unprotected ground/soil.												
	Localised loss of soil and land capability due to reduction in nutrient status - de-nitrification and leaching due to stripping and stockpiling footprint areas.	2	1	2	6	4	2	5	1	12	78		Moderate
Traffic	Increase in traffic volumes as a result of pre-construction activities which may lead to an increase in traffic congestion along the roads as well as the farm roads around the prospecting area.	2	3	2	7	4	2	5	1	12	84		Moderate
Climate	Emissions of Green House Gases as a result of the use of plant, heavy moving machinery, generators etc.	2	2	2	6	4	2	5	1	12	78		Moderate
Waste Manag ement	Potential water and soil pollution as a result of inappropriate waste management practices.	2	3	2	6	4	2	5	1	12	78		Moderate

Construction

The construction phase of the project will entail the site establishment for the access roads, the camp site as well as surveying and pegging sites. Environmental impacts on the biophysical and socioeconomic environment which are anticipated to occur throughout the construction were identified as follows:

Socio-Economic

The main positive impacts of the prospecting activities will be the temporary creation of jobs during the construction phase of the project. The project may also result in a temporary boost in small local businesses in the area.

It is expected that the final site layout will take into account all the sensitive environment in the area and will avoid graves and other heritage and cultural resources in the area. Movement of construction vehicles on the roads (R621) and other farm roads) may increase the risks accidents on the roads. Other health and safety risks may be as a result on construction workers lighting fires on site, littering and lack of housekeeping. Potential increase in social pathologies and negative health impacts due to potential squatting of job seekers and increase in nuisance dust may also occur.

The risk will be low to medium

Groundwater

The use of earth moving machinery and construction vehicles on site poses the risk of chemical spillages including fuel and oils, which may leach into the groundwater. The removal of vegetation could furthermore lower the evapotranspiration rates, thereby allowing a greater volume of potentially contaminated water to percolate to the underlying aquifer in the event of an accidental spill from the machinery. It must however be noted that the removal of vegetation will be limited to the required footprints for the access roads, the boreholes and sumps as well as the camp sites. The impact on evapotranspiration is therefore expected to be negligible. Site clearing and grubbing is unlikely to materially affect the groundwater within the project area. However, care should be taken during the utilisation and storage of hydrocarbons and chemicals, which may have an impact on groundwater quality as a result of spillages and uncontrolled release.

Risk will be low to medium

Surface water

The Mzinyashane stream runs across/ cuts through the proposed sites in an meandering flow. The potential drilling activities will not impact on the river or the ecological functioning of the system. The desktop analysis and site assessment indicate showed that there are no wetlands on site.

Various substances may result in the pollution of groundwater sources. Pollution from litter and general wastes may occur due to improper site management. Washing down of vehicles and equipment may result in the pollution of surface and groundwater, and pollution may occur from poor vehicle maintenance and improper storage of hazardous materials such as fuel, sludge etc.

The potential impacts on surface water during the construction phase of the proposed project are as follows:

- Accidental spillages of hazardous substances from construction vehicles used during core and RC drilling on site, as well as from hazardous storage areas;
- Contamination of runoff by poor materials/waste handling practices;
- Debris from poor handling of materials and/or waste blocking watercourses;
- Contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality;
- Increase in turbidity of the local water streams as a result of runoff of cleared areas; and
- Increase of surface runoff and potentially contaminated water that needs to be controlled in the areas where site clearing occurred.

Some level of sedimentation is expected to occur in the watercourses that traverse the project area as runoff is naturally anticipated to pick up environmental debris as it crosses natural areas. Increased turbidity is reversible and surface water should return to pre-impact turbidity levels once sediment levels entering the watercourse are reduced. Settled sediments should naturally move downstream during periods of high flow flowing storm events.

Wetlands and Aquatic Ecosystems

During site establishment and drilling phase it is expected to have an impact on the provision of ecological and sociocultural services specifically the wetlands from being disturbed by the proposed project. In addition, construction waste dumping and oil leakages from construction vehicles will alter biodiversity maintenance of the wetland features, which endangers the survival of wetland species inhabiting the area. Impacts on the wetlands will include:

- Loss of habitat and wetland ecological structure as a result of site clearance activities and uncontrolled wetland degradation;
- Impact on the wetlands systems as a result of changes to the sociocultural service provisions through site clearance, waste management and wetland disturbance;
- Potential poor planning, resulting in the placement of the access roads across wetland habitats, leading to altered habitat;
- Impact on the hydrological functioning of the wetland systems;
- Soil compaction and levelling as a result of construction activities and vehicle movement leading to loss of wetland and riparian habitat; and
- Increased runoff due to topsoil removal and vegetation clearance leading to possible erosion and sedimentation of wetland and riparian resources.

Heritage and Archaeological Resources

The final layout plan will be dependent on the location of local heritage and archaeological resources. The siting of the boreholes and infrastructure will be in such a way as to avoid sensitive environments, which include graves and archaeological resources as far as is practicable.

It should be noted that none of the SAHRis listed sites present within the proposed project area will be touched. However, it is highly unlikely that sites will consist such phenomenon, due to the fact that approximately 90% of the site has been transformed from its natural state to agricultural land (livestock and farming), it is unlikely that any artifacts of heritage value will be found on site. In the event that any heritage artifacts including graves and human remains are uncovered during prospecting, this will immediately be reported to SAHRA as per National Legislation.

Flora

The project may result in the following impacts on the floral environment during the construction phase:

- Destruction of potential floral habitats for species as a result of site clearing, alien species, improper waste management and soil compaction;
- Vegetation clearance may lead to floral habitat loss of potential species of conservational concern;

Fauna

The project may result in the following impacts on the faunal environment during the construction phase:

- Loss of faunal habitat and ecological structure as a result of site clearing, alien invasive species, erosion, and general construction activities;
- Loss of faunal species due to collisions with construction vehicles and machinery;
- Loss of faunal diversity and ecological integrity as a result of construction activities, erosion, poaching and faunal specie trapping;
- Impact on faunal species of conservational concern due to habitat loss and collision with construction vehicles, Failure to initiate a rehabilitation plan and alien control plan during the construction phase may lead to further impacts on faunal habitat during the operation phase.

Limited vegetation disturbance is expected due to the transformed nature of the sites and the small size of the borehole diameter. The loss of biodiversity is expected be insignificant as it will be limited to the footprints of the required infrastructure. However, mitigation and management of species of conservational concern, if any, needs to be adhered to. The infrastructure that will have the significant impact on biodiversity is expected to the access roads.

As the vegetation within the prospecting region has been identified as least concern in terms of their conservation status, the relatively small loss of vegetation within already degraded agricultural areas is regarded as negligible.

Environmental Impacts

Impacts of topsoil removal for pitting: Topsoil removal could lead to short term dust creation (air pollution). These exposed surfaces will increase the chances of soil erosion and potential soil loss

Impacts of drilling activities: Increased dust and noise generation, noise impact on fauna in the immediate surrounds, increase in veld fire risk and loss of vegetation and stock/wild life, decrease visual quality and impact on land uses are potential impacts.

Noise: Noise is unlikely to be an impact during prospecting, due to the majority of the activities occurring during the day, and far away from public roads or community nodes.

Soil: Impacts on soil are likely to be low negative impact, as drilling and coring may be required in the later phases of the prospecting. Soil erosion and disturbance impacts should be incorporated into the landowner agreements prior to prospecting.

Air Quality

The movement of construction vehicles and earth moving machinery as well as the stripping of vegetation will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It is expected that the implementation of dust suppressing mitigation measures will result in the reduction in nuisance dust.

Visual

The following impacts on the visual character as a result of the proposed project are envisaged during the construction phase:

- Scaring of the landscape as a result of the clearance of vegetation;
- Visual intrusion as a result of the movement of machinery and the erection of contractor camps; and

Indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the site

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

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

All the identified potential impact were assessed according to the following Impact Assessment Methodology as described below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact. The risk ratings and significance are indicated in the tables below.

TABLE 13: SEVERITY

How severe does the aspects impact on resource quality (flow regime, water quality, geomorphology, biota, habitat)?

Insignificant / non –harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great/ harmful	4
Disastrous / extremely harmful and /or wetland(s) involved	5
Where "or wetland(s) are involved" it means that the activity is located within the delineated boundary of any wetland. The score of 5 is only compulsory for the significance rating.	

TABLE 14: SPATIAL SCALE

How big is the area that the aspect is impacting on?

Area specific (at impact site)	1
Whole site (entire surface right)	2
Regional / neighboring areas	3
National	4
Global (impacting beyond SA boundary)	5

TABLE 15: DURATION

How long does the aspect impact on the environment and resource quality?

One day to one month, PES, EIS and /or REC not impacted	1
One month to one year, PES, EIS and /or REC impacted but no change in status	2
One year to 10 years, PES, EIS and /or REC impacted to a lower status but can be improved over this period through mitigation	3
Life of the activity, PES, EIS and /or REC permanently lowered	4
More than life of the organisation /facility, PES and EIS scores, a E or F	5
PES and EIS (sensitivity) must be considered.	

TABLE 16: FREQUENCY OF THE ACTIVITY

How often do you do the specific activity?

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

TABLE 17: FREQUENCY OF THE INCIDENT/ IMPACT

How often does the activity impact on the environment?

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly/ likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

TABLE 18: LEGAL ISSUES

How is the activity governed by legislation?

No legislation	1
Fully covered by legislation	5
Located within the regulated areas	

TABLE 19: DETECTION

How quickly can the impacts/risks of the activity be observed on the resource quality, people or property?

Immediately	1
Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered	5

TABLE 20: RATING CLASSES

Rating	Class	Management description
1-55	(L) Low risk	Acceptable as is or consider requirements for mitigation. Impact to watercourses and resource quality small and easily mitigated
56-169	(M) Moderate risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
170-300	(H) High risk	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

A low risk class must be obtained for all activities to be considered for a GA

TABLE 21: CALCULATION

Consequence = Severity + Spatial Scale + Duration
Likelihood = Frequency of Activity + Frequency of Incident + Legal Issues + Detection
Significance \Risk = Consequence X Likelihood

TABLE 22: RATING CLASSES

Rating	Risk Class	Management Description
1-55	Low (L)	Acceptable as is or consider requirement for mitigation impact
56-169	Moderate (M)	Risk and impact on notably are required and mitigation measures on a higher level
170-300	High (H)	Impact on the environment has a long term impact.

(vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

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

The impacts of the proposed site layout will be the same as those of the alternative sites that may be identified during the prospecting exercise. The alternative sites will be identified based on the location of sensitive environments such as heritage sites (graves etc.), wetlands, riparian zones, and areas with Red Data Species. Changes in the layout plan will be discussed and agreed on with the affected landowners.

The positive impacts of the activities are the creation of employment, which is required in the region. Should coal be found in the project area, Kenya go bona ka mahlo Trading will be able to mine the available reserves. This will result in job creation and support to local businesses is continued. Kenya go bona ka Mahlo Trading expect that substantial benefits from the project (should coal be found) will accrue to the immediate project area, the sub-region and the province of the Free State. Coal in South Africa is of important economic value. This prospecting activity has a potential to decrease level of unemployment rate in proposed areas and surroundings. This prospecting activity will bring revenue into the city and the province which will in turn boost the economy of the country. The project will also contribute in the supply of energy as coal is the primary source of energy in South Africa.

The proposed activities have medium to low significance impacts, which will be short term activities in nature. The probability of occurrence of an impact was determined and most of the activities can be controlled and impacts can be reduced or avoided. The probability was also determined based on other prospecting activities of similar nature. It was found that generally prospecting activities have low impact on the environment.

(viii) The possible mitigation measures that could be applied and the level of risk

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Please refer to Section v for the management and mitigation measures.

(ix) Motivation where no alternatives sites were considered

As discussed in the previously, the site is located in an area where the geology is known for having coal deposits of good quality. The site is therefore regarded as the preferred site and alternatives sites are not considered. The alternative drill sites will be identified based on the location of sensitive environments such as heritage sites (graves etc.), wetlands, riparian zones, and areas with Red Data Species. Changes in the layout plan will be discussed and agreed on with the affected landowners.

(x) Statement motivating the alternative development location within the overall site

The location and extent of the prospecting activities will be based on the information derived from the desktop surveys as well as the specialist studies. Where practicable, the drilling sites and location of infrastructure will be selected to avoid sensitive environments such as wetlands, watercourses, biodiversity of conservation importance and heritage features.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.

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

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

- The stakeholder consultant process is currently being undertaken in a manner to be interactive, providing the landowners and identified stakeholders with an opportunity to provide input into the project. This is considered a key focus as the local residents have capabilities of providing site-specific information, which may not be available in desktop research material. Stakeholders were requested, as part of the notification letter, to provide their views on the project, and to state any potential concerns they may have. All comments and responses provided will be collated into the Comments and Responses Register, which will be attached to the final BAR, and will also be incorporated into the final impact assessment.
- A detailed desktop study was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations, various resources were used to determine the significance and sensitivity of the various environmental considerations. The desktop investigation involved the use of:
 - The South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS System;
 - The Department of Environmental Affairs 2015 Landcover and Landuse Mapping Database;
 - Department of Water and Sanitation information documents such as the Internal Strategic Perspective (ISP) for the Vaal River and Groundwater Vulnerability Reports
 - Municipal Integrated Development Plans for Ngwathe and Metsimaholo Local Municipalities; and
 - The Provincial Spatial Development Framework for the Free State Province.

The rating of the identified impacts was undertaken in a quantitative manner as provided in Section V (impact rating). The ratings were undertaken in a manner to calculate the significance of each of the impacts. The identification of management and mitigation measures was done based on the significance of the impacts and

measures included are considered sufficient, appropriate and practical to protect the environment.

j) Assessment of each identified potentially significant impact and risk

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

TABLE 22: ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Data Collection and Assessment	Desktop Study	None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Geological Mapping		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Planning for Drilling Surveys		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective	N/A

						implementation of the data acquisition and desktop study.	
Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Soils, Land capability and Land use	Construction	Low	Rehabilitation of areas cleared of vegetation and dust control	Low
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Groundwater	Construction	Medium to Low	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMPr.	Low
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Surface water	Construction	Medium to Low	Monitoring through rehabilitation and management of spoil sites	Low
Fence		Wetland contamination, destruction and loss of habitat	Wetlands and aquatic ecosystems	Construction	Medium to Low	Control of access to wetland areas and within the regulated 500 m buffer.	Low

Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Heritage and archaeological resources	Construction	Low	Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
Mobile office		Destruction of fossils	Palaeontological resources	Construction	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
Ablution Facility		Loss of natural vegetation in the affected areas	Flora	Construction	Low	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	Low
		Migration of fauna due to disturbance caused by the proposed project	Fauna	Construction	Low	Relocation of affected species of conservation importance	Low
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles and machinery.	Air quality	Construction	Low	Dust control measures	Low
		Increase in ambient noise due to	Noise	Construction	Low	Management and	Low

		movement of construction vehicles and machinery				maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers Control through the limiting of the activities to the day time and the implementation of an open and transparent channel of communication	
		Visual impacts as a result of vegetation clearance	Visual	Construction	Low	Rehabilitation of areas cleared of vegetation	Low
		Increased traffic on the roads due to additional construction vehicles	Traffic, Socio-economic	Construction	Medium to Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Climate Change	Construction	Low	Control and keep to a minimal the number of vehicles used for construction. Vehicles must be maintained to ensure efficient use of fuel.	Low

RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant will make use of qualified contractors for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners	Socio-Economic	Operation	Low	Control of times during which operation activities will take place	Low
Core Drilling		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from vehicles and machinery. This will result in the contamination of soils and	Groundwater	Operation	Low	Rehabilitation of affected areas and control using bunds	Low

		groundwater. The prospecting operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.					
Soil Sampling		Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings should spillage occur. The sedimentation and possible contamination with carbonaceous material will have negative impacts on the water quality due to increase	Surface Water	Operation	Low	Control through management and monitoring of surface runoff	Low

		turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.					
			Wetlands	Operation	Medium to Low	Avoidance of wetland and riparian areas	Low
			Flora	Operation	Low	Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.	Low
			Fauna	Operation	Low	Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes. Drill holes must be permanently capped as soon as is practicable	Low

		<p>The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will contain carbonaceous material, which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable after backfilling operation.</p>	Soils Land use and Land Capability	Operation	Low	Rehabilitation of affected areas	Low
		<p>The movement of vehicles and drilling machinery will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for</p>	Air Quality	Operation	Medium to Low	Dust control measures	Low

		increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.					
		The drill rigs and towers used during the drilling operation phase will be visible from nearby locations, and will have visual impact on the local communities in close proximity to the prospecting area.	Visual	Operation	Medium to Low	Strategic location of rigs and towers to areas where there may be some tree cover, as far as practicable	Low
		The drilling operations may result in the destruction of graves and other heritage resources	Heritage Resources	Operation	Low	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
		Earth moving activities may result in the destruction of fossils (if any).	Palaeontological Resources	Operation	Low	Management of drill sites. Should any fossils be discovered, operations must	Low

						cease and SAHRA must be notified	
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in an increase in noise in the vicinity of the project.	Noise	Operation	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low
		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Traffic	Operation	Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Climate	Operation	Low	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.	Low
		Drilling ground vibrations may result in possible damage to infrastructure.	Drilling and Vibrations	Operation	Low	Drill sites must be located as far from infrastructure as is possible to avoid damage to infrastructure	Low

Data Analysis	Feasibility Studies	None	N/A	Operation	N/A	N/A	N/A
Feasibility Studies Report		None	N/A	Operation	N/A	N/A	N/A
Borehole capping	Closure and Rehabilitation of borehole and infrastructure sites	The removal of the campsite equipment and the rehabilitation of the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.	Soils, Land Capability and Land Use	Decommissioning and Closure	N/A	N/A	N/A
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Decommissioning and Closure	N/A	N/A	N/A
		The use of vehicles/machinery during the rehabilitation of the exploration	Soils and Vegetation	Decommissioning and Closure	Low	Control and prohibit access of vehicles and	Low

		sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.				<p>machinery to areas outside of established access tracks</p> <p>Control through the clear delineation of the prospecting area.</p> <p>Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system.</p> <p>Control through the implementation of a soil management programme in terms of the correct tops oil removal, stockpiling and rehabilitation practices as discussed in the EMPr.</p>	
		During the decommissioning and closure phases equipment will be	Surface Water	Decommissioning and Closure	Medium to Low	Control through the clear delineation of the	Low

		removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, top soiled and the area re-seeded. During the process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.				prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.	
		Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on	Air Quality	Decommissioning and Closure	Low	Dust control measures and rehabilitation of areas stripped of vegetation	Low

		surrounding properties including nearby vegetation.					
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Noise	Decommissioning and Closure	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low

k) Summary of specialist reports

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

No specialist studies were conducted as part of this application. Desktop information was used to compile the report and to conduct the impact assessment.

TABLE 23: SPECIALIST STUDIES

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
No specialist studies have been undertaken	N/A. Specialist studies will be undertaken during the mining right application process.	N/A	N/A

I) Environmental Impact statement

(i) Summary of the key findings of the environmental impact assessment;

During the proposed prospecting operation impacts may occur on soils, natural vegetation, surface water, groundwater, sensitive landscapes, air quality, noise, visual aspects, and sites of archaeological and cultural importance should the EMPr not be adhered to.

Ke nyaka go bona ka mahlo trading will undertake measures to ensure that the identified impacts are minimised. Assessment of the impacts with the proposed mitigation measures has shown the significance of the impacts on all affected environmental aspects to be reduced from medium and low to low and negligible significance.

Land use will not change. Several landowners and land occupiers within the proposed project area may be affected although on a temporary basis due to the need to access the sites and the establishment and use of the campsite. Measures such as safety along the roads and dust suppression will be undertaken to ensure that the impacts on the land owners and land occupiers are minimised.

Storm water runoff from the dirty water areas of the drilling sites, its associated surface infrastructure (campsite) may have a detrimental impact on the surrounding water environment should this water be released to the environment. In order to prevent the occurrence of the above-mentioned impacts, dirty water collection sump will be used to collect all dirty water from the drilling site. The water collected from the sump will be re-used, evaporated and the sump will be rehabilitated once the drilling is finished. Sediments will be created from the site during the construction, operational and decommissioning phase, which may impact negatively on the surrounding water environment. The sediments will be treated should they contain hydrocarbon waste.

The employees will undergo training and will be given strict instruction not to undertake activities that will affect the environment and that may have an impact on the landowners. Waste generated from the site will be collected in proper receptacles and disposed of in registered waste disposal sites.

Key findings of the environmental impact assessment include:

- All the identified impacts will be localised, short term and will have a medium and low significance. The significance of potential environmental impacts can be reduced to low and very low significance with implementation of mitigation measures and monitoring.
- Cumulative noise, visual and air quality (dust) impacts are deemed to not be significant (low) when proper mitigation measures are implemented.
- Vegetation loss is unavoidable during the construction phase of the project. This will however be limited to the footprint of the infrastructure (access road, camp, boreholes). Care must be taken to manage any species of special concern as well as the proliferation of alien invasive plant species.

(ii) Final Site Map

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

Please refer to Appendix C for the locality map which includes the environmental sensitive areas.

The final maps showing the layout of the proposed project will be submitted to the DMR on granting of the prospecting right. The map will be developed to superimpose the proposed prospecting project and associated infrastructure together with the environmentally sensitive areas such as heritage sites, wetland and riparian areas, water courses and Red Data Listed floral species within the proposed project site.

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

The proposed activities have medium and low significance and will be short term activities. The probability of occurrence of an impact was determined and most of these activities can be controlled and impacts can be reduced or avoided. Generally prospecting activities have low impact on the environment. The planned activities negative impacts can be controlled and avoided or minimised. Mitigation measures will be used to manage and control any potential impact. The main impacts will include:

- Increased ambient noise levels resulting from drilling activities and increased traffic movement;
- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion which may impact on the water resources utilised by the communities and landowners;
- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning;
- Increased vehicle activity within the area resulting in potential destruction and disturbance of flora and fauna;
- Poor access control to farms may impact on cattle movement, breeding and grazing practices;
- Influx of job seekers to site may result in increased opportunistic crimes;
- Potential visual impacts by drilling activities as well as vegetation clearance;
- Prospecting will be undertaken by special sub-contractors and it is not anticipated that employment opportunities for local and/or regional communities will result from prospecting activities; and
- Short term boost for local businesses.

m)Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

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

The objectives of the EMPr will be to:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts;
- Provide sufficient information and guidance to plan the prospecting activities in a manner that will reduce impacts (social, physical and biological) as far as is practically possible;
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance; and

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

Through the implementation of the identified proposed mitigation measures, it is anticipated that the identified impacts can be managed and mitigated effectively. All the impacts were assessed to have significance ranging between medium and low without the implementation of mitigation measures. All the identified impacts will have a reduced significance of low when the mitigation measures have been implemented.

n) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

The following conditions should be included in the Environmental Authorisation:

- A minimum distance of 500 m from any dwellings or infrastructure must be kept;
- Landowners as well as land occupiers must be re-consulted at least 30 days prior to any prospecting activities undertaken on their properties;
- A map detailing the drilling locations should be submitted to the relevant landowners, the DWS and DMR prior to the commencement of the prospecting activities;
- No activities may be undertaken within 500 m of wetlands and/or within 100 m of watercourses without approval from the DWS;
- No relocation of heritage resources may be undertaken without the approval of SAHRA; and
- Heritage Impact Assessment must be undertaken where infrastructure and drilling sites will be located, prior to commencement of the prospecting activities.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The following assumptions, uncertainties and gaps are applicable to this project:

- The Stakeholder Consultation is not yet complete. The Draft BAR will be updated once the 30- day public review and comment period has lapsed. Comments from the stakeholders will be incorporated into the Final BAR to be submitted to the DMR;
- Not all landowners were consulted with in person;

- Details on the Water Use Licence requirements are not available;
- No Heritage Impact Assessment was undertaken therefore details on the SAHRA permit requirement are not available;
- No wetland delineation was undertaken;
- No detailed site layout is currently available due to the nature of the prospecting activities. The impact assessment was undertaken as a holistic assessment for the overall site.

p) Reasoned opinion as to whether the proposed activity should or should not be authorized

(i) Reasons why the activity should be authorized or not

The option of not approving the activities will result in a significant loss of valuable information regarding the mineral status (in terms of coal), present on the identified properties. In addition, should economical reserves be present and the applicant does not have the opportunity to prospect the opportunity to utilize these reserves for future phases will be lost.

According to the impact assessment undertaken for the proposed project, the impacts of the project are considered to be of medium and low significance. The significance of the impacts can be reduced to low and very low when the mitigation measures are implemented.

The project will also have positive impacts due to the employment to be created although for a short term, as well as a short boost to local businesses.

The stakeholders will also be requested for their comments. All comments to be received during Public Participation Process will be included in this BAR and EMP. These comments will be addressed the as far as possible to the satisfaction of the interested and affected parties.

The management of the impacts identified in the impact assessment for all phases of the proposed project will be undertaken through a range of programmes and plans contained in the EMP. In consideration of the layout plan and the management and mitigation measures contained within the EMP compiled for the project, which are

expected to be effectively implemented, there will be significant reduction in the significance of potential impacts.

(ii) Conditions that must be included in the authorisation

See Section 6.6 of the BAR.

q) Period for which the Environmental Authorisation is required

The prospecting right has been applied for a period of five (5) years. The Environmental Authorisation should therefore allow for 5 year of prospecting.

r) Undertaking

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

An undertaking by the EAP and the client is provided in Section 2 of the EMPr

s) Financial Provision

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

TABLE 24: THE CLOSURE COSTS WERE CALCULATED TO BE R476,400.00 AS SHOWN IN TABLE

ACIVITY	YEAR 1 Expenditure (R`)	YEAR 2 Expenditure (R`)	YEAR 3 Expenditure (R`)	YEAR 4 Expenditure (R`)	YEAR 5 Expenditure (R`)
Phase 1 (Months 0 to 12)					
Literature surveys	R 2 500.00	R1 500.00			
Desk top studies	R 10 000.00	R 5 000.00			
Geophysical or geotechnical work	R 8 000.00	R 4 000.00			
Research and target identification		R 5 000.00			
Phase 2 (Months 13 to 24)					
Invasive work such as trenching, pitting, drilling and excavations		R 40 000.00	R 20 000.00	R 10 000.00	
Sampling work		R 25 000.00	R 15 000.00	R 9 000.00	R 5 000.00
Laboratory work		R 22 800.00	R 11 200.00	R 8 800.00	R 4 800.00
Analytical and modelling work			R 40 000.00	R 20 000.00	R 7 000.00
Infill work			R 25 000.00	R 15 000.00	
Bulk sampling and testing to be carried out			R 22 800.00	R10 800.00	
Phase3 (Months 25 to 60)					
EIA and EMP for mining right application				R 40 000.00	R 20 000.00
Pre-feasibility studies				R 25 000.00	R 10 000.00
Investment decision making application for mining rights				R 22 800.00	R 10 400.00
Annual Total	R 20,500.00	R103,300.00	R 134,000.00	R161,400.00	R 57,200.00
				Total Budget	R476,400.00

(i) Explain how the aforesaid amount was derived

The financial provision for the environmental rehabilitation and closure of any mine/prospecting and its associated operations forms an integral part of the MPRDA. Sections 41 (1) and, 41 (2), 41 (3) and 45 of the MPRDA deal with the financial provision for rehabilitation and closure. During 2012, the DMR made updated rate available for the calculation of the closure costs, where contractor's costs are not available, these apply.

The "Guideline Document for the Evaluation of Financial Provision made by the Mining Industry" was developed by the DMR in January 2005 in order to empower the personnel at Regional DMR offices to review the quantum determination for the rehabilitation and closure of mining sites. With the determination of the quantum for closure, it must be assumed that the infrastructure had no salvage value (clean closure). The closure cost estimate (clean closure) was determined in accordance with the DMR guidelines.

(ii) Confirm that this amount can be provided for from operating expenditure

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

The amount required to cover the prospecting operation, including rehabilitation and closure is estimated to be R 16 250 720.00 at this stage. Ke Nyaka Bona Ka Mahlo Trading will fund the operation. The applicant hereby confirms that the amount is anticipated to be an operating cost and is provided for as such in the Prospecting Work Programme.

t) Specific Information required by the competent Authority

(i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-

(1) Impact on the socio-economic conditions of any directly affected person.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the

landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix) .

No specific report was generated for the purposes of the socio-economic conditions. Current land uses inside the prospecting area, such as farming and grazing, may be temporarily impacted through the presence of the fenced areas that drill rigs will operate within. These will however, be small areas. These areas will be rehabilitated post drilling activities and the areas will once again become available for grazing. Other potential socio-economic impacts will include:

- Nuisance noise due to on site activities and drilling;
- Poor access control resulting in impacts on cattle movement, breeding and grazing practises;
- Influx of job-seekers to site, which may result in an increase in opportunistic crime;
- Uncontrolled access to private property outside of the demarcated boundaries; and
- Visual impact as a result of the vegetation clearance.

Prospecting will be undertaken by specialist sub-contractors and it is not anticipated that employment opportunities for local and/or regional communities will result from the prospecting activities during the drilling phases.

Management and mitigation measures must be implemented to prevent environmental pollution which may impact on environmental resources utilised by communities, landowners and other stakeholders. Measures to manage the potential impacts on communities, individuals or competing land uses in close proximity include;

Noise due to construction activities and drilling:

- Directly affected and adjacent landowners and land occupiers must be informed of the planned dates of the drilling activities and a grievance lodging mechanism must be made available to the stakeholders.
- Site activities shall be concluded during daytime hours (0700 to 1730), to avoid night time noise disturbances and night time collisions with fauna.

Poor access control resulting in impacts on cattle movement, breeding and grazing practices:

- Access control procedures must be agreed on with the farm owners and all on site personnel shall be trained on these procedures.

Influx of job seekers to the site which may result in increased opportunistic crime:

- Casual labour shall not be recruited at the site. This will eliminate the incentive for people to travel to site seeking employment. Where necessary, a recruitment centre may be established in the major town areas;
- The landowners shall be notified on unauthorized persons encountered on site; and
- Where necessary, the South African Police Service (SAPS) will be notified of unauthorized persons encountered on site.

Visual Impact:

- Wet dust suppression will be undertaken to manage nuisance dust from construction vehicle movements and other construction activities as and when necessary; The portable ablution facilities and any other infrastructure will be acquired with a consideration for colour. Natural earth, green and mat black options which blend with the surrounding must be favoured;
- A waste management system will be implemented, and sufficient waste bins will be provided for on site. A fine system must be implemented to further prohibit littering and poor housekeeping practices; and
- Vegetation cover shall be used where drill rigs will be located to minimise visual impacts.

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

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

As outlined in Section d (ii) of this report, prospecting will be undertaken in phases. The first phase will be a desktop study, which will be followed by ground surveys and soil sampling.

Based on the outcome of the activities, soil sampling and drill sites will be determined. Potential heritage impacts will only occur once the drilling sites have been identified.

It is therefore recommended that the HIA be undertaken prior to the commencement of the drilling activities, and that the HIA be conducted over the identified localised drill sites and access routes, as opposed to the entire exploration area.

This recommendation will be submitted to the SAHRA for approval.

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

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

Not applicable

PART B

**ENVIRONMENTAL MANAGEMENT
PROGRAMME**

a) Details of the EAP.

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

Details of the EAP have already been included in Part A section 1(a)

b) Description of the Aspects of the Activity

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

The EAP hereby confirms that the requirement to describe the aspects of the activity that are covered by the draft Environmental Management Programme is already included in Part A, Section (1)(h) of this report as required

c) Composition Map

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

Refer to Appendix C for the composite map. The composition map covers the entire sensitive environmental site that have been identified on the proposed site.

d) Description of impact management objectives including management statements

(i) Determination of closure objectives.

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

As previously mentioned, each phase of the prospecting activities is dependent on the success of the preceding phase. Depending on the findings from Phase 1, Phase 2 will be initiated. The location and extent of the soil drill sites can therefore not be determined at this stage of the process.

The rehabilitation plan was developed on the basis that the rehabilitated areas will be made safe, stable as well as non-polluting and will be able to support self-sustaining

ecosystems, similar to surrounding natural ecosystems. To ensure that the rehabilitation plan is aligned with the closure objective, high-level risk assessment of the prospecting components was undertaken to establish the potential risks associated with therewith disturbed areas.

The closure objectives are to:

- Eliminate any safety risks associated with drill holes and sump through adequate drill hole capping and backfilling;
- Remove and/or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To establish rehabilitated areas to a state which with no susceptible to soil erosion which may result in loss of soil, pollution of water resources;
- Restore disturbed areas and re-vegetate these areas with plant species naturally occurring in the area to restore the ecological function of the affected areas as far as practicable; and
- Eliminate all alien invasive plant species from the

(ii) Volumes and rate of water use required for the operation

The rate of water use required for the operation is unknown at this stage

(iii) Has a water use licence has been applied for?

It is anticipated that discussions will be held with the DWS to determine whether or not abstraction of water will be required. Based on the outcomes of the discussions with the DWS, any potential abstraction of water due to drilling activities will be clarified. At this stage it is not anticipated that abstraction will be required. Furthermore, depending on the DWS opinion of the sampling, potentially in the river beds, Section 21 (c) and (i) WUL may be required. This will also be clarified with the DWS. Should it be deemed necessary, on instruction by the DWS, the applicant will submit a water use licence application.

iv) Impacts to be mitigated in their respective phases

TABLE 25: MEASURE TO REHABILITATE THE ENVIRONMENTAL AFFECTED BY THE UNDERTAKING OF ANY LISTED ACTIVITY

ACTIVITIES (E.g. For prospecting- drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc..... etc....etc.	PHASE (of operation in which activity will take place. State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m2)	MITIGATION MEASURES (describe how each of the recommendation in herein will remedy the cause of pollution or degradation and migration of pollutant)	COMPLIANCE WITH STANDARD (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented when required. With regards to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting the case may be
E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, road, pipelines, power					

lines, conveyors, etc....etc...etc)					
<p>Site Establishment and clearing of vegetation (which includes site preparation and preparation and upgrade of access roads)</p> <ul style="list-style-type: none"> - Vegetation clearance - Topsoil stripping and stockpiling - Access roads - Site camp - Temporal portable toilets - Ablution facilities - Equipment storage - Temporal Site offices - Waste management <p><u>Drilling</u></p>	Pre-construction phase, Construction Phase and Operational Phase	0.2 Ha per drill site	<ul style="list-style-type: none"> • Vegetation clearance should be limited to the authorised directional drilling footprint only. • At all vertical borehole positions the footprint will be cleared by mowing the sections. No stripping of topsoil or clearing of vegetation will be required. • Dust will be suppressed at all times. Dust nuisance will be assessed visually, and complaints assessed and addressed. • All designated footprint areas will be secured and demarcated at all times while in use. • All areas outside of the authorised footprint should be regarded as no-go areas for any staff members. • Vegetation clearing shall only take place when the individual site is to commence with vertical drilling works, in order to retain vegetation cover for as long as possible. This would reduce the size of areas where 	<ul style="list-style-type: none"> ➤ All the recommendation and mitigation measures will ensure the preservation of top soli from erosion in order for it be used for rehabilitation and assist in reducing any environmental degradation to air quality or damage on heritage ➤ Heritage Act 	During the Pre-construction phase, operational phase and decommissioning phase

<ul style="list-style-type: none"> - Drill maintenance - Sample storage - Access roads - Waste Management - Drilling 			<p>dust can be generated and avoid erosion limiting the exposure of sediment runoff.</p> <ul style="list-style-type: none"> • Site clearance will encourage the introduction of alien invasive plant species. During site establishment it will be ensure that the area cleared is free of alien plants propagating at all times. <ul style="list-style-type: none"> • Undertake heritage study to survey the site activities to identify heritage features • A buffer zone of 50m from the heritage features should be maintained • Should archaeological features be uncovered during construction, work must be halted immediately • Old burial grounds (if found) will be reported to the ECO who will advise the contractor as to the mode of action, which will include informing either South Africa Heritage 		
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			Resources (SAHRA)	Agency		
	Pre-construction phase, construction phase and Operational phase	0.2 Ha	<p>All sites disturbed by construction activities must be monitored for exotic or alien invasive plant species and weeds.</p> <ul style="list-style-type: none"> • Chemical or mechanical removal may be used. If chemical methods are used the method of use is to be undertaken in accordance with manufacturer's specification for the weeds and this method and management is to be approved by the EP. • Any eradicated exotic/invasive plant or weed vegetation must be removed from site and disposed of at an approved waste disposal facility or dried out and then burned, any method can be used to dispose of the alien invasive plants as long as it is within the law and the plants have no possibility of propagating. • During the process of stripping topsoil care should be 			During construction, Pre-construction, Construction and operational phase

		0.2Ha	<p>taken to ensure that no topsoil is contaminated with oil and grease, foreign material or alien plants. The topsoil will be stored in a manner that will prevent any loss of topsoil via the natural elements. Topsoil is not to be double handled, it is to be stripped, stockpiled then once the area has been prepared for rehabilitation, the topsoil is will be replaced in its original position. The topsoil will be hand seeded with an indigenous Highveld grass seeds mix, approved by the Environmental Officer if more than 30% bare ground is seen after one rainy season.</p> <ul style="list-style-type: none"> • Alien Plant monitoring and eradication schedule will be implemented from the onset of construction and operation 		
	Pre-Construction phase, Construction phase and operational phase	0.2 Ha	<ul style="list-style-type: none"> • The drilling rig and other visible items on the proposed site will be located in consultation with the land owner • noise generation will be limited to working hours 	<ul style="list-style-type: none"> • SANS 10103 guideline 	Before and during drilling activities

			<p>08.00-17.00 and no equipment will be use during public holiday, Saturday and Sunday</p> <ul style="list-style-type: none"> • 500m buffer between the drilling site and dwellings will be maintained • Underneath the drill rig or any equipment or machine with a potential oil spillage shall be covered with a plastic material that will prevent soil and water contamination • Control through management and monitoring of spillage. Where spillages occur, the soil must be stripped and disposed 		
	Construction and operational phase	0.2 Ha	All operation will be carried out under the guidance of a qualified and experienced manager with proven skills in public consultation and conflict resolution, including environmental coordinator where applicable		

Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph);

TABLE 26: IMPACT MANAGEMENT OUTCOMES

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Data Collection and Assessment	Desktop Study	None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Geological Mapping		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	N/A
Planning for Drilling Surveys		None	N/A	Planning	N/A	Control potential deviations from the approved EMPr through the effective implementation of	N/A

						the data acquisition and desktop study.	
Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Soils, Land capability and Land use	Construction	Low	Rehabilitation of areas cleared of vegetation and dust control	Low
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Groundwater	Construction	Medium to Low	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMP.	Low
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Surface water	Construction	Medium to Low	Monitoring through rehabilitation and management of spoil sites	Low
Fence		Wetland contamination, destruction and loss of habitat	Wetlands and aquatic ecosystems	Construction	Medium to Low	Control of access to wetland areas and within the regulated 500 m buffer.	Low
Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Heritage and archaeological resources	Construction	Low	Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low

Mobile office		Destruction of fossils	Palaeontological resources	Construction	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
Ablution Facility		Loss of natural vegetation in the affected areas	Flora	Construction	Low	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	Low
		Migration of fauna due to disturbance caused by the proposed project	Fauna	Construction	Low	Relocation of affected species of conservation importance	Low
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles and machinery.	Air quality	Construction	Low	Dust control measures	Low
		Increase in ambient noise due to movement of construction vehicles and machinery	Noise	Construction	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers Control through the limiting of the activities to	Low

						the day time and the implementation of an open and transparent channel of communication	
		Visual impacts as a result of vegetation clearance	Visual	Construction	Low	Rehabilitation of areas cleared of vegetation	Low
		Increased traffic on the roads due to additional construction vehicles	Traffic, Socio-economic	Construction	Medium to Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Climate Change	Construction	Low	Control and keep to a minimal the number of vehicles used for construction. Vehicles must be maintained to ensure efficient use of fuel.	Low
RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant will make use of qualified contractors	Socio-Economic	Operation	Low	Control of times during which operation activities will take place	Low

		for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners					
Core Drilling		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from vehicles and machinery. This will result in the contamination of soils and groundwater. The prospecting operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield to the surrounding groundwater	Groundwater	Operation	Low	Rehabilitation of affected areas and control using bunds	Low

		users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.					
Soil Sampling		Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings, should spillage occur. The sedimentation and possible contamination with carbonaceous material will have negative impacts on the water quality due to increase turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.	Surface Water	Operation	Low	Control through management and monitoring of surface runoff	Low
			Wetlands	Operation	Medium to Low	Avoidance of wetland and riparian areas	Low

			Flora	Operation	Low	Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.	Low
			Fauna	Operation	Low	Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes. Drill holes must be permanently capped as soon as is practicable	Low
		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will contain carbonaceous material,	Soils Land use and Land Capability	Operation	Low	Rehabilitation of affected areas	Low

		which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable after backfilling operation.					
		The movement of vehicles and drilling machinery will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.	Air Quality	Operation	Medium to Low	Dust control measures	Low
		The drill rigs and towers used during the drilling operation phase will be	Visual	Operation	Medium to Low	Strategic location of rigs and towers to areas where there may be some tree cover, as far as	Low

		visible from nearby locations, and will have visual impact on the local communities in close proximity to the prospecting area.				practicable	
		The drilling operations may result in the destruction of graves and other heritage resources	Heritage Resources	Operation	Low	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Low
		Earth moving activities may result in the destruction of fossils (if any).	Palaeontological Resources	Operation	Low	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	Low
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in an increase in noise in the vicinity of	Noise	Operation	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers	Low

		the project.					
		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Traffic	Operation	Low	Speed control and limitation of the times when construction vehicles may be on the roads	Low
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Climate	Operation	Low	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.	Low
		Drilling ground vibrations may result in possible damage to infrastructure.	Drilling and Vibrations	Operation	Low	Drill sites must be located as far from infrastructure as is possible to avoid damage to infrastructure	Low
Data Analysis	Feasibility Studies	None	N/A	Operation	N/A	N/A	N/A
Feasibility Studies Report		None	N/A	Operation	N/A	N/A	N/A
Borehole capping	Closure and Rehabilitation of borehole and infrastructure sites	The removal of the campsite equipment and the rehabilitation of the drilling sites and associated access infrastructure will result in the	Soils, Land Capability and Land Use	Decommissioning and Closure	N/A	N/A	N/A

		affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.					
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Decommissioning and Closure	N/A	N/A	N/A
		The use of vehicles/machinery during the rehabilitation of the exploration sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.	Soils and Vegetation	Decommissioning and Closure	Low	Control and prohibit access of vehicles and machinery to areas outside of established access tracks Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system.	Low

						Control through the implementation of a soil management programme in terms of the correct topsoil removal, stockpiling and rehabilitation practices as discussed in the EMPr.	
		During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, topsoiled and the area re-seeded. During the process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.	Surface Water	Decommissioning and Closure	Medium to Low	Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.	Low

		Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.	Air Quality	Decommissioning and Closure	Low	Dust control measures and rehabilitation of areas stripped of vegetation	Low
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Noise	Decommissioning and Closure	Low	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies e.g. noise mufflers	Low

F) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

NAME OF ACTIVITY		POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Data Collection and Assessment	Desktop Study	None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	N/A
Geological Mapping		None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	N/A
Planning for Drilling Surveys		None	Control potential deviations from the approved EMPr through the effective implementation of the data acquisition and desktop study.	Planning	

Access Roads	Establishment of access roads, campsite, physical surveying of the site and pegging of drilling boreholes	Loss of soils, erosion of the soils and impacts on landowners' livelihood.	Rehabilitation of areas cleared of vegetation and dust control	Pre-construction , construction phase and operational phase	
Drill Sites		Contamination of groundwater from hydrocarbon spillages	Control through management and monitoring of spillages. Where spillages occur, the soil must be stripped and disposed of as stipulated in the EMPr.	Pre-construction phase and operational phase	
Temporary Soil Storage Area		Contamination of surface water due to erosion of soils which will lead to increased turbidity as well as contamination from hydrocarbon spillages	Monitoring through rehabilitation and management of spoil sites	Construction phase	
Fence		Wetland contamination, destruction and loss of habitat	Control of access to wetland areas and within the regulated 500 m buffer.	During the site establishment, construction phase and operational phase	
Hydrocarbon storage area		Destruction of graves and cultural heritage sites	Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites	Pre- construction, construction and operation phase	

Mobile office		Destruction of fossils	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified	During drilling activities	
Ablution Facility		Loss of natural vegetation in the affected areas	Rehabilitation of areas cleared of vegetation. Control of alien invasive plant species	During drilling and decommission phase	
		Migration of fauna due to disturbance caused by the proposed project	Relocation of affected species of conservation importance	Pre- construction, construction and operational phase	
		Air pollution through nuisance dust, PM 10 and PM2.5 as well as emissions from construction vehicles and machinery.	Dust control measures		
		Increase in ambient noise due to movement of construction vehicles and machinery	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers Control through the limiting of the activities to the day time and the implementation of an open		

			and transparent channel of communication		
		Visual impacts as a result of vegetation clearance	Rehabilitation of areas cleared of vegetation		
		Increased traffic on the roads due to additional construction vehicles	Speed control and limitation of the times when construction vehicles may be on the roads		
		Impact of carbon dioxide (GHG) produced by construction vehicles on the local climate	Control and keep to a minimal the number of vehicles used for construction. Vehicles must be maintained to ensure efficient use of fuel.		
RC Drilling	Drilling and Soil Sampling	It is expected that during the operation phase the project will not result in the creation of employment as prospecting requires highly specialised personnel. The applicant will make use of qualified contractors	Control of times during which operation activities will take place		

		for the drilling and sampling of the sites. The community will however continue to benefit as a result of the continued boost in small local businesses. Drilling has potential to affect the day to day operations by affected landowners			
Core Drilling		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from vehicles and machinery. This will result in the contamination of soils and groundwater. The prospecting	Rehabilitation of affected areas and control using bunds		

		<p>operations will require the drilling of boreholes, which may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling boreholes may leach pollutants, which will result in the contamination of surrounding groundwater regime. This may spread beyond the backfilling site via plume migration.</p>			
Soil Sampling		<p>Drilling operations may result in the generation of surface water runoff contaminated with drill muds and cuttings, should spillage occur. The</p>	Control through management and monitoring of surface runoff		

		sedimentation and possible contamination with carbonaceous material will have negative impacts on the water quality due to increase turbidity and an increase in acidity of the water in the streams. This will have an impact on aquatic habitats.			
			Avoidance of wetland and riparian areas		
			Rehabilitation of affected areas Monitoring of rehabilitated areas to ensure success.		
			Rehabilitation of affected areas Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes.		

			Drill holes must be permanently capped as soon as is practicable		
		The use of vehicles during the drilling of the exploration boreholes may result in the spillages of hydrocarbons from the vehicles and machinery. This will result in the contamination of soils. The materials removed from the drilling sites will contain carbonaceous material, which has potential for contamination should it not be managed properly. The material from the drilling site may result in the contamination of soils, which may render the land not usable	Rehabilitation of affected areas		

		after backfilling operation.			
		The movement of vehicles and drilling machinery will likely result in an increase in nuisance dust, PM10 and PM2.5. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It in the reduction in nuisance dust.	Dust control measures		
		The drill rigs and towers used during the drilling operation phase will be visible from nearby locations, and will have visual impact on the local	Strategic location of rigs and towers to areas where there may be some tree cover, as far as practicable		

		communities in close proximity to the prospecting area.			
		The drilling operations may result in the destruction of graves and other heritage resources	Operation Low Control through clear demarcation of prospecting areas to ensure avoidance of graves and other heritage sites		
		Earth moving activities may result in the destruction of fossils (if any).	Management of drill sites. Should any fossils be discovered, operations must cease and SAHRA must be notified		
		The use of vehicles and machinery may result in an increase in noise in the immediate vicinity of the project. The drilling activities will also result in an increase in noise in the vicinity of the project.	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies eg noise mufflers		

		The movement of vehicles in the project area will result in an increase in traffic on the roads.	Speed control and limitation of the times when construction vehicles may be on the roads		
		The movement of vehicles and machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area.	Control and keep to a minimal the number of vehicles used for operations. Vehicles must be maintained to ensure efficient use of fuel.		
		Drilling ground vibrations may result in possible damage to infrastructure.	Drill sites must be located as far from infrastructure as is possible to avoid damage to infrastructure		
Data Analysis	Feasibility Studies	None	N/A		
Feasibility Studies Report		None	N/A		
Borehole capping	Closure and Rehabilitation of borehole and	The removal of the campsite equipment and the rehabilitation of	N/A		

	infrastructure sites	the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.			
Removal of equipment and infrastructure		Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	N/A		
		The use of vehicles/machinery during the rehabilitation of the exploration	Control and prohibit access of vehicles and machinery to areas outside of established access tracks		

		<p>sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.</p>	<p>Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of a soil management programme in terms of the correct tops oil removal, stockpiling and rehabilitation practices as discussed in the EMPr.</p>		
		<p>During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, top soiled and the area re-seeded. During the</p>	<p>Control through the clear delineation of the prospecting area. Control through the implementation of environmental induction and toolbox talks, as well as the implementation of a fine system. Control through the implementation of the NWA GN 704 water management principles.</p>		

		process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.			
		Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant	Dust control measures and rehabilitation of areas stripped of vegetation		

		wind direction and may settle on surrounding properties including nearby vegetation.			
		Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived	Management and maintenance of construction vehicles. Management through the use of noise dissipating technologies e.g. noise mufflers		

i) Financial Provision

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the regulation

The main closure objective is to ensure that the site is left close as possible to the pre-prospecting state after completion of the borehole drilling activities. Each phase of the prospecting activities is dependent on the success of the preceding phase. Depending on the outcome of the Desktop and geological mapping phase, the prospecting drilling will be initiated. The location and extent of the drill and infrastructure sites cannot be determined at this stage. Mapping of the actual prospecting activities cannot be undertaken. The rehabilitation plan was developed on the basis that the rehabilitated areas will be left safe, stable, non-polluting and able to support a self-sustaining ecosystem similar to the surrounding natural environment. To ensure that the rehabilitation plan is aligned with the closure objective, a high-level risk assessment of the prospecting components was undertaken to establish the potential risks associated therewith.

The following rehabilitation specification designed to meet closure objectives are to:

- Eliminate any safety risks associated with drill hole and sumps through adequate drill hole capping and backfilling;
- Rehabilitation would be undertaken in a phased manner after the completion of prospecting activities
- Remove and/or rehabilitate all pollution and pollution sources such as waste materials and spills;
- To establish a rehabilitated area that is not susceptible to soil erosion which may result in the loss of soil, degradation of water resources and aquatic environments;
- Restore disturbed areas and re-vegetate these areas with plant species naturally occurring the area to restore the ecological function of such areas, as far as is practicable; and to eradicate all alien invasive plant species that may colonise the areas that have been cleared of vegetation.

(b) Confirm specifically that the environmental objectives in relations to closure have been consulted with landowner and interested and affected parties.

Land owners will be consulted with regard to closure plan, the rehabilitation plan is

attached in Appendix D. Comments on the closure and rehabilitation will be expected from landowners and I&As after the review of the DBAR. The comments that will be received will be updated on the final BAR and EMP report. All the issues raised by the I&As will be incorporated in the final BAR

(c) Provide a rehabilitation plan that describes and shows the scale an aerial extent of the main mining activities including the anticipated mining area at the time of closure

Rehabilitation Plan is attached in Appendix D

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

Care and adherence to environmental issues is a priority (please see Rehabilitation Plan attached in Appendix D)

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

The financial provision for the environmental rehabilitation and closure of any mine/prospecting and its associated operations forms an integral part of the MPRDA. Section 41 (1) and 41(3) and 45 of the MPRDA deal with the financial provision for rehabilitation and closure. During 2012, the DMR made updated rate available for the calculation of the closure costs, where contractor's costs are not available these apply

The Guideline document for the evaluation of financial provision made by the Mining Industry was developed by the DMR in January 2005 in order to empower the personnel at Regional DMR offices to review the quantum determination for the rehabilitation and closure for mining sites.

With the determination of the quantum closure, it must be assumed that the infrastructure had no salvage value (clean closure). The closure costs were calculated to be R

(f) Confirm that the financial provision will be provided as determined.

ACTIVITY	YEAR 1 Expenditure (R`)	YEAR 2 Expenditure (R`)	YEAR 3 Expenditure (R`)	YEAR 4 Expenditure (R`)	YEAR 5 Expenditure (R`)
Phase 1 (Months 0 to 12)					
Literature surveys	R 2 500.00	R1 500.00			
Desk top studies	R 10 000.00	R 5 000.00			
Geophysical or geotechnical work	R 8 000.00	R 4 000.00			
Research and target		R 5 000.00			
Phase 2 (Months 13 to 24)					
Invasive work such as trenching, pitting, drilling and Sampling work		R 40 000.00	R 20 000.00	R 10 000.00	
Laboratory work		R 25 000.00	R 15 000.00	R 9 000.00	R 5 000.00
		R 22 800.00	R 11 200.00	R 8 800.00	R 4 800.00
Analytical and modelling work			R 40 000.00	R 20 000.00	R 7 000.00
Infill work			R 25 000.00	R 15 000.00	
Bulk sampling and testing to be carried out			R 22 800.00	R10 800.00	
Phase3 (Months 25 to 60)					
EIA and EMP for mining right application				R 40 000.00	R 20 000.00
Pre-feasibility studies				R 25 000.00	R 10 000.00
Investment decision making application for mining rights				R 22 800.00	R 10 400.00
Annual Total	R 20,500.00	R103,300.00	R 134,000.00	R161,400.00	R 57,200.00
				Total Budget	R476,400.00

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon including

- g) Monitoring of impact Management Actions**
- h) Monitoring and reporting frequency**
- i) Responsible persons**
- j) Time period for implementing impact management actions**
- k) Mechanism for monitoring compliance**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Prospecting activities	All commitments that are in the BAR and EMP	Ensure that the commitment made within the approved EMP and BAR are being adhere to.	The Environmental control officer (ECO) the independent EAP	Submission of Environmental audit report at the DMR every 2 weeks
Drilling activities	<ul style="list-style-type: none"> - Cultural and Heritage resource - Dust fall - Noise - Soil and Vegetation - Soil, ground water and 	<ul style="list-style-type: none"> - Ensure that the site is proper surveyed for any cultural/ heritage artifacts that might be found on site and if any are found SAHRA must be contacted 	Appointed drilling contractor	Everyday inspection on site

	<p>surface water</p> <ul style="list-style-type: none"> - Social - Visual - Maintenance 	<ul style="list-style-type: none"> - The liberation of dust into the surrounding environment shall be effectively controlled by the use of, water spraying. - The speed of trucks and other vehicles must be strictly being controlled to avoid dangerous conditions, excessive dust or deterioration of the road being used. - Construction and other noise generating activities should be restricted to between 07h00 and 17h00 Monday to Friday, unless otherwise approved by the appropriate competent person in consultation with adjacent 		
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		<p>landowners/affected persons and ECO.</p> <ul style="list-style-type: none"> - During the operational phase all activities must take place in a manner that will allow as little noise as possible. - Activities, which are deemed to generate high levels of noise, will be restricted to normal working hours. - Submission of an operational plan for the construction phase indicating technical and management measures to prevent soil erosion. - Stock piled topsoil should not be compacted and should be replaced as final soil layer. 		
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		<ul style="list-style-type: none"> - Soil should be exposed for the minimum time possible once cleared of vegetation, i.e. the timing of clearing and grubbing should be co-ordinate as much as possible to avoid prolonged exposure of soils to wind and water erosion. - The A-horizon will be removed and used for rehabilitation purposes. The lower soil horizons will be used for construction activities. The A-horizon will be stockpiled in a responsible manner and 		
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		<p>replaced during rehabilitation.</p> <ul style="list-style-type: none"> - Ground water quality within 500m from drills will be monitored - Manage through the EMPr and develop a groundwater management programme. - Collection of baseline hydrochemistry samples for analysis 		
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I) Indicate the frequency of the submission of the performance assessment/ environmental audit report

Annual environmental audits must be undertaken to ensure compliance with the EMPr and EA. The environmental audit reports must also include the financial provision. The reports must be submitted to the DMR

(m) Environmental Awareness Plan

1) MANNER IN WHICH THE APPLICANT INTENDS TO INFORM HIS OR HER EMPLOYEES OF ANY ENVIRONMENTAL RISK WHICH MAY RESULT FROM THEIR WORK.

Before the proposed project of prospecting commence, all the employees whom will be responsible for identifying environmental risks will go to training to get the insight information on how they will compile environmental risk study. It is a standard practice for all employees to attend induction training where environmental course will be explained in more detail related to the project. The training should cover the relevant part of the EMP which is formed as a guide to contractors and employees regarding environmental related issues and how to mitigate such issues

2) MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT.

The Following Documents Will Be Used As Reference For Identifying And Managing Impacts:

- Approved Empr;
- Approved EA; And
- EMS.

The Applicant (Ke Nyaka Go Bona Ka Mahlo Trading) and contractors will be responsible for the implementation section 28 of NEMA at all times “duty of care” to mitigate any impacts in order to avoid pollution or degradation of the environment. appropriate implementation of the recommended mitigation measures specified in the EMPr will be monitored through monthly site audits by an EAP and annual EMP audits undertaken by a third party.

O) Specific information required by the Competent Authority

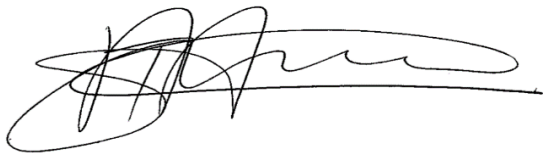
No specific information was required by the competent authority

N) UNDERTAKING

The EAP herewith confirms

- a) The correctness of the information provided in the reports ☒
- b) The inclusion of comments and inputs from stakeholders and I&APs ☒
- c) The inclusion of inputs and recommendations from the specialist reports where relevant ☒
- d) That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein ☒

TSHIA MALEHASE



Signature of the Environmental Impact Practitioner

BASIA ENVIRONMNETAL CONSULTING

Name of Company

2019/01/14

Date

APPENDIX A (EAP CV)

APPENDIX B (PUBLIC CONSULTATION REPORT)

APPENDIX C (SITE MAPS)

APPENDIX A (REHABILITATION PLAN)