ENVIRONMENTAL & ENGINEERING

REPORT

DIEPSOILS INVESTMENTS (PTY) LTD

DRAFT REPORT

BASIC ASSESSMENT REPORT FOR PROSPECTING RIGHT APPLICATION – MP 30/5/1/1/2/17030PR

PROSPECTING RIGHT APPLICATION FOR COAL IN RESPECT OF PORTION 8 OF THE FARM BANKPAN 225 IS IN THE GERT SIBANDE DISTRICT MUNICIPALITY AND MSUKALIKWA LOCAL MUNICIPALITY, MPUMALANGA PROVINCE

VERSION BB

DATE: 14/04/2022

Document and Quality Control:

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AA – draft	12/04/2022	Kelebone Sekonyela		First draft for review / comments
BB – draft	13/04/2022	Riana Panaino		Technical Review
CC– draft	13/04/2022	Leoni le Roux		Quality review
Approved for Distribution:				
0.0		Riana Panaino		Final report

Quality Control by:

Nature of Signoff:	Responsible Person:	Role / Responsibility	Qualification
Author	Kelebone Sekonyela	Environmental Assessment Practitioner	MSc Environmental Management
Technical Reviewer	Riana Panaino	Environmental Assessment Practitioner	BSc Honns Biodiversity and Conservation
Technical Reviewer	Vernon Siemelink	Environmental Assessment Practitioner	M(EnvMan) UP – Senior Environmental Consultant
Quality Reviewer	Leoni le Roux	Project Administration	Professional Secretary and Personal Assistant

DISCLAIMER:

This is a legally binding document and many of the actions and recommendations remain the responsibility of the client (as the owner/lessee of the property).

EAP - was independent and performed the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application; have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity; ensure compliance with these Regulations;

Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing-

The findings, results, observations, conclusions and recommendations provided in this report are based solely on the information provided to Eco Elementum (Pty) Ltd by the Client and other external sources (including previous site investigation data and external scientific studies). The opinions expressed herein apply to the site conditions and features which existed at the time of commencement of the investigations and production of this report.

The author has utilised his/her best scientific and professional knowledge in preparing this report and the content herein contained is and remains confidential in nature, save where otherwise ordered by a Court of law.

Whilst Eco Elementum (Pty) Ltd exercises due care and diligence in rendering the services and preparing this report, the accuracy of the content herein contained is reliant on the accuracy, correctness, and completeness of information and/or data supplied to it by the Client. In this regard, Eco Elementum (Pty) Ltd accepts no liability for any loss and/or damages arising out of the inaccuracy of this report in instances where the information and/or data provided to it by the Client is found to be inaccurate, incorrect and/or incomplete.

EXECUTIVE SUMMARY

BACKGROUND

Diepsoils Investments (Pty) Ltd (the applicant) applied for a prospecting right for coal to the Regional Department of Mineral Resources & Energy ("DMRE" Mpumalanga) in respect of portion of 8 of the farm Bankpan 225 IS situated in the Gert Sibande District Municipality and Msukalikwa Local Municipality, Mpumalanga Province. The proposed project aims to determine if economically viable mineral deposits exist within the application area. In order to undertake prospecting activities Diepsoils Investments requires a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act (MPRDA, Act No.28 of 2002). The Applicant is also required to obtain an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998) which involves the submission of a Basic Assessment Report (BAR).

Eco Elementum (Pty) Ltd (EcoElementum) has been appointed by Diepsoils Investments to compile the BAR (this report) in support of the Prospecting Right application.

Table 1: Basic Assessment Timeline followed

Date	Basic Assessment timeline
N/A	Prospecting Right Application on SAMRAD.
08/03/2022	Acceptance received from DMRE.
15/04/2022	Advert Placed in Ridge Time's Newspaper.
14/04/2022	Interested and Affected Parties notified via email and SMS.
14/04/2022 to 19/05/2022	30-day Public Participation started for the NEMA Basic Assessment Process
27/05/2022	Submission of the final Basic Assessment Report.

The obtaining of a prospecting right from the Department of Mineral Resources & Energy is governed by the Mineral and Petroleum Resources Development Act (MPRDA, no 28 of 2002). The MPRDA requires compliance with related legislation, specifically the National Environmental Management Act of 1998. This Basic Assessment Report includes, amongst others, the following information as required in terms of the MPRDA:

- A description of the environment likely to be affected by the proposed prospecting activities;
- An assessment of potential impacts on the environment, socio-economic conditions, as well as cultural and heritage aspects;
- A summary of the potential significance of identified impacts;
- Proposed mitigation and management measures to minimise adverse impacts and to optimise benefits; and
- Planned monitoring and performance assessment of the EMP and Rehabilitation measures of areas disturbed during prospecting.

PROJECT SCHEDULE

The BA process should be undertaken for project activities that are included under Listing Notices 1 and 3. Impacts of these activities are more generally known and can often be mitigated or easily managed. The BA process is generally shorter and less onerous than the S&EIR process. The BA process must follow the procedure as prescribed in Regulations 19 to 20. The following diagram outlines the steps that should be followed in undertaking a BA process. Once approved and based on the basic assessment process timeline. The prospecting can take one to three years. Then, after prospecting the mining right application process is another 300 days before the mining right application is approved or not approved.

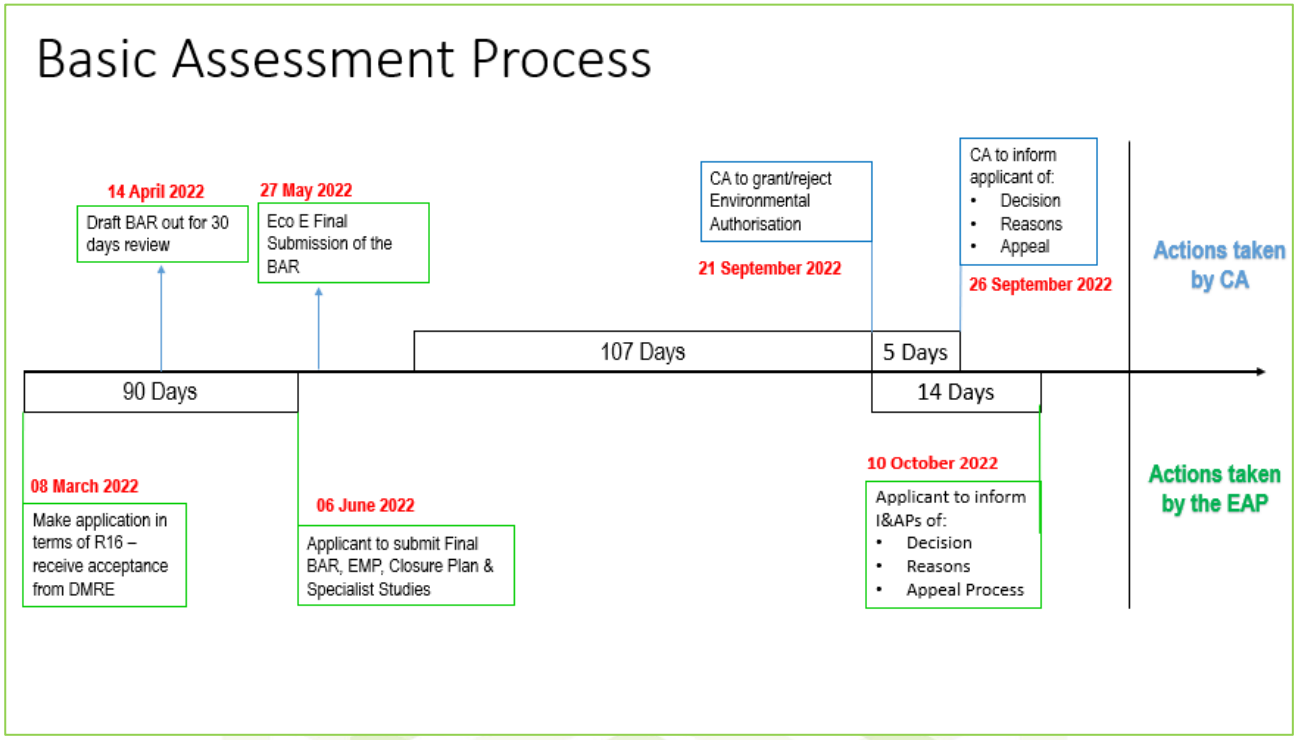

Figure 1: Basic Assessment Process- Timeline

REGISTERED LANDOWNER

The registered owners of the farms were listed as follows:

Table 2: Directly affected landowners

Landowner	Farm Portion
EDMAR FARMS CC	Portion 8 of the farm Bankpan IS

Adjacent landowners are listed below:

Landowner	Farm Portion
M L G W VAN DER MERWE FAMILIE TRUST	Portion 1 of the farm Bankpan 225 IS
VAN DER MERWE LODEWYK JOHANNES	Portion 10 of the farm Bankpan 225 IS
TOTAL COAL SOUTH AFRICA PTY LTD	Portion 14 of the farm Bankpan 225 IS
No information available on Windeed.	23 of the farm Bankpan 225 IS
No information available on Windeed	25 of the farm Bankpan 225 IS
RUBIN HIRSCHOWITZ TRUST	RE/8Kalabasfontein 232 IS

Landowner	Farm Portion
No information available on Windeed	25 Kalabasfontein 232 IS

PROJECT DESCRIPTION

Table 3: Project description

Item	Detail
Type of mineral	Coal
Prospecting method	Diamond drilling to test defined targets. Geotechnical drilling of 10 boreholes to an average depth of 100 - 150 meters.
Depth of the mineral below surface	To be established.
Geological formation	Ermelo Coalfield - Vryheid Formation (Ecca).
Prospecting Right Size	425 hectares (ha).
Mineral Reserve	To be established.
Prospecting Right Properties	Portion of 8 of the farm Bankpan 225 IS Situated in the Gert Sibande District Municipality and Msukalikwa Local Municipality, Mpumalanga Province of South Africa.
Property Applicable to current application (SG Codes)	T0IS00000000022500008
Existing Authorisations	N/A
Life of mine	N/A

LOCATION

Bethal is located roughly 20 km to the southwest of the proposed prospecting area, while Hendrina is located 19 km to the northeast and Kriel 33 km to the west. The demarcated farm portion falls within the Msukaligwa Local Municipality and the Gert Sibande District Municipality in the Mpumalanga Province. The R38 primary road runs in a northeast-southwest direction and intersects the Portion 8 near the south-eastern corner, while a railway line and power line runs along the southern border of the demarcated land parcel. The study area falls within in the B11A quaternary catchment of the Olifants Water Management Area.

PUBLIC PARTICIPATION PROCESS FOLLOWED & OUTCOME OF CONSULTATION

Section 41 of NEMA Regulation 982 set out the Legal and Regulatory Requirement for Public Participation. The Public Participation Process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process has been followed at all times and is based on reciprocal dissemination of information. The following will be undertaken during the PPP:

1. Identification of Interested and Affected Parties (IAPs);
2. Notification of IAPs regarding the proposed project;
3. A public information meeting;

4. Gathering comments, issues and concerns from IAPs;
5. Responding to IAP comments, issues and concerns;
6. Compilation and submission of results of consultation report to the DMRE; and
7. Providing IAPs with the opportunity to review and comment on the basic assessment report.

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Definition of Terms

Audit	a systematic, independent, and documented review of operations and practises to ensure that relevant requirements are met. Qualified professionals with relevant auditing experience should conduct audits and, where possible, independent external auditors should also be used.
Borehole	is a narrow shaft bored in the ground, either vertically or horizontally. A borehole may be constructed for many different purposes, including the extraction of water or other liquid (such as petroleum) or gases (such as natural gas), as part of a geotechnical investigation, environmental site assessment, mineral exploration, temperature measurement, as a pilot hole for installing piers or underground utilities, for geothermal installations, or for underground storage of unwanted substances, e.g. in Carbon capture and storage.
Clean Water	clean water is any water that has maintained the chemical, physical, and biological integrity of the waters by preventing point and nonpoint pollution sources.
Compliant	a full achievement of the performance requirement of a particular condition of the license or programme
Conservation	in relation to a water resource means the efficient use and saving of water, achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing;
Construction	the time period that corresponds to any event, process, or activity that occurs during the Construction phase (e.g., building of site, buildings, and processing units) of the proposed project. This phase terminates when the project goes into full operation or use.
Corrective Action Plan	an action plan developed by the proponent, contractor, or facility owner and approved by the external auditor that describes how the contractor or facility owner intends to resolve the non-conforming item. The Corrective Action Plan should be specific, measurable, achievable, realistic, and timely.
Director-General	means the Director-General of the Department;
Effluent	is defined by the United States Environmental Protection Agency as “wastewater - treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally, refers to wastes discharged into surface waters”. The Compact Oxford English Dictionary defines effluent as “liquid waste or sewage discharged into a river or the sea”. Effluent in the artificial sense is in general considered to be water pollution.
Environmental Audit Report	a summary report prepared after an environmental audit that describes the attributes of the audit and the audit findings and conclusions.
Environmental Authorisation	is an environmental authorisation issued by a state department.
Environmental Component	an attribute or constituent of the environment (i.e., air quality; marine water; waste management; geology, seismicity, soil, and groundwater; marine ecology; terrestrial ecology, noise, traffic, socio-economic) that may be impacted by the proposed project.
Environmental Impact	a positive or negative condition that occurs to an environmental component as a result of the activity of a project or facility. This impact can be directly or indirectly caused by the project’s different phases (i.e., Construction, Operation, and Decommissioning).
Groundwater	is the water located beneath the earth's surface in soil pore spaces and in the fractures of rock formations. A unit of rock or an unconsolidated deposit is called an aquifer when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table. Groundwater is recharged from, and eventually flows to, the surface naturally; natural discharge often occurs at springs and seeps, and can form oases or wetlands
Non-conformance	constitutes a non-compliance, or an action plan or initial actions taken without tangible deliverables. Non-conformance may also be associated with activities breaching legislation. Non-Conformance findings therefore have a high priority and mitigation measures are mandatory.
Operation	the time period that corresponds to any event, process, or activity that occurs during the Operation (i.e., fully functioning) phase of the proposed project or development. (The Operation phase follows the Construction phase, and then terminates when the project or development goes into the Decommissioning phase.)
Partially Compliant	achievement with shortcomings (such as documented proof and or work in progress) and achievement where there is an obvious shortcoming in the delivery of the performance requirement.
Pollution	is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point source or nonpoint source pollution.
Protection	in relation to a water resource, means - (a) Maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way; (b) Prevention of the degradation of the water resource; and (c) the rehabilitation of the water resource;
Proponent	the person, company, or agency that is the primary responsible party for a development project and that is the permit applicant/holder for the project.
Rehabilitation	is the act of restoring something to its original state;
Responsible Authority	in relation to a specific power or duty in respect of water uses, means - (a) if that power or duty has been assigned by the Minister to a catchment management agency, that catchment management agency; or (b) if that power or duty has not been so assigned, the Minister;
Water Resource	includes a watercourse, surface water, estuary, or aquifer;

Wetland	means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

Abbreviations

CARA:	Conservation of Agricultural Resources Act, 43 of 1983
DEA:	Department of Environmental Affairs (The former Department of Environmental Affairs and Tourism)
DMRE:	The Department of Mineral Resources (The former Department of Minerals and Energy)
DWA:	Department of Water Affairs (Is now referred to the Department of Water and Sanitation – DWS)
EA:	Environmental Authorisation
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
ELCA:	Environmental Legal Compliance Assessment
EMP:	Environmental Management Plan
EMPPA:	Environmental Management Programme Performance Assessment
EMPR :	Environnemental Management Programme
EMS:	Environnemental Management System
GM:	General Manager
GN:	Government Notice
I&AP:	Interested & Affected Parties
IEM:	Integrated Environmental Management Series
ISO:	International Standards Organisation
IWULA:	Integrated Water Use Licence Application
IWUL:	Integrated Water Use License
IWWMP:	Integrated Water and Waste Management Plan
KG:	Knowledge Gap
MOC:	Management of Change
MPRDA:	Mineral and Petroleum Resources Development Act, 28 of 2002
MR:	Mining Right
N/R:	Applicable, but not required at the time of the audit
NEMA:	National Environmental Management Act, 107 of 1998
NEMAQA:	National Environmental Management: Air Quality Act, 39 of 2004
NEMBA:	National Environmental Management: Biodiversity Act, 10 of 2004
NEMWA:	National Environmental Management: Waste Act, 59 of 2008
NC:	Non-conformance
NHRA:	National Heritage Resources Act, 25 of 1999
NWA:	National Water Act, 36 of 1998
RWD:	Return Water Dam
ROM:	Run of Mine
SAHRA:	South African Heritage Resources Authority
SHEQ:	Safety, Health, Environment and Quality
SLP:	Social and Labour Plan
SOP:	Standard Operating Procedure
SWMP:	Strategic Water Management Plan
WSA:	Water Services Act, 108 of 1997
WUL:	Water Use Licence

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: **Diepsoils Investments (Pty) Ltd**

POSTAL ADDRESS: Postnet Suite 2247

FILE REFERENCE NUMBER SAMRAD: MP 30/5/1/1/2/17030PR

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.

PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. CONTACT PERSON AND CORRESPONDENCE ADDRESS

3.1 DETAILS OF

i. Details of the EAP

Name of The Practitioner:	Vernon Siemelink / Lian Roos
Tel No.:	012 807 0383
Fax No. :	086 714 5397
e-mail address:	vernon@ecoe.co.za / lian@ecoe.co.za

ii. Expertise of the EAP.

(1) **The qualifications of the EAP**
(with evidence).

Name	Vernon
Surname	Siemelink
Company	Eco Elementum (Pty) Ltd
Position	Senior Environmental Consultant
Location	Glenfield Office Park, 361 Oberon Avenue, Faerie Glen, Pretoria
Email	vernon@ecoe.co.za
Telephone Number	012 807 0383
Education	**M (EnvMan) - Masters in Environmental Management** Master's Degree at University of Pretoria in Pretoria, South Africa (Gauteng) **BSSc. GeoScience - Honours in Geographical Science** Honours Degree at University of Pretoria in Pretoria, South Africa (Gauteng)
Professional skills	i. Specialist Co-ordination. ii. Project Management. iii. Monitoring and Compliance. iv. Compilation of Environmental Management. v. Compilation of Environmental Impact Assessment. vi. Government Department Liaison. vii. Assessment of Wetland Status and Functionality. viii. Determination of Wetland Boundaries.

Name	Lian
Surname	Roos
Company	Eco Elementum (Pty) Ltd
Position	Junior Environmental Consultant
Location	Glenfield Office Park, 361 Oberon Avenue, Faerie Glen, Pretoria
Email	lian@ecoe.co.za

Name	Lian
Telephone Number	012 807 0383
Education	**BSc Hons (App Sci) Water Utilisation,** University of Pretoria **B.Sc. Environmental Science,** University of Pretoria
Professional skills	Specialist Co-ordination. Project Management. Monitoring and Compliance. Compilation of Environmental Management. Compilation of Environmental Impact Assessment. Government Department Liaison.

Please refer to the CVs attached in Appendix A.

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure)

Table 4: Qualifications of EAP

Skills	**i. Environmental Impact Assessments.** ii. Basic assessments, WULA reports. iii. Water use license application. iv. Prospecting and Mining Right Authorizations. v. Environmental Management Plans. vi. Public Participation. **vii.** Environmental Authorizations.
EAP Experience	With more than 14 years' experience in the environmental consulting industry he has a firm understanding of Environmental Management. He can adapt to a wide range of working environments, has a strong problem-solving ability and work towards team and client satisfaction. Vernon has a passion for Environmental Authorisation Processes (Basic Assessments, Environmental Impact Assessments, Monitoring, Environmental Management Plans, Waste Licence Applications, Closure Application and Integrated Water Use License Applications) in terms of the South African legislative regime.

3.2 B. LOCATION OF THE OVERALL ACTIVITY.

Table 5: Location of the activity

Farm Name:	**Portion 8 of the farm Bankpan 225 IS**
Application area (Ha)	425 hectares (ha).
Magisterial district:	Gert Sibande District Municipality and Msukalikwa Local Municipality
Distance and direction from nearest town	Bethal is located roughly 20 km to the southwest of the proposed prospecting area, while Hendrina is located 19 km to the northeast
21-digit Surveyor General Code for each farm portion	T0IS00000000022500008
Locality map	Attach a locality map at a **scale not smaller than 1:250 000 and attach as Appendix C.**
Description of the overall activity. (Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)	Portion 8 of the farm Bankpan 225 IS Situated in the Gert Sibande District Municipality and Msukalikwa Local Municipality, Mpumalanga Province of South Africa.

3.3 c. Locality Map

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

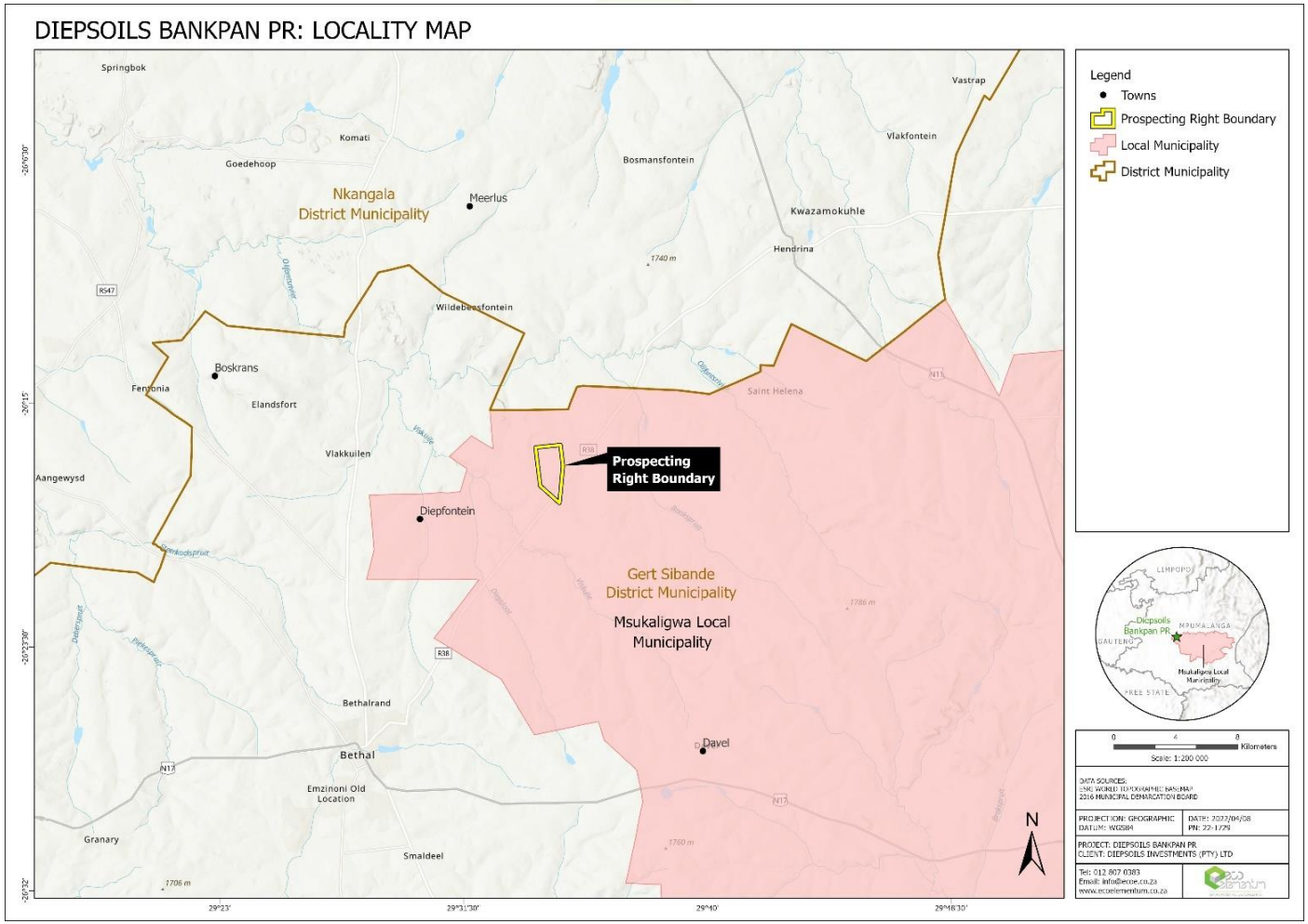

Figure 2: Locality Map

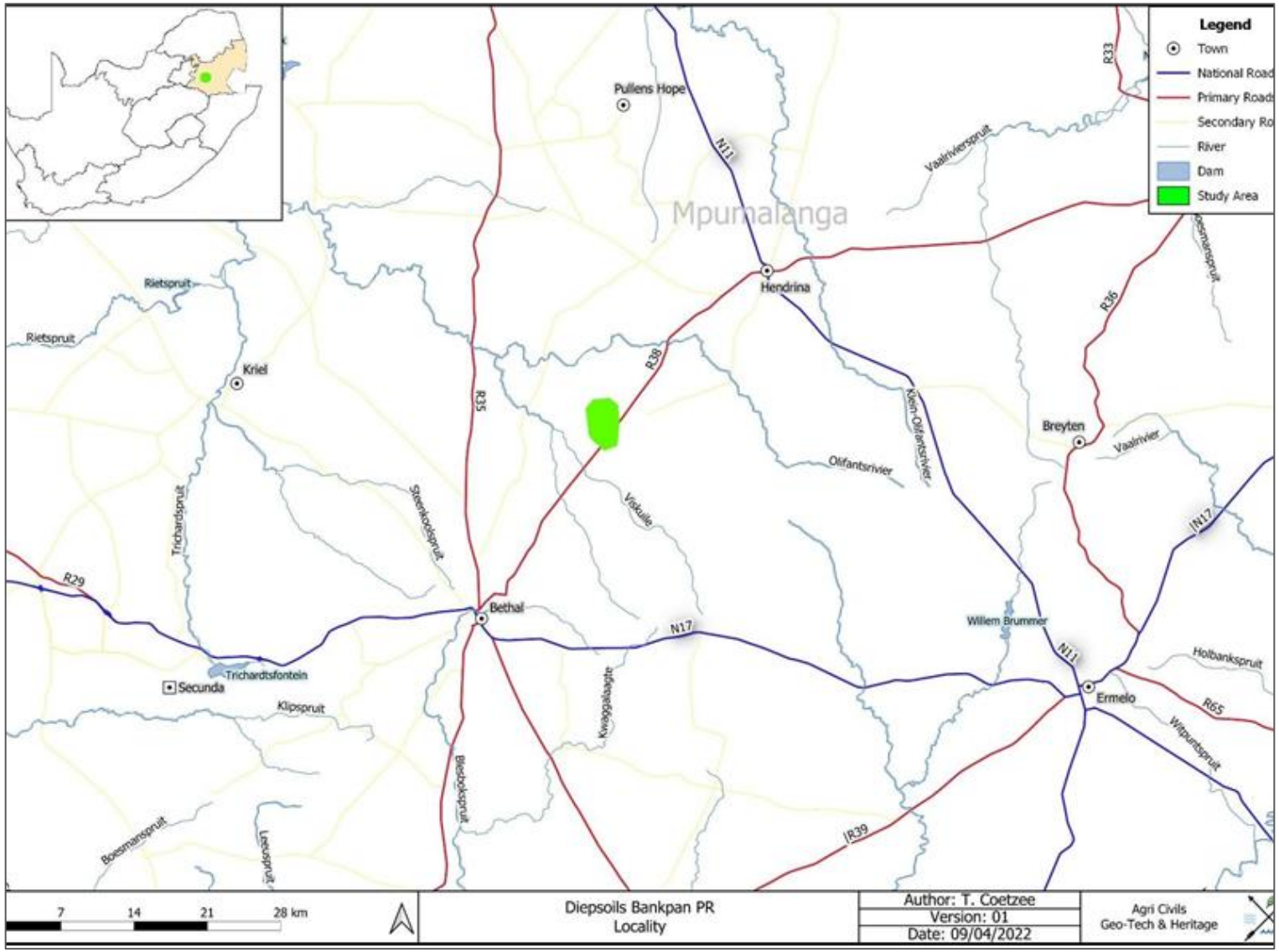

Figure 3: Regional and provincial location of the study area.

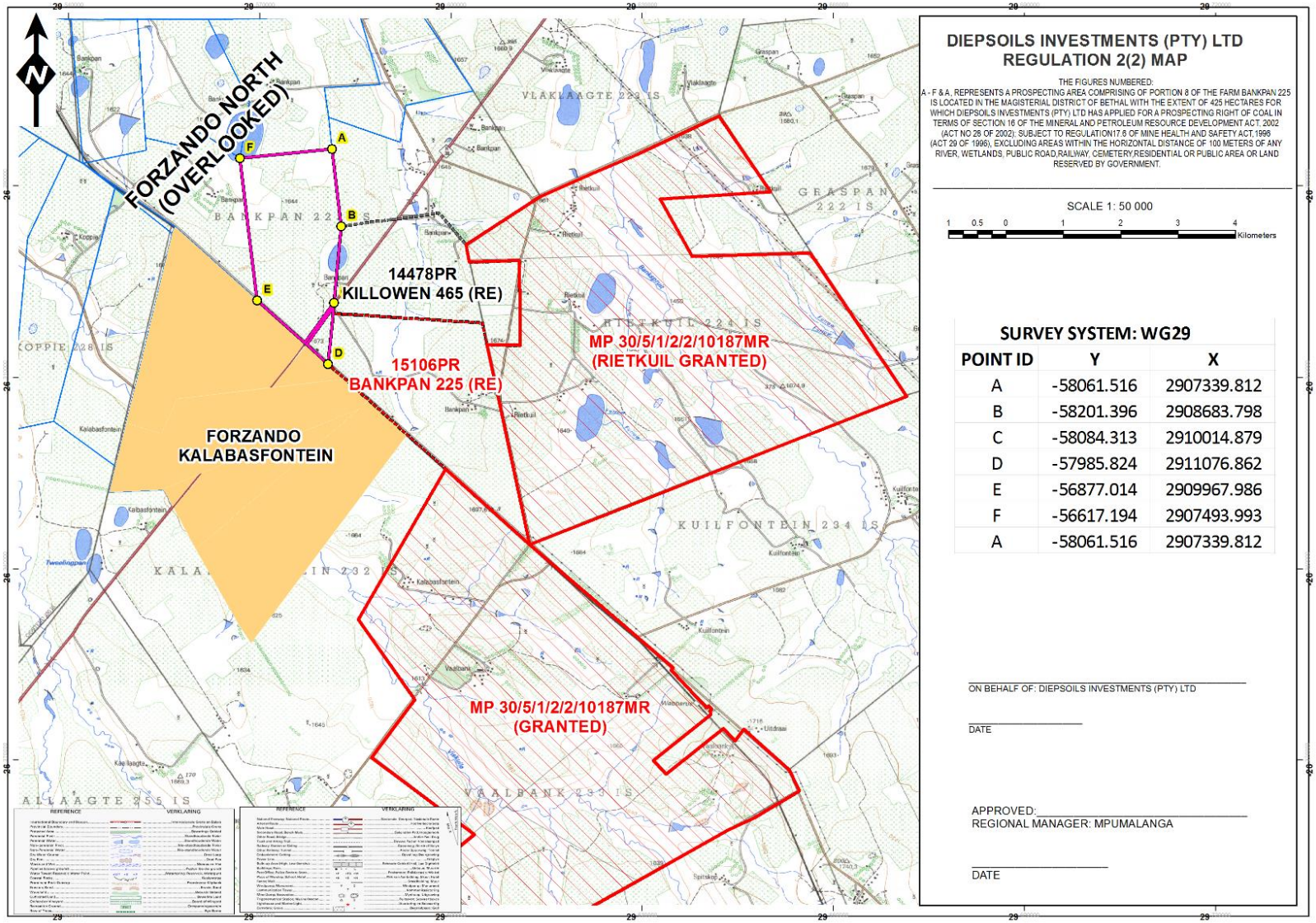

Figure 4: Regulation 2 (2) Map

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

The mineral distribution in the portions of the area will be determined following the mineral exploration methods which are outlined in the following text. These mineral exploration methods are planned to follow the mineral exploration value chain where a systematic, phased, and cost-effective approach of determining the minerals distribution is followed. At the end of each phase, a decision will be taken to proceed or to abandon the project.

i. The first phase will be information gathering which includes detailed desktop studies and geological mapping. This will result in a plan showing outcrops and any geological information that will be useful during the subsequent phases of exploration. Feasibility studies will also be conducted at the end of the exploration phases.

ii. No geochemical survey is planned.

iii. Geophysical Survey – a decision will be taken to conduct geophysical observations or procure geophysical data from commercial sources and organizations that collect them. The information that will be acquired will be chiefly magnetic which will be aimed at delineating structures of higher or lower magnetic susceptibility than the surrounding country rocks. If the company conducts the observations, it will be airborne surveys conducted with the auspices of a contractor.

iv. Drilling will be conducted using a diamond drill rig. The core will be handled and logged in a designated area, sampling will also take place in the same area. Samples will be sent to a laboratory for chemical analyses.

v. No other excavations or bulk sampling.

Both non-invasive and invasive prospecting activities will be undertaken as part of the proposed Prospecting Work Programme (PWP). The application will follow a phased approach, where the prospecting work program is divided into several sequential phases.

Figure 5 below depicts the current land cover and farm portions of the proposed prospecting area, the proposed areas of interest within the application area will be defined within the course of prospecting activities. It is anticipated that the invasive program will consist of 10 boreholes. Vegetation will be cleared at the borehole locations within the application area.

At the end of each phase there will be a brief period of compiling and evaluating results. The results will not only determine whether prospecting proceeds, but also the manner in which it will go forward. The applicant will only action the next phase of prospecting, once satisfied with the results obtained in the previous phases. In addition, smaller, non-core parts of the prospecting work program will be undertaken, if warranted. A description of the planned invasive and non-invasive activities is detailed below.

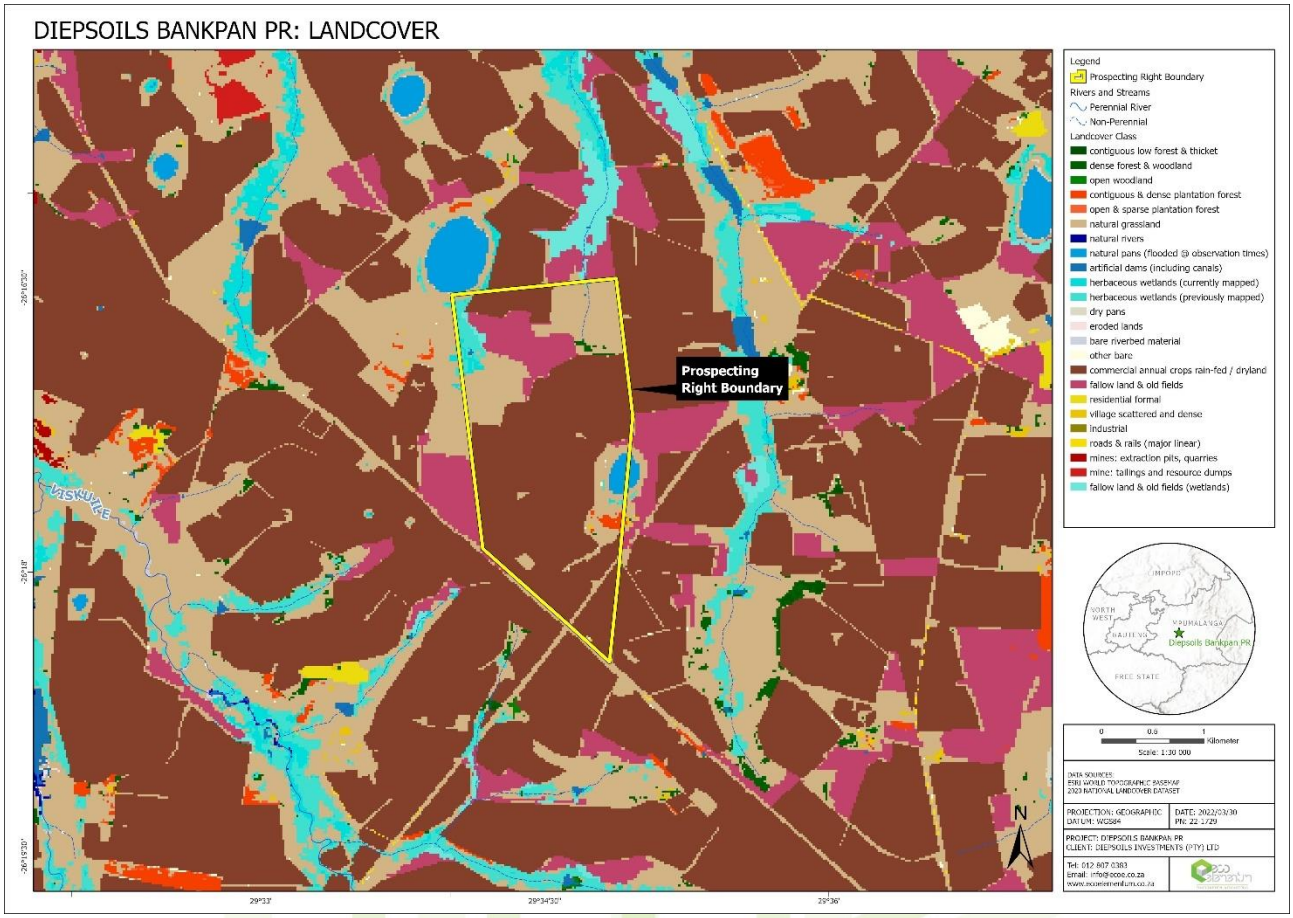

Figure 5: Current land cover Map – Farm portions

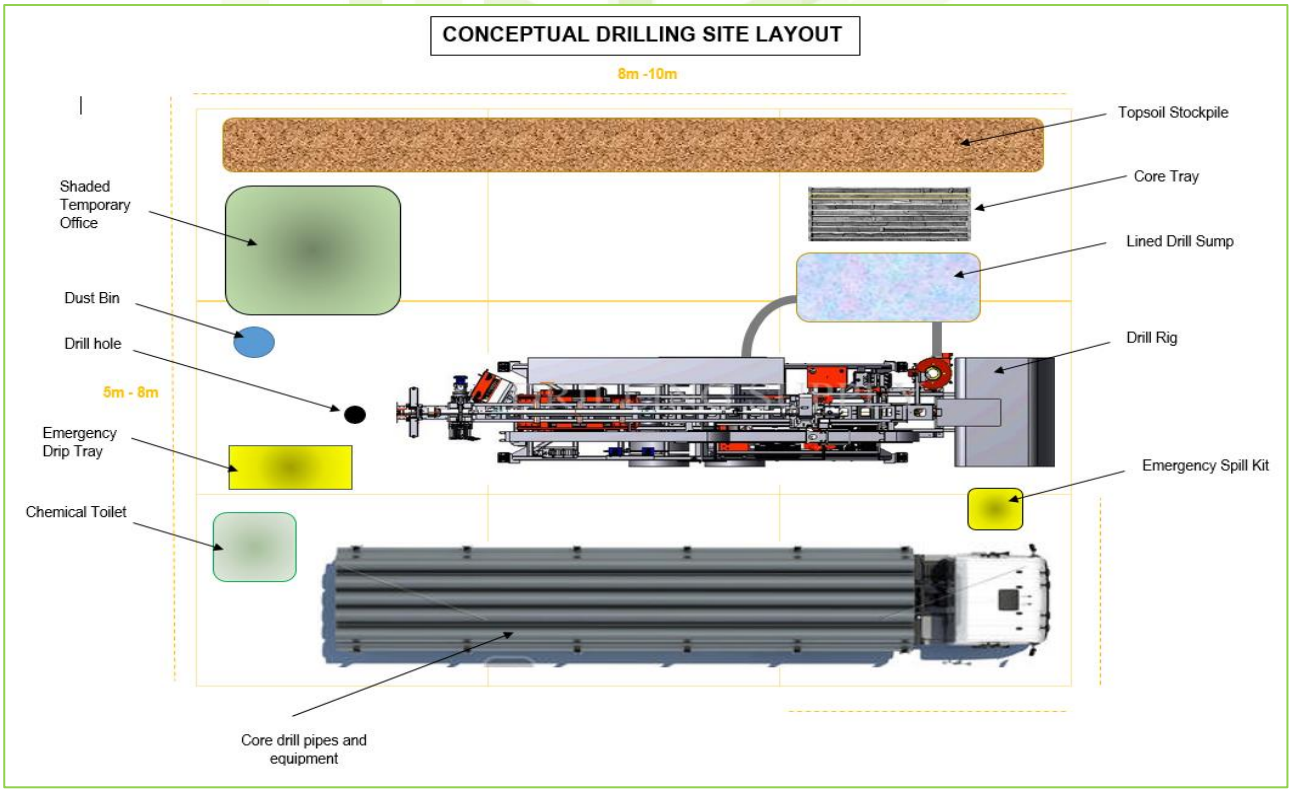

Figure 6: Conceptual drilling site layout

4.1 DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES

(These activities do not disturb the land where prospecting will take place e.g., aerial photography, desktop studies, aeromagnetic surveys, etc.)

The Non-Invasive methods which will be used during the exploration program span all the four phases in different time frames. They are outlined in the following text.

Phase 1 (month 0 to 12)

Airborne Surveys/Geophysical Surveys will be conducted upon issue of the Prospecting Right, to give an overview of the geophysical properties of the prospecting area. Drilling will commence six months later and the process will be determined by local conditions but can generally be based on about 25m per rig per day for a week. 10 diamond drill holes will be drilled in the strategic locations to fill the gaps and confirm existing holes and information derived from the geophysical field survey.

The drill cores will be geologically logged and sampled and analyzed at an accredited facility to determine the economic viability. All core logging will be completed concurrently with the drilling programme to assist in determining the spectrum of viable coal seams. The drill wells will then be geo-physical logged for structural and geotechnical interpretation. After this, the holes will be cased, caped and marked to make it noticeable safe for people and animals but also allow for future access by the exploration team. No bulk sampling work is to be carried out during this prospecting program.

4.2 DESCRIPTION OF PLANNED INVASIVE ACTIVITIES

(These activities result in land disturbances e.g., sampling, drilling, bulk sampling, etc.)

Phase 2 (month 12 to 24)

Additional drilling and sampling will be done to be able to quantify the bounds and extent of the coal resource. This phase will also be used to establish the mining techniques that may be required.

Detailed evaluation and modeling of the results will be undertaken during this phase and several planning scenarios contemplated to ensure the best deployment of further exploration capital. The holes required for this phase of drilling may vary in depth and quality but should take the existence of geological features that are significant to mine planning and future rehabilitation issues.

Table 6: Timeframes each of the proposed activities

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) 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 offon the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	Non-Invasive phase Literature review, Geological maps, satellite imagery, aerial photographs and historical borehole data, Geological reconnaissance	Exploration Geologist	0-3 months	Extraction of site specific geologicalmap, information and geological report.	Month 4-6	Geologist
1	Non-Invasive phase Ground geophysical survey, airborne survey, geological mapping, stream andsoil sampling.	Geophysicist/Geologist	3-6 months	Interpretation of digital data into report. Correlation of geological and geophysical results.	Months 7-9	Geophysicist/Geologist
1	Invasive phase Site Establishment (25m X25m) Diamond core drilling (85MM) at 150mDe-establishment	Exploration Geologist, Drilling Engineer, Site works foreman, labourers.	6-12 months	Geotechnical reporting from sidewalland soil sampling. Updating of data base, recording of borehole logs, evaluation and geological modelling. Pre-feasibility study and planning ofphase 2 exploration drilling.	Month 7-15	Geologist
2	Invasive phase Further reverse circulation and diamond drilling.	Exploration Geologist, Drilling Engineer, Site works foreman, labourers	24-36 months	Updating of data base, recording of borehole logs, evaluation and geological modeling	Month 26-36	Mineral Economist/Geologist/Mine Surveyor/Mine Engineer
3	Invasive Phase	Exploration Geologist, Final Rehabilitation & Environmental Assessment Practitioner, Mining Engineer		Environmental assessment, monitoring and rehabilitation , Conceptual mine planning Preliminary economic analyses	Month 34	Mine Engineer/EIA Specialist

4.3 DESCRIPTION OF PRE-FEASIBILITY STUDIES

(Activities in this section includes but are not limited to initial, geological modelling, resource determination, possible future funding models, etc).

Depending on the results of phase 2, the below will apply

Overall Environmental Assessment, Monitoring and Rehabilitation. Prefeasibility study will be conducted. Should the Coal be economically viable, an application for a Mining Right will be decided, compiled and submitted. Alternatively, if additional exploration is required incase the results are not conclusive; an application for the renewal of the Prospecting Right will be submitted at this phase.

A complete report covering all the findings of the above phases will be compiled and submitted within 60 days of the release of the last analysis results from appointed Coal laboratory.

4.4 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 mineral that will be prospected in the proposed site is coal. This section presents a detailed description of all the activities associated with the proposed prospecting application. Due to the nature of the Prospecting Works Programme, and the fact that the specific prospecting activities required are dependent on the preceding phase, assumptions are presented where required.

Access Roads

Access to the site will be required during mapping and drilling activities (Phase 2). Access requirements can only be determined after Phase 1 has been concluded. A number of existing roads and tracks already traverse the proposed prospecting site and where practicable, these roads will be used. All access on farms will be conducted in terms of a written agreement with the landowner. In instances where no access roads are available to the site location a single track will be selected as the best alternative on the basis of least environmental impact with natural habitat considered the last option.

During mapping activities, vehicle access will be gained to site through the veld and the establishment of a track to gain repeated access to a mapping site will not be required.

Once the drill sites have been identified, temporary access roads may be established for repeated access to the prospecting site if the identified drill site cannot be accessed via existing roads and tracks.

Vegetation and topsoil stockpile areas (if required)

Vegetation and topsoil will only be stockpiled in instances where settling sumps are required i.e., core drilling. During the excavation process the topsoil and available vegetation will be placed adjacent to the sumps. This will also serve as a storm water diversion berm. The excavated material will be backfilled into the rehabilitated sumps on completion of the drilling process.

Water Supply

For the prospecting phase, several sites will be selected for geotechnical drilling. These boreholes and its associated activities will impact on a surface area of between 250 and 640 m². The full extent of the drill site will also be demarcated, and no drilling will be done outside of the boundary.

Currently it is not known whether there are any water boreholes located on the site and whether access and supply will be granted by the landowner.

Continuous water supply will be required during drilling, and on-site water storage tanks with a capacity of 15,000 ℓ for water supply to the drill, will be used.

When core drilling will be undertaken, a number of settling sumps will be excavated and lined with impervious plastic sheets. The purpose of these sumps are to recycle water and drilling fluids by means of gravity which leads to heavier materials (e.g., drill cuttings) to settle and clean water being produced for re-use. The drill cuttings form a sludge which will be collected in the sumps. These sumps

will be fenced, where required, to prevent livestock and public access. The plastic-lined sumps will be used to recycle water through a filter process in order to maintain a constant clean water source for the purpose of drilling. The plastic sheets will be removed, and sumps will be backfilled on completion of drilling. If required, the remaining sludge in sumps is to be treated with a suitable bio-remediation product prior to backfilling or disposal.

Additional water requirements relate to the potable water supply for employees and workers. A temporary 15 000 ℓ will be stored in tanks for drinking water and generalise by persons will be provided at the drill site. Additional facilities will include temporary portable toilets, berms on the upstream side of the mini pit to divert clean water around the pit.

Ablution

Ablution facilities at the drill site will involve the hiring of drum or tank type portable toilets.

Accommodation

No accommodation for staff and workers will be provided on- site. Workers will be transported to and from the prospecting site on a daily basis. No equipment will be stored onsite.

Storage of Dangerous Goods

During the diamond drilling activities limited quantities of diesel fuel, oil and lubricants will be used onsite, all chemicals and dangerous goods will be stored on the drilling trucks and be packed up at night and removed. The only dangerous goods that will be stored in any significant quantity is diesel fuel. A maximum amount of 60 m^3 will be stored in above ground diesel storage tanks located on an impermeable surface with bunds. Storage and use of hydrocarbons and other chemicals may only take place on impermeable surfaces with bunds to contain any accidental spills.

Hazardous material will be stored in appropriate containers and clearly marked. Drip trays and or impermeable surfaces with bunds must be placed under machinery that has the potential to leak. Material Safety Data Sheets will be available for all drilling and other chemicals kept on site.

Drill rig

In most cases, the drill rig will be a self-contained, truck-mounted unit that will be accompanied by a compressor and a generator. The drill rig will be driven to site and mobilised in the desired location, positioned over the hole site, and will be stabilised.

The footprint of disturbance for a prospecting rig and associated equipment is generally smaller than 25 - 64 m^2. Plastic sheets and trip trays will be placed underneath the rig for the duration of the drilling process at each site in order to avoid hydrocarbon spills and contamination. The full extent of the drill sites will be staked out and the drill crew will not operate beyond these boundaries. Depending on the locality, this perimeter may be fenced, marked with bunting or barricading. Please refer to Figure 6 for a layout plan of the drilling site.

Drill core storage area

During core drilling, a laydown area for the extracted core samples will be established within the footprint of the drill site. This area is usually 5 m × 2 m and is used to place the extracted core in sequence (according to depth) for later analysis by an appointed geologist. Core trays will be used to contain the core samples.

4.5 LISTED AND SPECIFIED ACTIVITIES

Section 16 of the Mineral and Petroleum Resources Development Act, 200 2 (Act No. 28 of 2002) requires, upon request by the Minister that an Environmental Management Plan be submitted, and that the applicant must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that activities, which may impact on the environment must obtain an environmental authorisation from a relevant authority before commencing with the activities. Such activities are listed under Regulations Listing Notice 10 the proposed prospecting activity triggers:

Please refer to the following table for the details in terms of the listed activities.

Table 7: Listed and specific activities

NAME OF ACTIVITY (E.g., For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc... Etc... etc. E.g., for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc... Etc... Etc.)	Aerial extent of the Activity Ha or m^2	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.	640 m^2	X	GNR 983 – Listing 1, Activity 20	n/a
Drill site clearing and establishment, mobile chemical ablution facility, drill rig equipment, return water lined sump, and sample storage trays.	640 m^2	X	GNR 983 – Listing 1, Activity 20	n/a
Soil Sampling Activities (A typical sampling site will be approximately 25 m^2). It is unlikely that more than 10 samples will be taken, however, this will be confirmed on site as part of the prospecting activities.	64 m^2 per prospecting drill site	X	GNR 985 – Listing 3, Activity 12	n/a
Roads (roads will be temporary gravel roads, not exceeding 3,5 m in width).	Approx. 20 000 m^2	-	-	n/a
Temporary Camp Site	Approx. 100 m^2	-	-	n/a
Site Clearance	Less than 20 ha	X	GNR 983 – Listing 1, Activity 27	n/a
Hydrocarbon Storage	Less than 30 m^3	-	-	n/a

5. POLICY AND LEGISLATIVE CONTEXT

Table 8: Policy and legislative table

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	The project requires a prospecting right authorisation from the Department of Mineral Resources.	A prospecting right was lodged with the DMRE. The application was accepted by DMRE on 8th of March 2022.
NEMA Environmental Impact Assessment (EIA) Regulations, as Amended 2017	This Basic Assessment and Environmental Management Plan to be conducted. Baseline environmental information of the project area will be assessed. Mitigation measures and recommendations were provided according to best practice standards.	An Application for Environmental Authorisation will be submitted to the Mpumalanga DMRE with the prospecting right application lodgement on SAMRAD. The DMRE also requested the submission of the updated NEMA application forms and PWP with 60 days of the approved application.
The South African Constitution **The South African Constitution (Act 108 of 1996) constitutes the supreme law of the country and guarantee the rights of all people in South Africa**	Applied at potential impacts identification as well as mitigation measures and public participation.	A public participation process will be followed, and consultations will be done regarding the proposed project. An EMPr and awareness plan will be designed according to the issues raised during this process.
National Environmental Management: Biodiversity Act , 2004	Presence of critically endangered species if permit is required. To be determined by ecologist prior to prospecting activities.	The EMP will regulate the applicant to apply for Tree Removal Permit from the Relevant authority prior to the potential removal of any sensitive and/or protected species.
National Environmental Management: Waste Act	Provisions of the waste act were consulted to determine whether a waste license was required for any aspect of the proposed development.	The project activities do not trigger a waste management license, but proper waste management measures will be addressed in the EMPr.
Section 38 of the National Heritage Resources Act (Act No. 25 of 1999)	Legislation consulted during the impact assessment process, to determine what legal requirements with regards to the management of national heritage resources were relevant to this application.	An upload of the BAR will be done on the SAHRIS online system for comment.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Water Act The NWA (Act No. 36 of 1998)	Triggered activities will be identified according to the Section 21 of the NWA.	The department has been notified of the proposed project and comments will be addressed.
National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004);	Dust monitoring on site during the operation.	As part of the EMPr dust suppression methods will be used.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996);	Health and Safety Policy.	Risk Impact Assessment to be conducted.
CBAs are terrestrial (land) and aquatic (water) features (e.g., vleis, rivers and estuaries) in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning in the long term (which is particularly important in the face of climate change). The desired management objective for CBAs is for them to remain in a natural or near- natural, i.e. to prevent further loss or degradation of natural habitat in these areas. Therefore, CBAs are biodiversity request priority that must be afforded special attention in assessing and evaluating impacts of prospecting or mining. Although CBAs have been identified at a very fine spatial scale in some provinces (Gauteng, Western Cape, KwaZulu-Natal), other areas they have been identified more at a broader scale (Eastern Cape, Northwest, Limpopo, and the Namakwa district of the Northern Cape). All CBAs require field verification, but this is particularly the case for broad scale CBAs where it is only in the intact areas of the CBA that mining should be prohibited. Over time, CBAs will be identified in the Free State, and remaining areas of the Northern Cape, and may be identified at a finer scale in additional provinces.	Used to identify possible mitigation measures.	Specialists have been appointed to undertake studies to determine if the application area falls within any CBAs and recommend mitigation measures where applicable.
Msukalikwa Local Municipality SDF.	Source of background demographic and socio-economic information.	Utilized as a source of demographic and socio-economic information for the project.

6. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

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

The area falls within the Mpumalanga coal fields and as such the economy of the surrounding area is predominantly based on coal mining (and associated services such as coal hauling); agriculture; forestry and timber processing.

The mining industry is identified as one of the key components toward Rapid Economic Growth in order to reduce poverty and minimise unemployment Growth (State of the Nation Address, 2019). The key issues include:

- The need for a strong capable state;
- Cost reduction for businesses and consumers;
- The need for reindustrialisation and a revitalised mining sector;
- Faster growth in tourism;
- Improved infrastructure;
- Better support for small businesses; and
- Marked reduction in unemployment

Mining's contribution to provincial GDP (2020) is 25.9% and the sector employs 53 000 people.

The activity of mining has numerous social and economic benefits in local, regional and national context. These include:

1. Job creation
2. Skills development
3. SMME development
4. Local economic development
5. Contribution to local and national tax income (royalties, companies' tax etc.)
6. Contribution to the national gross domestic product, and
7. Future business opportunities.

The ongoing need for electricity supply further enforces the need for the ongoing and increased supply of Coal to the Eskom Power Stations, from suppliers that conform to the MPRDA, NEMA, and NWA.

The production of goods, supply of services or construction of infrastructure results in expenditure within a regional economy which has knock-on effects and results in additional expenditure which contributes to the regional economy.

At the South Africa Investment Conference in 2020, over 50 global companies made investment commitments of R109 billion in industries as diverse as advanced manufacturing, agro-processing, infrastructure, mining, services, tourism and hospitality. Global investment in mining being the 7th largest out of 19 economic subsectors with a total investment of >R2 billion This shows that mining remains a significant source of investment into the country.

7. MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE.

The application area has been selected as the preferred site based on the geological formations in the area.

Some of the techniques employed in the non-invasive prospecting activities will include a literature survey, field reconnaissance / mapping, and geophysical survey of the geology, outcrops. Some of the invasive prospective activities include prospecting boreholes, boreholes to confirm continuity of mineralization and potential deposit size and resource definition drilling.

In terms of the technologies proposed, these have been chosen based on the long-term success of the company in terms of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

Consultation with affected landowners and adjacent landowners will be conducted to keep them informed about the proposed prospecting activities as well as to capture any comments and concerns they may have regarding the prospecting activity.

It should be noted that the exact locations of the boreholes have not been identified at this stage. The location of these boreholes will be dependent on the findings of the non-invasive prospecting activities. Once the proposed target areas for the boreholes have been identified during the phases as set out in these areas will be investigated and will be subject to the conditions of this document.

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

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

8.1 Details of the Development Footprint Alternatives Considered.

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

a. the property on which or location where it is proposed to undertake the activity;

portion 8 of the farm Bankpan 225 IS situated in the Gert Sibande District Municipality and Msukalikwa Local Municipality, Mpumalanga Province.

b. the type of activity to be undertaken;

The minerals that will be prospected in the proposed site are coal and pseudocoal. This section presents a detailed description of all the activities associated with the proposed prospecting application. Due to the nature of the Prospecting Works Programme, and the fact that the specific prospecting activities required are dependent on the preceding phase, assumptions are presented where required.

The mineral distribution in the portions of the area will be determined following the mineral exploration methods which are outlined in the following text. These mineral exploration methods are planned to follow the mineral exploration value chain where a systematic, phased, and cost-effective approach of determining the minerals distribution is followed. At the end of each phase, a decision will be taken to proceed or to abandon the project.

8.2 Prospecting process

The mineral distribution in the prospecting area will be determined following the mineral exploration methods as outlined in the following text. At the end of each phase, a decision will be taken to proceed or to abandon the project.

Non-invasive prospecting

vi. Airborne Surveys/Geophysical Surveys will be conducted upon issue of the Prospecting Right, to give an overview of the geophysical properties of the prospecting area. Drilling will commence six months later and the process will be determined by local conditions but can generally be based on about 25m per rig per day for a week. 10 diamond drill holes will be drilled in the strategic locations to fill the gaps and confirm existing holes and information derived from the geophysical field survey.

vii. The drill cores will be geologically logged and sampled and analyzed at an accredited facility to determine the economic viability. All core logging will be completed concurrently with the drilling programme to assist in determining the spectrum of viable coal seams. The drill wells will then be geo-physical logged for structural and geotechnical interpretation. After this, the holes will be cased, caped and marked to make it noticeable safe for people and animals but also allow for future access by the exploration team.

Invasive Prospecting

i. Additional drilling and sampling will be done to be able to quantify the bounds and extent of the coal resource. This phase will also be used to establish the mining techniques that may be required.

ii. Detailed evaluation and modeling of the results will be undertaken during this phase and several planning scenarios contemplated to ensure the best deployment of further exploration capital. The holes required for this phase of drilling may vary in depth and quality but should take the existence of geological features that are significant to mine planning and future rehabilitation issues.

8.3 THE DESIGN OR LAYOUT OF THE ACTIVITY;

The location of activities will be determined based on the location of the prospecting activities, which will only be determined during Phase 1 of the Prospecting Works Programme.

Final borehole sites to be determined after phase one of the prospecting.

8.4 THE TECHNOLOGY TO BE USED IN THE ACTIVITY;

All equipment to be used will be provided by contractors.

1. Exploration Drilling

   After an anomaly or a presumed anomaly has been detected, it is necessary to define its limits and to determine mineral content of any ore present. After determination of these factors, it is necessary to evaluate the ore in terms of its physical characteristics for:

   - Mining operating parameters.
   - Geotechnical design, and
   - Metallurgical extraction.

   The type of drilling program required to evaluate the Rock is primarily dependent upon the depth of the Rock and the strength of the material to be drilled. Generally, shallow Rocks are sampled using:

   - Geotechnical drilling.

   Deep ore bodies are most commonly evaluated by diamond drilling techniques. The essential part of exploratory drilling is that material broken out of the borehole must be recovered for analysis.

8.5 THE OPTION OF NOT IMPLEMENTING THE ACTIVITY.

The option of not approving the activities will result in a significant loss to valuable information regarding the mineral reserve status on this property. In addition to this, 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.

8.6 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.)

Section 41 of NEMA Regulation 982 set out the Legal and Regulatory Requirement for Public Participation. The Public Participation Process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations, and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process has and been followed at all times and is based on reciprocal dissemination of information. The following was undertaken during the PPP:

1. Identification of Interested and Affected Parties (IAPs);
2. Notification of IAPs regarding the proposed project;
3. A public information meeting with IAPs;
4. Gathering comments, issues, and concerns from IAPs;
5. Responding to IAP comments, issues and concerns;
6. Compilation and submission of results of consultation report to the DMRE; and
7. Providing IAPs with the opportunity to review and comment on the basic assessment report.

Each of the processes is described in detail in the sections below.

8.6.1 Identification of Interested and Affected Parties

The application area extends over approximately 425 hectares(ha) of rural farmland consisting of several properties. Background Information Documents (BIDs) were delivered to identified landowners.

Various landowners were identified within the project area as per the Commission of Restitution of Land Rights

The registered owners of the farms were listed as follows:

Table 9: Directly affected landowners

Landowner	Farm Portion
EDMAR FARMS CC	Portion 8 of the farm Bankpan IS

Adjacent landowners are listed below:

Landowner	Farm Portion
M L G W VAN DER MERWE FAMILIE TRUST	Portion 1 of the farm Bankpan 225 IS
VAN DER MERWE LODEWYK JOHANNES	Portion 10 of the farm Bankpan 225 IS
TOTAL COAL SOUTH AFRICA PTY LTD	Portion 14 of the farm Bankpan 225 IS
No information available on Windeed.	23 of the farm Bankpan 225 IS
No information available on Windeed	25 of the farm Bankpan 225 IS
RUBIN HIRSCHOWITZ TRUST	RE/8Kalabasfontein 232 IS
No information available on Windeed	25 Kalabasfontein 232 IS

8.6.2 Interested and affected parties (IAPs) that were identified include the following: -

- Landowners and legal occupiers within the project area – as indicated in the table above.
- Msukalikwa Local Municipality.
- Gert Sibande District Municipality.
- Bethal town.
- Organs of State:
    - Department of Mineral Resources Mpumalanga - Legal and Environmental Sections;
    - DARDLEA;
    - Department of Water & Sanitation – Mpumalanga;
    - Department of Rural Development & Land Reform;
    - South African Heritage Resources Agency & Mpumalanga Heritage Resources Agency; and
    - Land Claims Commission.

The details of all the IAPs were compiled into a database and are included as APPENDIX B following the Public Participation Phase.

8.6.3 Notification of Interested and Affected Parties

Eco Elementum notified IAPs by providing each person with an information letter (written notice) and Background Information Document (BID) that included a description of the project, the public participation process and how they can get involved in the process. The notification letter also included a comment sheet whereby all IAPs can respond with issues, concerns, or comments. Due to the rural nature of the project area, it was decided to provide physical and electronic methods of sending the notification letter as well as gathering responses. Letters were also delivered to the identified occupiers and/or landowners of the respective properties. Proof of the notification letters will be included as APPENDIX B following the Public Participation Phase.

Other forms of notification included the placement of Site Notices (as per the Regulation required size) at various locations. 4 x Site notices were placed at various access points along the secondary road which transverses the site.

The site notices are available during the PPP period whereby IAPs can register to be provided with more information on the project. Photos of the site notices will be included as APPENDIX B following the Public Participation Phase.

An advert will be placed in Ridge Time's Newspaper.The advert will include a brief project description, location of the project, date of public meeting, methods to register as an IAP and review period of the BA report. A copy and proof of the newspaper adverts will be included as APPENDIX B following the Public Participation Phase.

8.6.3.1 Public Information Meeting

The public consultation meeting will take place at the Bethal Public Library (Danie Nortje Street, Bethal, 2310) in Bethal town on the 6th of May 2022 from 10:00 to 12:30.

8.6.3.2 Gathering Comments, Issues and Concerns from IAPs

IAPs have been provided with the opportunity to register as IAPs and raise issues and concerns from the of 14 April 2022 to 19 May 2022 to form part of the public consultation report.

8.6.3.3 Responding to Comments, Issues and Concerns from IAPs

All comments, issues and concerns will be compiled and responded by email or virtually.

8.6.3.4 Compilation of a Report on the Results of the Public Participation Process

The public consultation process is documented in accordance with the DMRE standard template for results of public consultation.

8.6.3.5 Review and Commenting on the Basic Environmental Impact Assessment Report (BAR)

The draft BAR is available for review and comment from the 14 April 2022 to 19 May 2022. The IAPs were notified in the written notices and site notice that the BAR will be made available for review at the electronically on www.ecoelementum.co.za and a hard copy at the Bethal Public Library.

The table below summarises the issues and responses raised during the PPP to date.

8.6.4 Summary of issues raised by I&APs.

This will be updated after the public participation process.

9. BASELINE ENVIRONMENT

a. Type of environment affected by the proposed activity.

(Its current geographical, physical, biological, socio- economic, and cultural character).

Key aspects of the baseline environment that are likely to impact on the scope of the impact assessment and management measures that are implemented as well as project decisions regarding alternatives are listed below. Table 10 below is a short summary of the main environmental characteristics and land-use in and around the proposed prospecting area.

Table 10: Summary of Baseline Environment

Environmental Aspect	Environmental Variable	Description
CLIMATE (derived from climatic recordsof Kriel)	**TEMPERATURE**	• Summers warm to hot with a mean monthly maximum temperature for January around 24°C • Winters are cold with a mean monthly minimum temperatureof just above 2°C in July
	RAINFALL	• 650 - 900 mm of rain per annum, summer rainfall area • Majority of the rainfall during early to mid-summer • Frequent thunderstorms during periods of rainfall
	FROST	• Frequent and restricted to winter months.
SURROUNDING LAND USE		ON-SITE AND NEARBY LAND-USES: • Provincial Roads (R38) • Agricultural • Mines CLOSEST TOWNSHIPS: • Kriel (north-west) • Bethal (south)
HISTORICAL VEGETATION	Eastern Temperate Freshwater Wetlands VU (EN[1])	These wetlands are found on flat or gently undulating landscapes or shallow depressions filled with (temporary) water bodies such as pans and periodically flooded vleis. Also included are edges of calmly flowing rivers that support zoned systems of aquatic and hygrophilous vegetation where grasslands are temporarily flooded. Dominant or prominent taxa that can be expected in the different zones in wetlands include: **In Marshes:** **Graminoids:** *Cyperus congestus, Agrostis lachnantha, Carex acutiformis, Eleocharis palustris, Eragrostis plana, E. planiculmis, Fuirena pubescens, Helictotrichon turgidulum, Hemarthria altissima, Imperata cylindrica, Leersia hexandra, Paspalum dilatatum, P. urvillei, Pennisetum thunbergii, Schoenoplectus decipiens, Scleria dieterlenii, Setaria sphacelata, Andropogon appendiculatus, A.* *eucomus.* **Herbs:** *Centella asiatica, Ranunculus multifidus, Berkheya radula, B. speciosa, Berula erecta subsp. thunbergii, Centella coriacea, Chironia palustris,*

		Equisetum ramosissimum, Falkia oblonga, Haplocarpha lyrata, Helichrysum difficile, H. dregeanum, H. mundtii, Hydrocotyle sibthorpioides, H. verticillata, Lindernia conferta, Lobelia angolensis, L. flaccida, Mentha aquatica, Monopsis decipiens, Pulicaria scabra, Pycnostachys reticulata, Rorippa fluviatilis var. fluviatilis, Rumex lanceolatus, Senecio inornatus, S. microglossus, Sium repandum, Thelypteris confluens, Wahlenbergia banksiana. **Geophytes:** *Cordylogyne globosa, Crinum bulbispermum, Gladiolus papilio, Kniphofia ensifolia, K. fluviatilis, K. linearifolia, Neobolusia tysonii, Satyrium hallackii subsp. hallackii.* **In Reed and sedge beds:** Graminoids: *Phragmites australis, Schoenoplectus corymbosus, Typha capensis, Cyperus immensus, Carex rhodesiaca.* **In Water bodies:** Aquatic Herbs: *Aponogeton junceus, Ceratophyllum demersum, Lagarosiphon major, L. muscoides, Marsilea capensis, Myriophyllum spicatum, Nymphaea lotus, N. nouchali var. caerulea, Nymphoides thunbergiana, Potamogeton thunbergii.* Carnivorous Herb: Utricularia inflexa. Herb: *Marsilea farinosa subsp. farinosa.* **Eastern Temperate Freshwater Wetlands are currently listed as Vulnerable (NEMBA 2011)**
	Eastern Highveld Grassland VU (EN[2])	This grassland type historically covered the slightly to moderately undulating plains between Belfast in the east and the eastern side of Johannesburg in the west and extending southwards to Bethal, Ermelo and west of Piet Retief (Mucina and Rutherford, 2006). The vegetation of this grassland type consists of short dense grassland dominated by the usual Highveld grass composition (Aristida, *Digitaria, Eragrostis, Themeda,* and *Tristachya*). Small, scattered rocky outcrops may have a variable cover of wiry, sour grasses and some woody species (*Senegalia caffra, Celtis africana, Diospyros lycioides* subsp. *lycioides, Parinari capensis, Protea caffra, P. welwitschii* and *Searsia magalismontanum*) (Mucina and Rutherford, 2006). Dominant and/or prominent taxa in primary, undisturbed grasslands (Mucina and Rutherford, 2006) would have included following species: Graminoids: *Aristida aequiglumis, A. congesta, A. junciformis* subsp. *galpinii, Brachiaria*

		serrata, Cynodon dactylon, Digitaria monodactyla, D. tricholaenoides, Elionurus muticus, Eragrostis chloromelas, E. curvula, E. plana, E. racemosa, E. sclerantha, Heteropogon contortus, Loudetia simplex, Microchloa caffra, Monocymbium ceresiiforme, Setaria sphacelata, Sporobolus africanus, S. pectinatus, Themeda triandra, Trachypogon spicatus, Tristachya leucothrix, T. rehmannii, Alloteropsis semialata subsp. *eckloniana* Herbs: *Berkheya setifera, Haplocarpha scaposa, Justicia anagalloides, Pelargonium luridum, Acalypha angustata, Chamaecrista mimosoides, Dicoma anomala, Euryops gilfillanii, E. transvaalensis subsp. setilobus, Helichrysum aureonitens, H. caespititium, H. callicomum, H. oreophilum, H. rugulosum, Ipomoea crassipes, Pentanisia prunelloides* subsp. *latifolia, Selago densiflora, Senecio coronatus, Hilliardiella elaeagnoides, Wahlenbergia undulata* Geophytes: *Gladiolus crassifolius, Haemanthus humilis* subsp. *hirsutus, Hypoxis rigidula* var. *pilosissima, Ledebouria ovatifolia* Succulents: *Aloe ecklonis* Low Shrubs: *Anthospermum rigidum* subsp. *pumilum, Stoebe plumosa*

9.1 Baseline Environmental Characteristics

A preliminary desktop study was conducted to focus on topology, surface water, wetlands, soils, land capability, noise, socio-economic and habitat availability for species of vegetation, mammals, and avifauna (birds) of the study area. The data was supplemented by previous surveys conducted in the area, literature investigations, specialist studies, personal records, and historic data.

The environment where the site is located can be described as predominantly rural; surrounding land cover includes:

The majority of the study area appears to be cultivated, while the remaining sections are associated with open veldt. These sections are likely to be used as grazing veldt for cattle. Outbuildings are evident along the eastern border of the study area and what appears to be a small railway facility along the southern border.

As initially stated, the demarcated farm portion falls within the Msukaligwa Local Municipality and the Gert Sibande District Municipality in the Mpumalanga Province. Msukaligwa Local Municipality is a Category B municipality situated within the Gert Sibande District in the Mpumalanga Province. It is bordered in the north by the Nkangala District and Chief Albert Luthuli, in the south by Lekwa and Dr Pixley Ka Isaka Seme, in the east by Mkhondo, and in the west by Govan Mbeki. It is the largest of the seven municipalities that make up the district, accounting for 19% of its geographical area. Ermelo is the seat of the municipality.

Figure 7: Gert Sibande District Municipality

9.1.1 Climate

- Methodology and Data Sources

The study area falls within the summer rainfall region and the average annual rainfall is roughly 809 mm per year. The average annual temperature is 15.2 ºC. The average summer temperature is 18.7 ºC, while the winter temperature averages 9.2 ºC (Climate-data.org accessed 08/04/2022).

- Sensitivities

There are no foreseen climatic sensitivities associated with the site or the proposed activity.

9.1.2 Geology and Soils

- Methodology and Data Sources

The geological information was obtained from the Prospecting works program.

- Regional Description.

The Highveld Coalfield is located in south-eastern Mpumalanga Province, immediately south of the Witbank Coalfield. The width of the coalfield is some 95km, stretching from Nigel and Greylingstad in the west to Davel in the east, and is about 90km long, from just north of Kriel to beyond Standerton in the south and covers an area of approximately 7,000km^2. After the Witbank Coalfield, the Highveld Coalfield is the next largest producing coalfield, on a tonnage basis, in South Africa.

The coalfield is host to up to five coal Seams contained within the middle Ecca Group sediments of the Karoo Supergroup. The Karoo Supergroup comprises sediments ascribed to deposition in glacial to fluvio-glacial and from shallow marine to fluvio-deltaic environments. The Karoo Supergroup comprises the following Groups (in decreasing age), although not all Groups are completely represented in the Highveld Coalfield to the present day erosion surface: Dwyka; Ecca; Beaufort; Stormberg and Drakensberg. The Ecca Group comprises sediments from the following formations (in decreasing age): Pietermaritzburg; Vryheid and Volksrust.

The five identified coal Seams contained in the Vryheid Formation (middle Ecca Group) are named, from the base up, as follows: Number 1 Seam (No. 1 Seam, S1); Number 2 Seam (No. 2 Seam, S2); Number 3 Seam (No. 3 Seam, S3); Number 4 Seam (No. 4 Seam, S4) and Number 5 Seam (No. 5 Seam, S5). In certain areas of the coalfield, the No. 4 and No. 2 Seams are split by clastic partings and in those areas the Seams are called the No. 4 Upper and Lower Seams and the No. 2 Upper and Lower Seams.

The coalfield is characterised by the fact that in the northern regions, all the coal Seams, with the exception of the No. 3 Seam, attain mineable thicknesses with economic potential, while in the southern regions, only the No. 4 Seam, and in very localised areas the No. 2 Seam, attain mineable dimensions of economic importance.

The depth to the coal Seams increases in a southerly direction, e.g. the No. 4 Seam can be mined by opencast in the Kriel (northern) district, while it occurs at a depth of around 200m in the Standerton (southern) district. The coal Seams are generally flat-lying to gently undulating with a slight regional dip to the south.

Structurally, the coalfield is relatively undeformed with no prominent folding having been identified. Small-scale faulting (less than 1m) is not uncommon although large-scale faulting is. The only large-scale displacements identified are almost always associated with transgressive dolerite sills, intruded during the waning stages of the Karoo times. These intrusive dolerite sills and dykes are related to the Drakensberg Formation flood basalts. The dolerite intrusions adversely affect the coal Seams in the vicinity of the intrusions in terms of coal quality by devolatilising and burning the coal. Large areas of coal have been rendered uneconomical due to the effects of dolerite intrusions.

The most important economic coal Seams are the No. 4 Seam and the No. 2 Seam. The No. 4 Seam accounts for approximately 80% of the economically recoverable coal within the Highveld Coalfield. The No. 2 and No. 4 Seams are mined in the northern parts of the coalfield while only the No. 4 Seam is mined in the southern parts. The bulk of the coal produced is consumed in power stations and for the production of syn-fuels. A very limited quantity is exported.

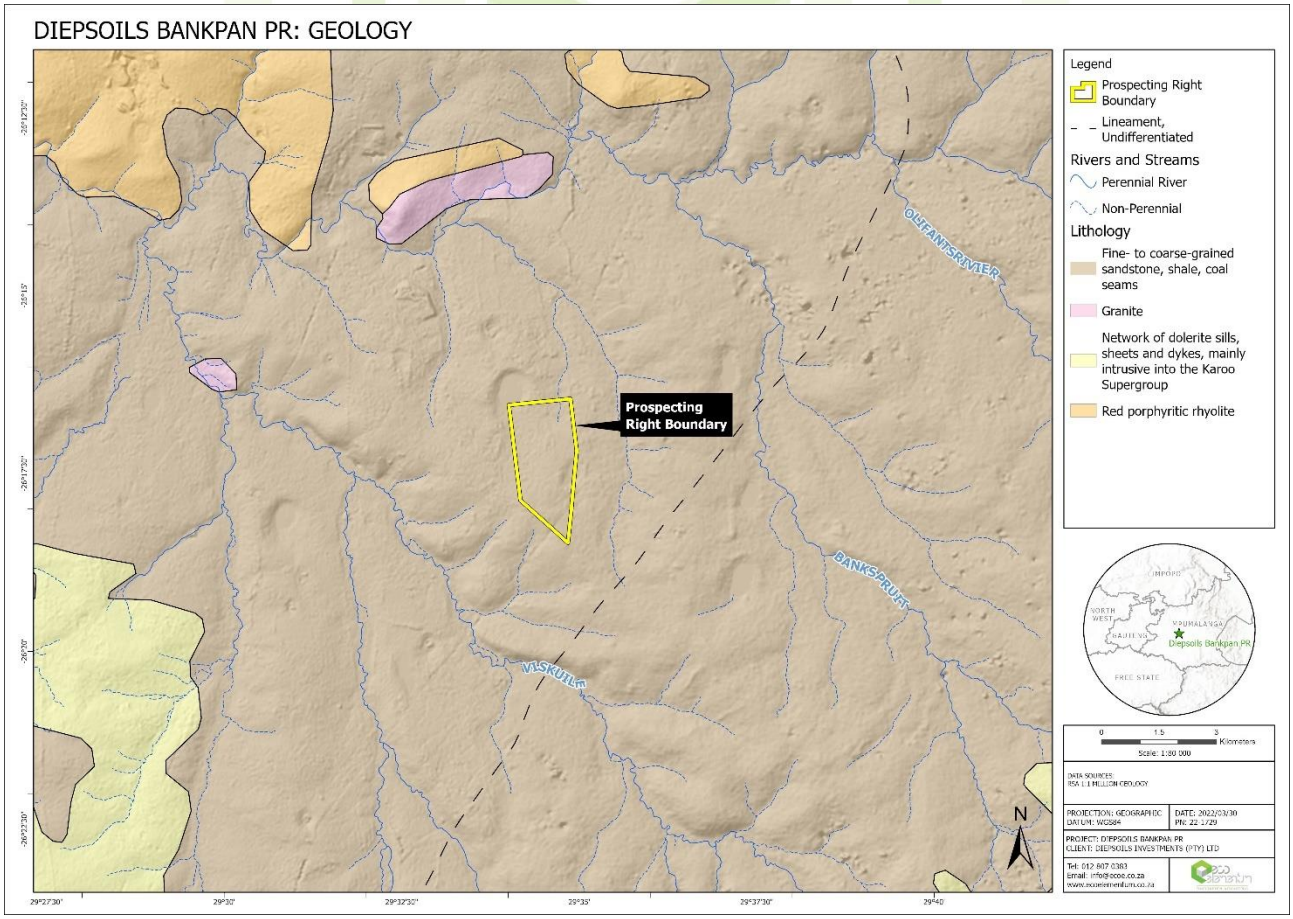

Figure 8: Local geology of prospecting right area

- Sensitivities

There are no foreseen geological sensitivities posed upon the site or the proposed activity.

9.1.3 Palaeontological context

The palaeontological sensitivity of the area under consideration is presented in Figure 9. The Permian Vryheid Formation sediments could have preserved fossil plants of the Glossopteris Flora, including leaf impressions and fructifications of Glossopteris, and other extinct groups like the cordaitaleans, some lycopods, sphenophytes, wood and ferns, as well as early gymnosperms. Fossil plants have been recorded from other regions but they are sporadic and their distribution is hard to predict. Coal seams 1-6 are found in this region but although coal is formed from the alteration by temperature and pressure of peats that are an accumulation of plant matter, no plants are recognised within the coal itself. Fossil plants can be found in the fine-grained shale lenses between the coal seams.

The Glossopteris flora fossils are of interest to palaeobotanists but in general they are widely scattered and difficult to locate. This flora is well known but there is always a very small chance that some new taxa may be discovered (Plumstead, 1969; Anderson and Anderson, 1985).

Quaternary sands seldom preserve fossils as they are either aeolian in origin or from recent fluvial activity, in other words they are not in primary context. Fossil pans, spring mounds or stabilised sand dunes may preserve fossils but these features are not indicated on the Google Earth map that shows the land has having been modified by agricultural practices.

Figure 9: SAHRIS palaeosensitivity map for the site for the proposed MRA on Farm Bankpan225 shown within the yellow rectangle.

Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero.

- Sensitivities

From the SAHRIS map above the area is indicated as very highly sensitive (red) for the Vryheid Formation. A site visit would usually be required but the area has been cultivated and no fossils will be visible in the soils. Rocks and rocky outcrops are usually cleared from the fields before they are ploughed. There might be fossil plants below the ground surface but these will not be visible unless the ground has been excavated. That will only happen when the prospecting activities commence.

9.1.4 Topography and Land Capability

- Methodology and Data Sources

Land Use and topography information data was obtained the specialist studies undertaken as well as the Msukaligwa Local Municipality's Spatial Development Framework (SDF) obtained from their website (http://www. Msukaligwa.gov.za/SDF.htm)

- Regional Description

Topography is gently undulating highland typical of the central Mpumalanga Province. The area falls in the central Mpumalanga climatic zone which experiences warms summers with rainfall and winters that are warm during the day, cold at night and dry, with sharp frosts. Rainfall is mainly experienced as showers and thunderstorms between October – March. Rainstorms are often violent with severe lightning and strong winds, occasional hail and up to 80mm of rain in a single day. Windiest months are August and September, although the winds are typically light.

According to Mucina & Rutherfords (2006), the average elevation for Eastern Highveld Grassland ranges from 1520 to 1780 MASL (metres above sea level). The average elevation of the study area is 1660 MASL and slopes from the slightly more elevated southern side to the lower northern side.

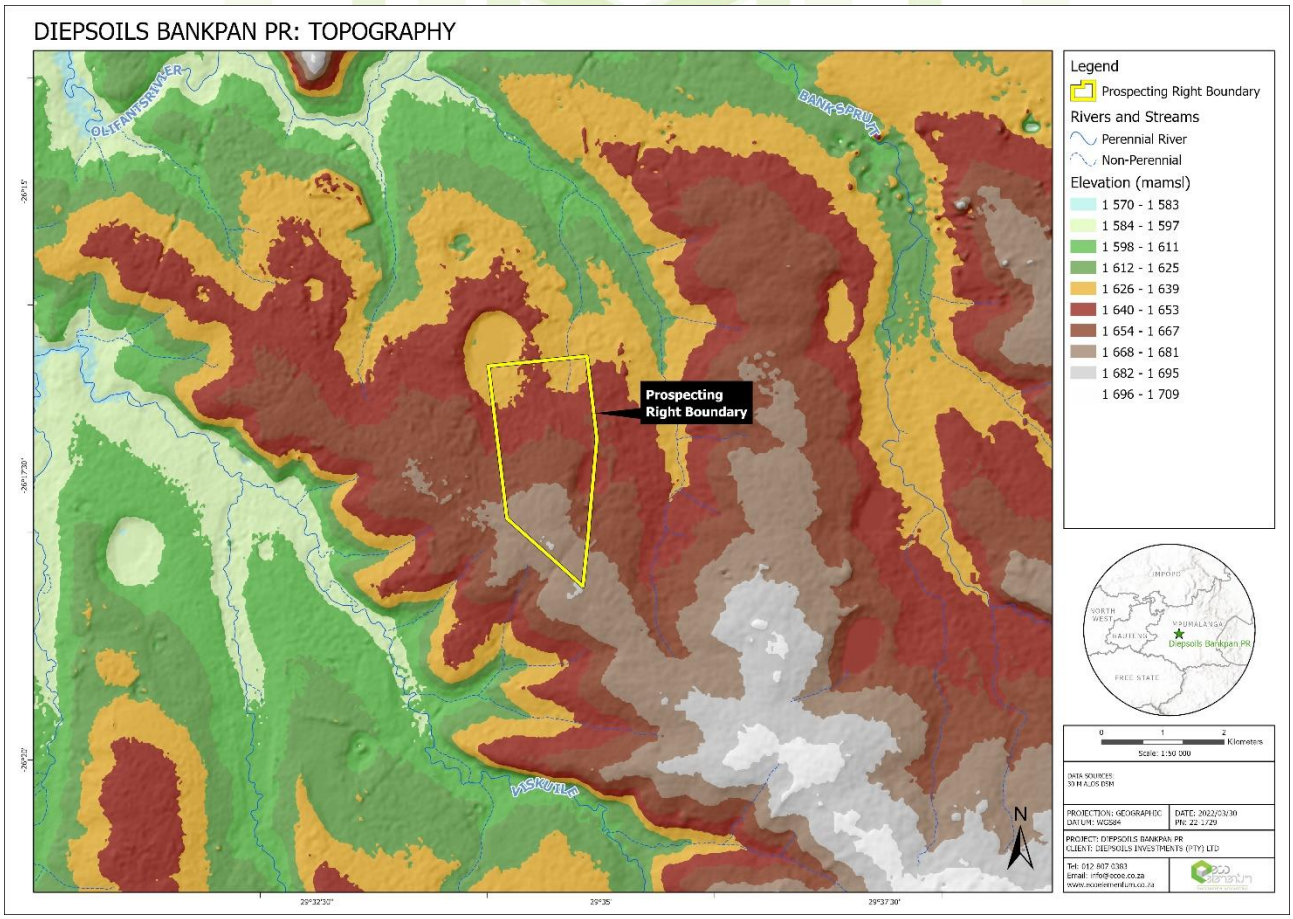

Figure 10: Topography of the study area

- Sensitivities

There are no foreseen topographical sensitivities in the study area.

9.1.5 Surface Drainage Features

- Methodology and Data Sources

The Surface Drainage information was obtained from the specialist studies conducted for the project including the Ecological Desktop Report 2022.

- Regional Description

The study area falls within in the B11A quaternary catchment of the Olifants Water Management Area (Figure 11). The closest perennial rivers to the study area are the Viskuile River 2.8 km to the southwest and Bankspruit 4.7 km to the northeast. Several non-perennial streams are also located directly east and southwest of the demarcated study area, while perennial pans intersect the eastern boundary and north-western corner. The Trichardtsfontein Dam is located approximately 41 km to the southwest of the study area and the Willem Brummer Dam 41 km to the southeast. Several minor dams, pans and non-perennial rivers are found in the general vicinity of the study area.

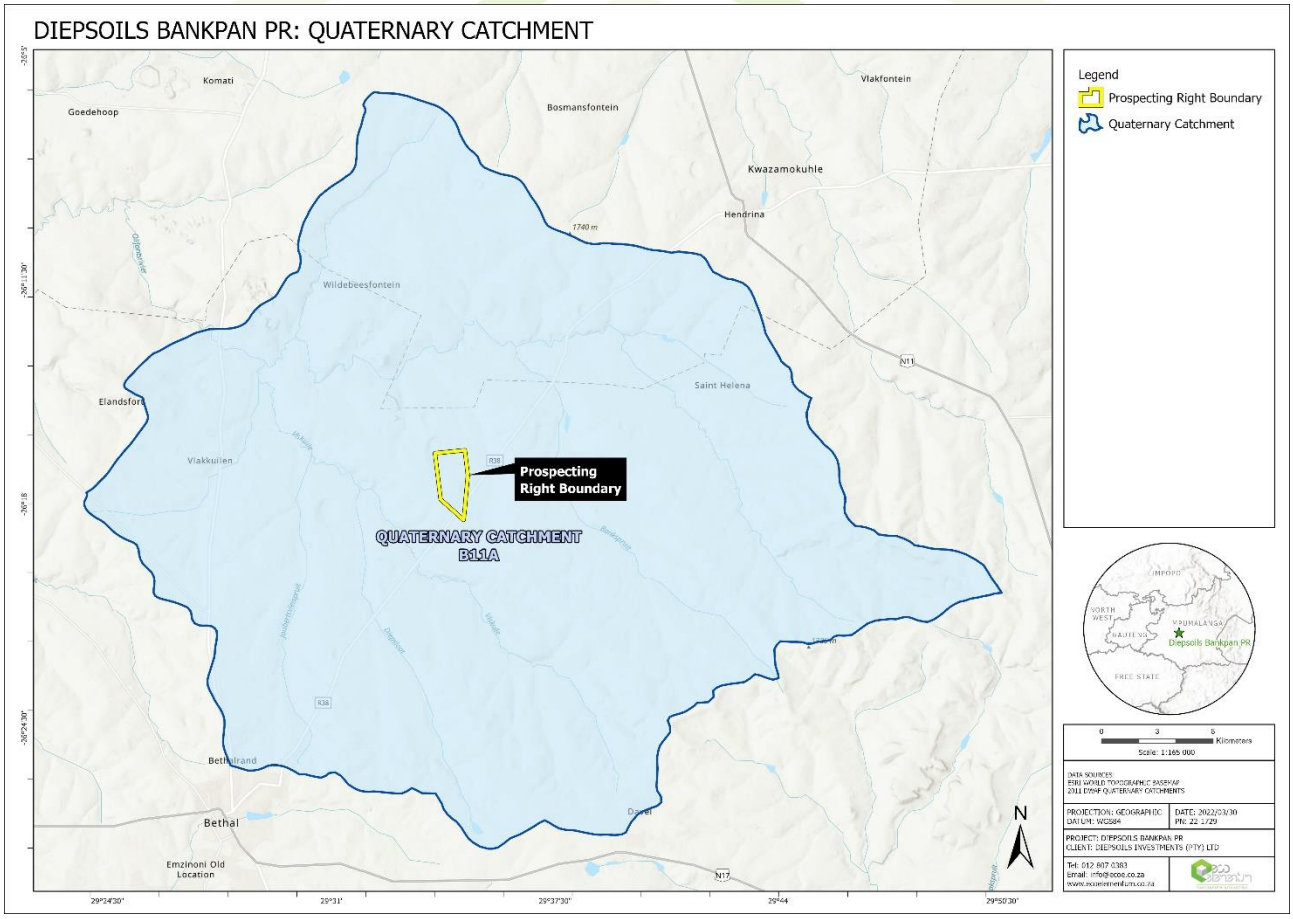

Figure 11: Quaternary catchment area

- Sensitivities

All these habitats should be considered of very high sensitivity. Prospecting activities must aim to avoid wetlands and riparian areas (such would require a WULA), ensuring also that no prospecting-related pollution or runoff from coal-ore seeps into such areas. For further details, please refer to attached Ecological Desktop Screening Report 2022.

9.1.6 Flora

- Methodology and Data Sources

Flora information was obtained from the specialist studies conducted for the project including the Archaeological Desktop Report 2022.

- Regional Description

In terms of vegetation, the study area falls within the Grassland Biome, Mesic Highveld Grassland Bioregion and the Eastern Highveld Grassland vegetation unit (Figure 12). The Grassland Biome covers approximately 28% of South Africa (Mucina & Rutherfords 2006). This vegetation unit's conservation status is considered to be endangered with a conservation target of 24%. Only a small portion is conserved in statutory and private reserves. Eastern Highveld Grassland consists of the plains between Belfast in the east and the eastern side of Johannesburg in the west and also extends towards Bethal, Ermelo and to the west of Piet Retief. This vegetation type is associated with slightly to moderately undulating planes and includes low hills and pan depressions. The general vegetation is short dense grassland with small, scattered rocky outcrops and some woody species. About 44% of this vegetation unit has been transformed by cultivation, plantations, mines, urbanisation and the building of dams. Although no serious alien invasions are reported, Acacia mearnsii may become dominant in disturbed areas. Erosion associated with this vegetation unit is low (Mucina & Rutherfords 2006).

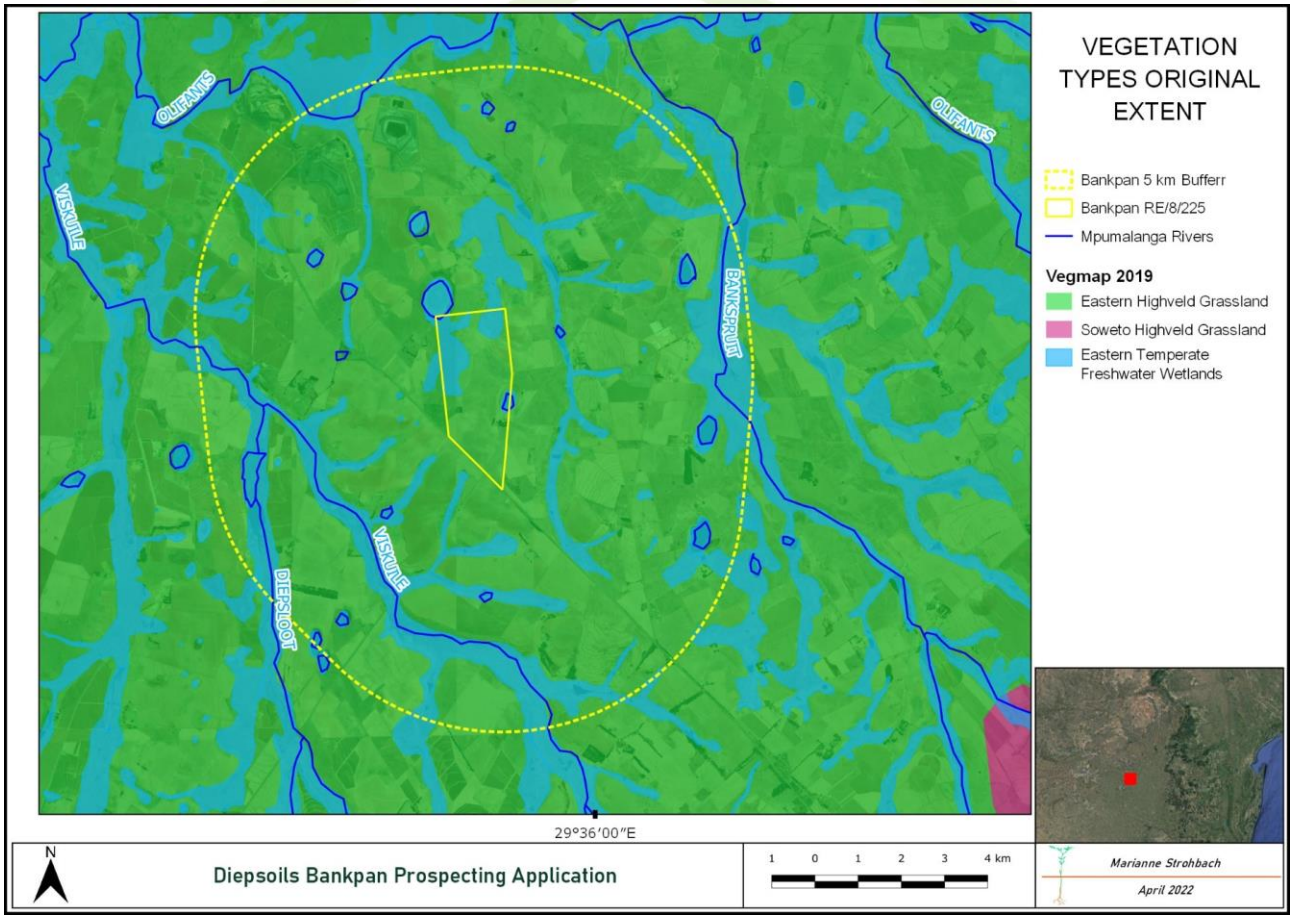

Figure 12: Map of the extent of historical vegetation types on and around the study area.

- Sensitivities

According to the Ecological desktop study all vegetation types within the prospecting area are listed as Threatened Ecosystems – classified as Vulnerable, possibly to be changed to Endangered. It is anticipated that due to historical disturbance levels, alien invasive plant species will be present on all sites. A full alien invasive plant survey is thus also recommended, as part of an analysis of the risk of prospecting and potential mining in spreading and/or further establishing such undesirable plants.

Mpumalanga Biodiversity Sector Plan (MBSP) 2014

On the **provincial level**, the **Mpumalanga Biodiversity Sector Plan** (MBSP) is a comprehensive environmental inventory and spatial plan that is intended to guide conservation and land use decisions in support of sustainable development (Lötter & Ferrar, 2006; Lötter 2014; MTPA, 2014). The MBSP maps the distribution of the Province's known biodiversity into several categories. These are ranked according to ecological and biodiversity importance and their contribution to meeting the quantitative targets set for each biodiversity feature. Of relevance to the study area are the following mapping categories (Figure 13):

The categories used in the CBA maps are as follows:

- **Protected areas (PAs):** Areas that are already proclaimed under national or provincial legislation, including gazetted biodiversity stewardship sites.
- **Critical Biodiversity Areas (CBAs):** Areas that are required to meet biodiversity targets for species, ecosystems or ecological processes.

Land use guidelines:* *These need to be kept in a natural or near-natural state, with no further loss of habitat or species. Only low-impact, biodiversity-sensitive land-uses are deemed appropriate.

The CBA category is split into:

  - **CBA: Irreplaceable** – Areas required to meet targets and with irreplaceability values of more than 80% (i.e. there are little of these features remaining in a natural state). They are also critical linkages in the landscape that must remain natural, and/or Critically Endangered ecosystems below their biodiversity target.
  - **CBA: Optimal** – (Previously called "Important and Necessary") planning units optimally located to meet biodiversity targets and other criteria defined in the analysis. Although these areas are not 'irreplaceable' they are the most efficient land configuration to meet all biodiversity conservation targets and design criteria.

- **Ecological Support Areas (ESAs):** Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs and for delivering ecosystem services such as water provision, flood mitigation, or carbon sequestration. In the terrestrial assessment they support landscape connectivity and strengthen resilience to climate change. ESAs need to be maintained in at least a functional and often natural state, supporting the purpose for which they were identified. They include features such as riparian habitat surrounding rivers or wetlands, corridors etc.

Land use guidelines:* *A greater range of land-uses over wider areas is appropriate, subject to an authorisation process that ensures the underlying biodiversity objectives are not compromised.

Freshwater ESAs may include:

  - **Wetland Clusters:** these are smaller wetlands such as pans embedded within a landscape to allow for the migration of fauna and flora between wetlands.
  - **Wetlands:** wetlands that are important for supporting the hydrological functioning of rivers, water tables and freshwater biodiversity, as well as providing ecosystem services through the ecological infrastructure that they provide.

- **Other Natural Areas (ONAs):** Areas that have not been identified as a priority in the current systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructural functions. Although they have not been prioritised for biodiversity now, they are still an important part of the natural ecosystem.

Land use guidelines:* *These areas offer the greatest flexibility in terms of management objectives and permissible land-uses, but some authorisation may still be required for high- impact land-uses.

- Moderately or Heavily Modified Areas: (Sometimes called 'transformed') areas that have been modified by human activity so that they are no longer natural, and do not contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructural functions, even if they are never prioritised for conservation action. Their biodiversity value has been significantly compromised.

According to the MBSP (2014), the study area contains large extents of the following (Figure 13):

- CBA Optimal Areas and Other natural Areas, mostly including wetland areas

- Wetlands (all NFEPA) draining into the Olifants NFEPA River (Figure 13)
- Moderately Modified – Old Lands (these are secondary grasslands)
- Heavily Modified Areas (currently under cultivation, high agricultural value)

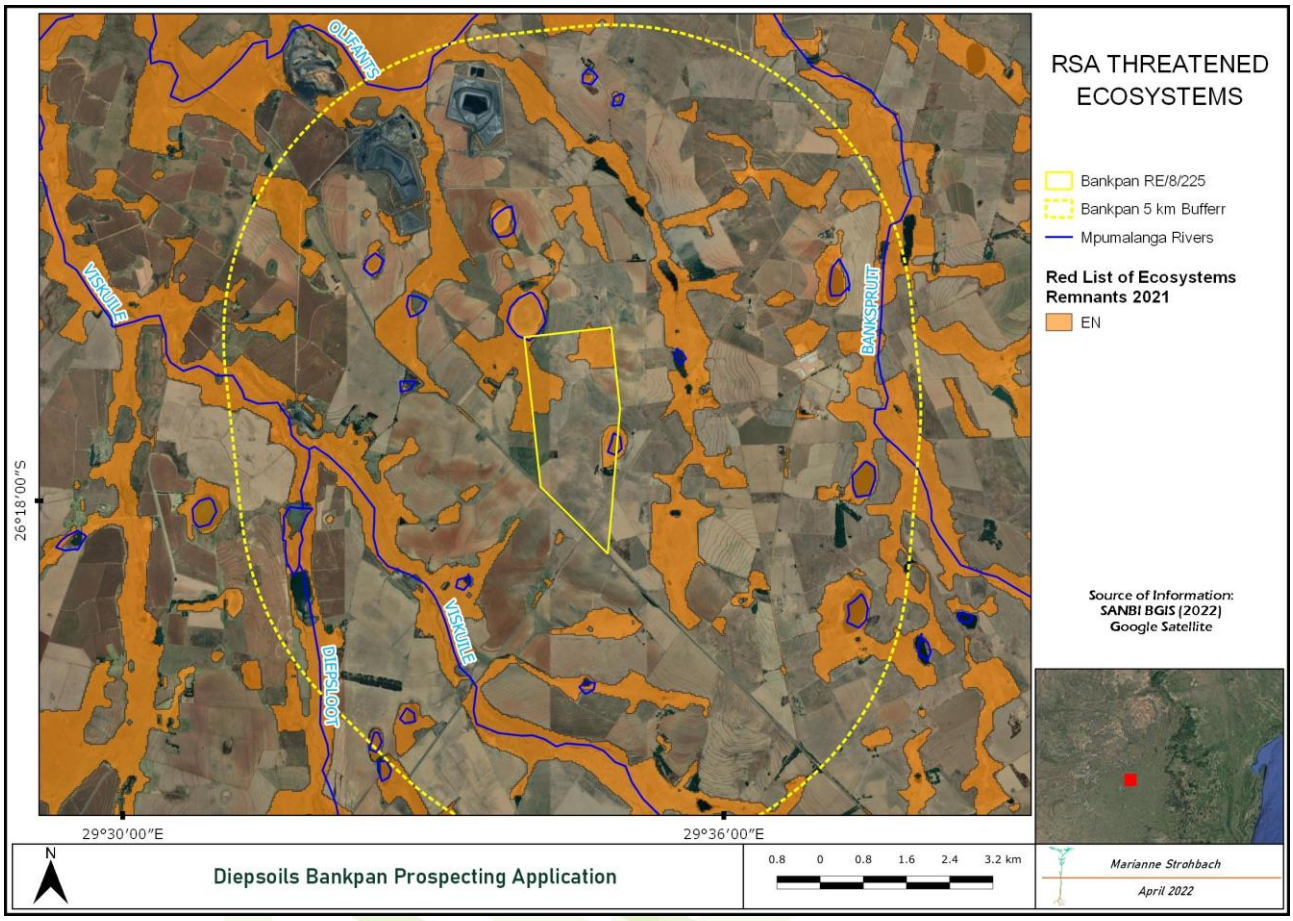

Figure 13: Map of remnants of Threatened Ecosystems in and around the study area (provisional 2021 delineation).

9.1.7 Aquatic: Wetland and Rivers

The southern periphery of the prospecting area is on a local watershed, with water mostly draining north into the Olifants River, which is classified as NFEPA River (Figure 12 and Figure 14 above). Many of the wetlands are classified as seepage, valley bottom- and channelled valley bottom wetlands, and all are classified as NFEPA wetlands. Overall the combined aquatic Sensitivity is rated Very High by the DFFE Screening Tool.

It will further be important to maintain suitable buffer zones around the wetlands. Key functions of such buffer zones would be to (Mcfarlane and Bredin, 2017):

- Maintain basic aquatic processes of the CBA Optimal wetlands
- Reduce impacts on water resources from upstream activities and adjoining land uses
- Provide habitat for aquatic and semi-aquatic species.
- Provide habitat for terrestrial species

The extent of the buffer zone that needs to be maintained varies according to factors including rainfall, nature of lateral flows and inputs, surrounding slope and soil characteristics, and must be determined by a wetland specialist prior to any prospecting taking place.

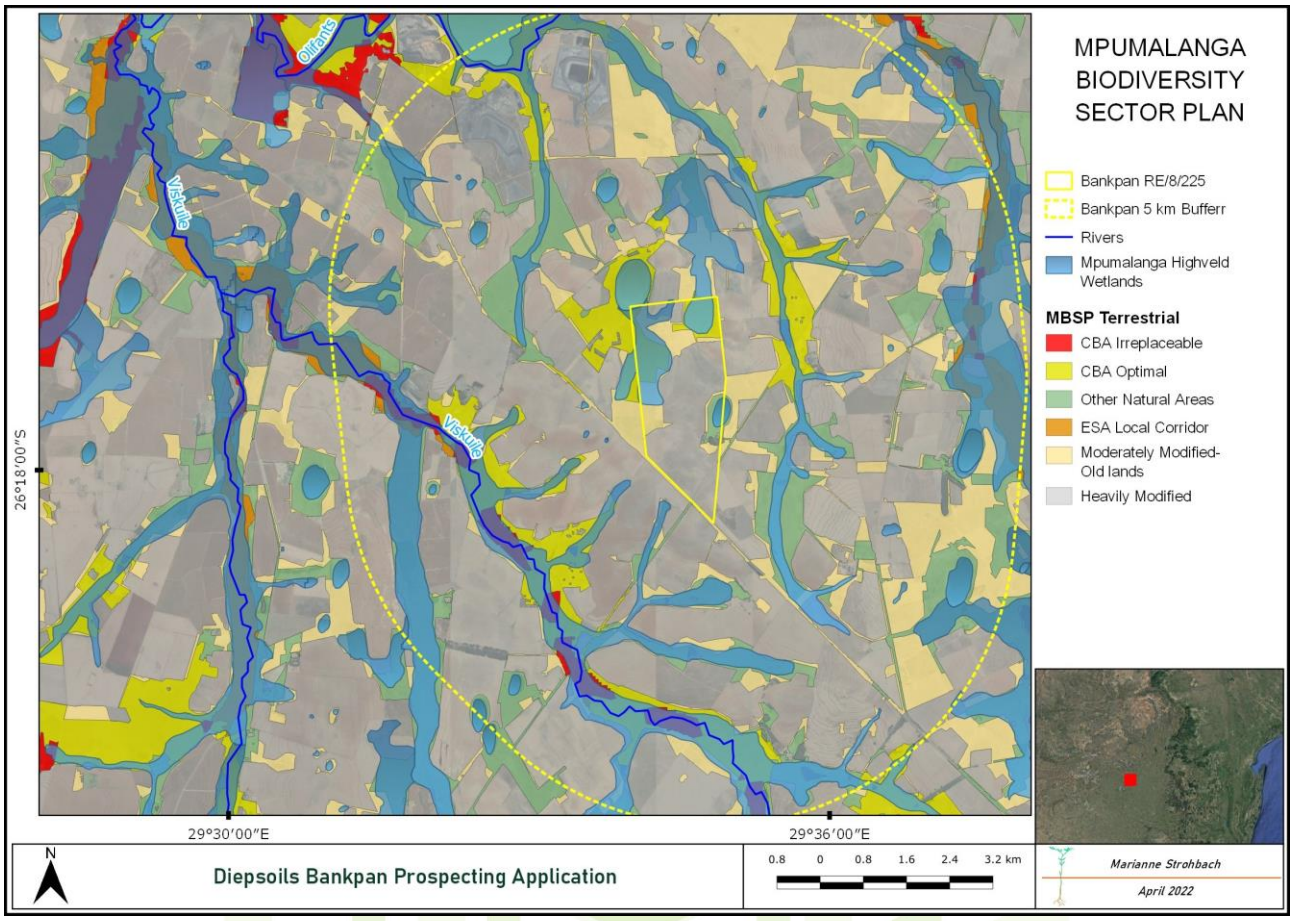

Figure 14: Map of CBA classification of areas in and around the study area.

9.1.8 Noise

The congestion of different types of vehicles and associated increased noise levels takes place along these roads during the day and to a lesser degree during the night. There are noise sensitive areas such as guest houses, houses, schools, entertainment areas along the road network.

- The Noise Receiving Environment

The prevailing ambient noise levels along this proposed road vary between built-up areas with high prevailing ambient noise levels to areas where there are low prevailing ambient noise levels because of the rural type of district of the area. Certain areas with high levels of ambient noise are located in close proximity to existing roads. The prevailing ambient noise levels are made up out of traffic noise, domestic noise, built-up area noise, industrial type noises and residential type noises. The proposed prospecting right is not a linear type of noise source with only high noise levels during work hours and low noise levels night.

- Current Noise Sources

The prospecting area is located in open veldt and the surrounding land is used for grazing and farming purposes and in this regard livestock, birds and human voices have been identified as the main sources of sound in the prospecting right area. In terms of the broader area, the prospecting area falls within a predominantly well-developed area due to the substantial mining activities.

The ambient noise level is proportional to the type of activity i.e., traffic and industrial type noise far and near field, wind direction, inversion conditions, additional sounds i.e., frogs, animals, insects, etc. present at the time in a specific area. The alleged noise impact on the environment and the residents living in the vicinity of the roads will be investigated.

9.1.9 Cultural and Historical Environment

- Methodology and Data Sources

The cultural and historical information was obtained from the specialist studies conducted for the project including the Archaeological Desktop Report 2022.

- Regional Description

A total of two sites consisting of buildings were noted on historical topographical maps and aerial imagery (Figure 15). The analysis indicate that Site B01, likely to have been a farmstead, already exited by 1955. Accordingly, the associated building and structures were demolished between 1996 and 2005. Recent satellite imagery, however, indicate that new buildings were constructed between 2005 and 2021. These buildings appear to be utilised for farming activities and if still present, are of contemporary origin and unlikely to be significant from a heritage perspective. However, because buildings and structures are not always identifiable on aerial imagery and since Site B01 might be associated with demolished historical infrastructure likely to exceed 60 years of age, the demarcated area is considered to be sensitive from a heritage perspective. Should building remains dating to historical times be present, it might be protected under the NHRA (25 of 1999). Site B01 should therefore be avoided by the proposed prospecting activities. Should this not be possible, the area should first be inspected by a qualified archaeologist.

The two buildings associated with Site B02 were constructed between 1975 and 1984 and according to contemporary satellite imagery, are still intact. The site appears to be associated with the adjacent railway line, does not exceed 60 years of age and is unlikely to be sensitive from a heritage perspective. However, should impact to the site be unavoidable, it is recommended that a qualified archaeologist first inspect the site.

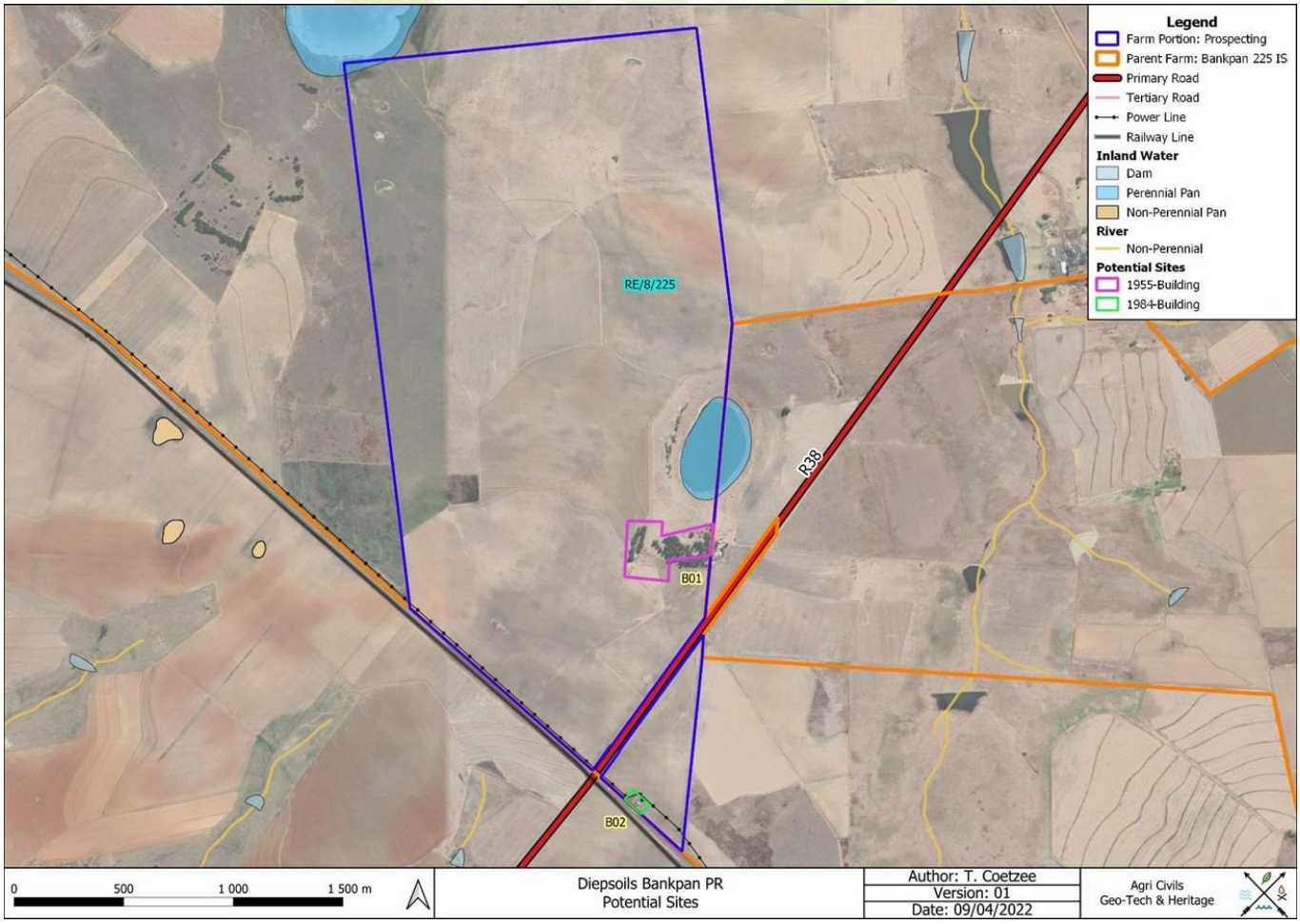

Figure 15: Heritage potential Sites.

- Sensitivity

Apart from the identified potential sites, open and undisturbed areas falling outside of the previously/currently cultivated areas are considered to be the most sensitive, especially due the presence of LIA, Historic and burial sites in the general area. Care should therefore be exercised when prospecting in these areas. The possibility also exists that culturally sensitive sites, such as burial sites, might have been created after some cultivated fields fell into disuse, meaning that burial sites might be located in disturbed areas as well. Therefore, should uncertainty regarding heritage remains exist, it is advised that a qualified archaeologist be contacted prior to any impact.

A full Phase 1 AIA must be conducted should any development that triggers an AIA result from the prospecting project, including if the cumulative impact of the proposed prospecting exceeds 0.5 ha. The 500 m buffer area is considered to be potentially sensitive from a heritage perspective since archaeological sites are often located within this zone.

9.1.10 Social and Economic Environment

- Methodology and Data Sources

The Msukalikwa Local Municipality's Spatial Development Framework (SDF) was obtained from their website (http://www.Msukalikwa.gov.za/SDF.htm).

- Regional Description

Gert Sibande is one of the 3 districts of Mpumalanga province of South Africa. The seat of Gert Sibande is Ermelo. The majority of its 900 007 people speak IsiZulu. The district code is DC30. On 15 October 2004, the municipality changed its name from the "Eastvaal" to "Gert Sibande" District Municipality. The economic thrust of Msukaligwa centred on Agriculture, Forestry and Coal Mining which significantly contributes to economic growth on provincial and national level. The mining sector generates mass employment opportunities which are mainly situated within the rural areas of the municipality. Although some key sectors of the municipality are slowly declining (due to international and national factors), the mining sector continues to grow (Msukaligwa Integrated Development Plan; 2019-2020). The mining sector contributes significantly to the GDP (22% of the provincial economy) followed by manufacturing at 12%, construction at 3%, and agriculture at 3%. The activity of mining has numerous social and economic benefits in local, regional and national context. These include:

- Job creation
- Skills development
- SMME development
- Local economic development
- Contribution to local and national tax income (royalties, companies' tax etc.)
- Contribution to the national gross domestic product, and
- Future business opportunities.

- The production of goods, supply of services or construction of infrastructure results in expenditure within a regional economy which has knock-on effects and results in additional expenditure which contributes to the regional economy.
- The objectives of the Human Resource Development Programme will be to ensure:
    - Availability of specific mining skills;
    - Competency of the workforce; and
    - Training employees in skills that can be carried and utilized outside the sphere of the mining industry.
- In terms of the Gert Sibande's IDP (2017-2022), the following objectives have been identified as part of the Key Performance Area (KPA) No. 6 which addresses the Spatial Development Analyses and Rationale through the vehicle of the GSDM Strategic Development Framework:
    - Promote intensive and extensive commercial farming activities throughout the District and facilitate Agrarian Transformation within the CRDP priority areas.
    - Facilitate and accommodate mining in the District in a sustainable manner in order to support local electricity generation and industrial development.

- Unlock the industrial development potential of existing towns through developing industry specific Special Economic Zones/Economic Clusters throughout the District, in line with the Mpumalanga SDF and the Mpumalanga Vision 2030 Strategy in accordance with the following sectors: Agricultural Cluster Forestry Cluster and Industrial Cluster.

b. Description of the current land uses.

Terrain and Land use

Current Land Uses on the proposed prospecting right area includes:

- Natural Veld;
- Rivers, streams, pans and dams;
- Dryland agriculture; and
- Infrastructure: roads, railway, powerlines, telecommunication.

Land ownership details within and immediately adjacent to the prospecting right area are provided in Table 2. The surface rights are mainly owned by private individuals and private companies.

This section should be read with reference to Figure 16 which shows affected farms and farms adjacent to the prospecting right area.

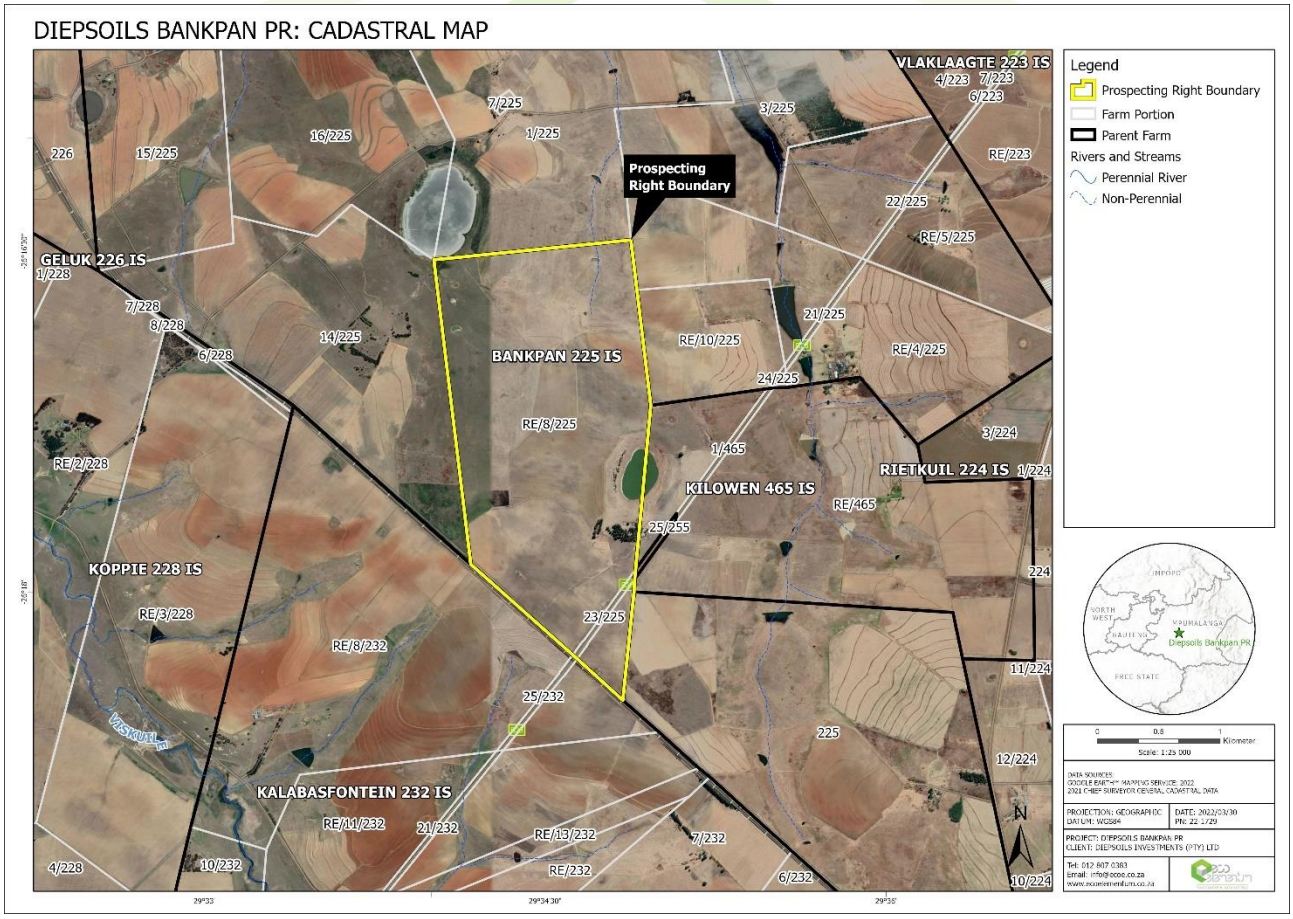

Figure 16: Study farm portions and adjacent farms

An email was sent to the Department of Rural Development and Land Reform to enquire as to the status of land claims on the subject properties. No response thus far.

c. Description of specific environmental features and infrastructure on the site.

The main environmental features would be those associated with the ecology, avi-faunal, ridges, heritage and the surface water bodies see Figure 17. Prospecting will allow for enough flexibility in location to avoid suitable habitats of globally threatened red data avifaunal species, wetlands, rivers, and associated buffer zones (servitudes). If there is a need to conduct activities in any of these areas, then the necessary applications will be sought and approved prior to conducting activities in these areas.

Wetlands and rivers

The southern periphery of the prospecting area is on a local watershed, with water mostly draining north into the Olifants River, which is classified as NFEPA River (Figure 13 and Figure 17). Many of the wetlands are classified as seepage, valley bottom- and channelled valley bottom wetlands, and all are classified as NFEPA wetlands.

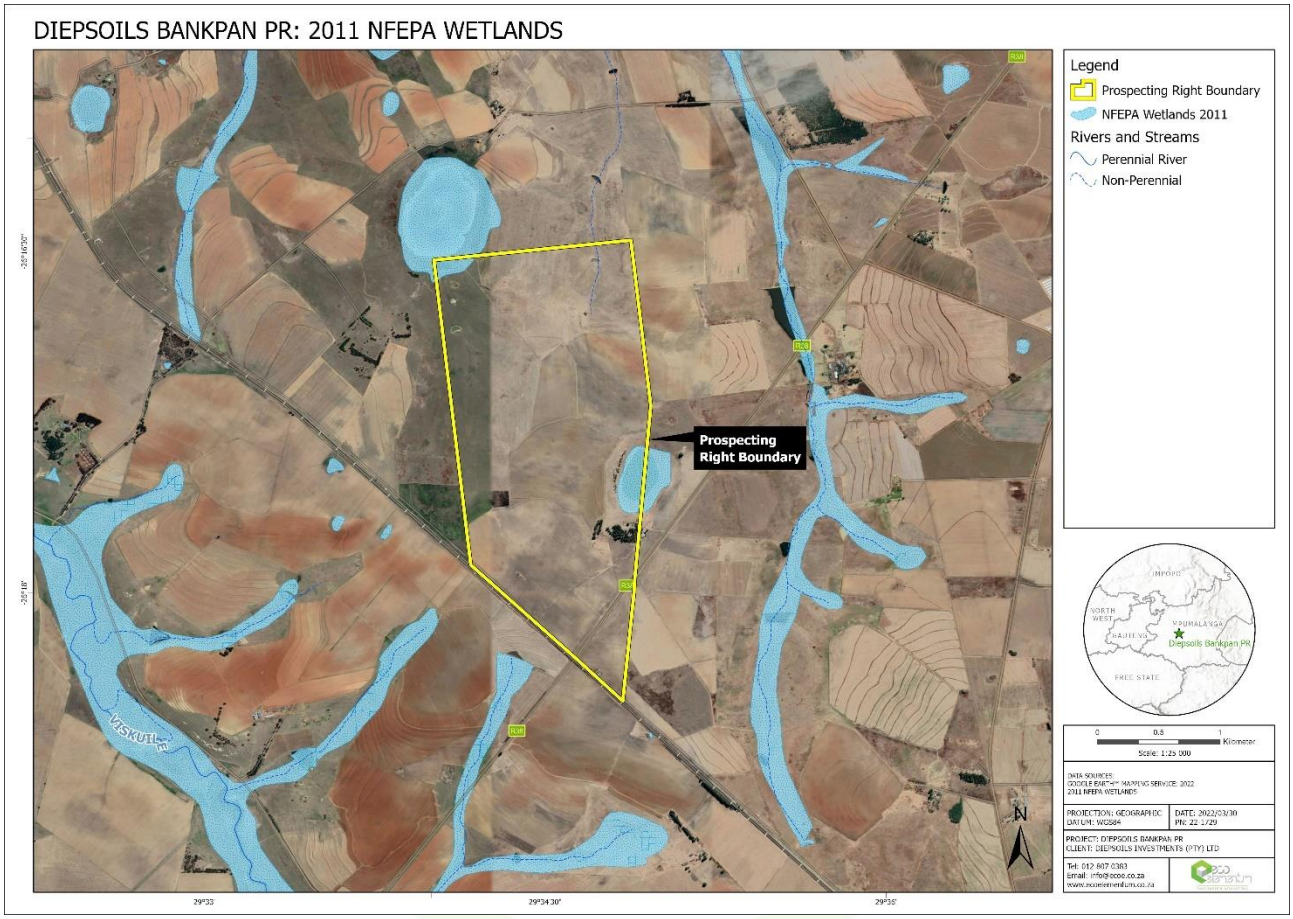

Figure 17: Wetlands and Rivers on and near the study area.

d. Environmental and current land use map.

A conceptual map showing topographical information as well as land uses on and immediately surrounding the prospecting site is provided in Figure 18.

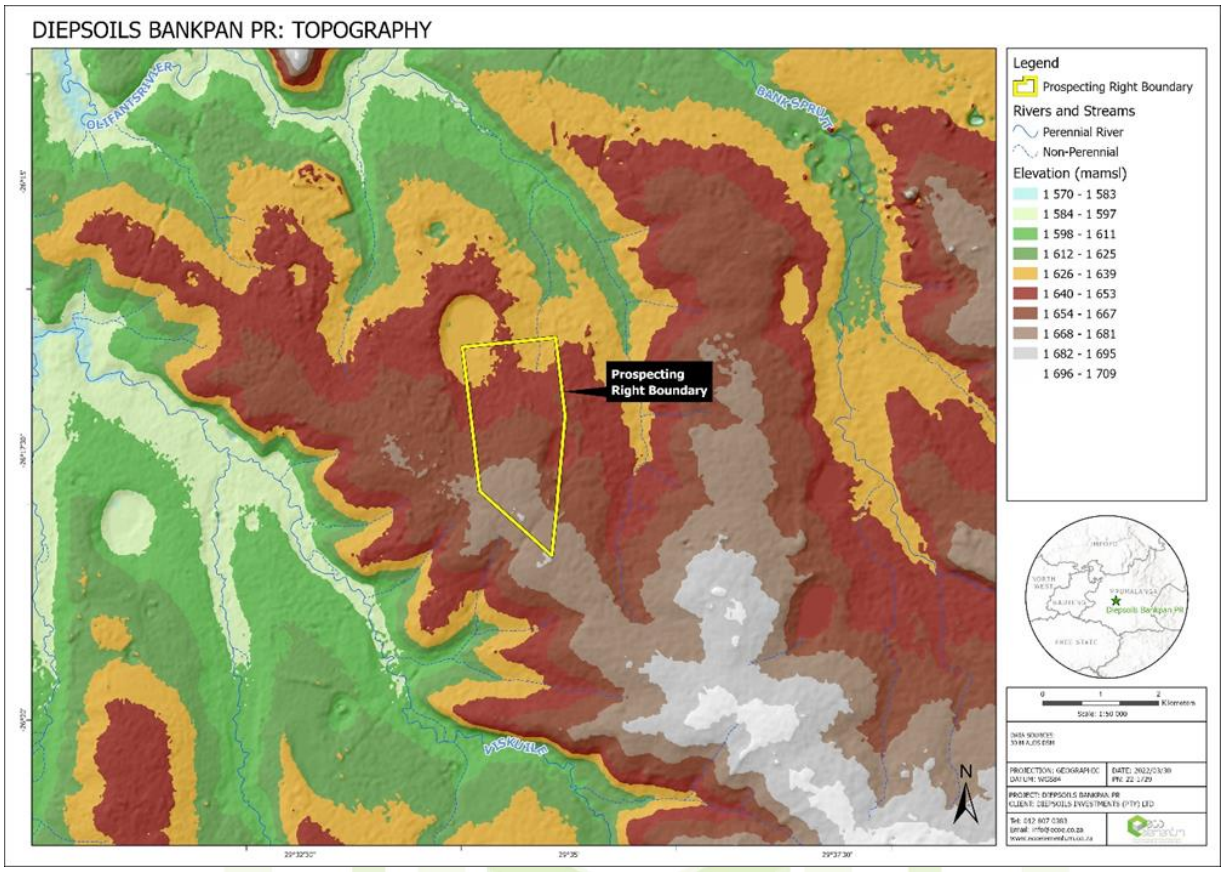

Figure 18: Topography of the prospecting area

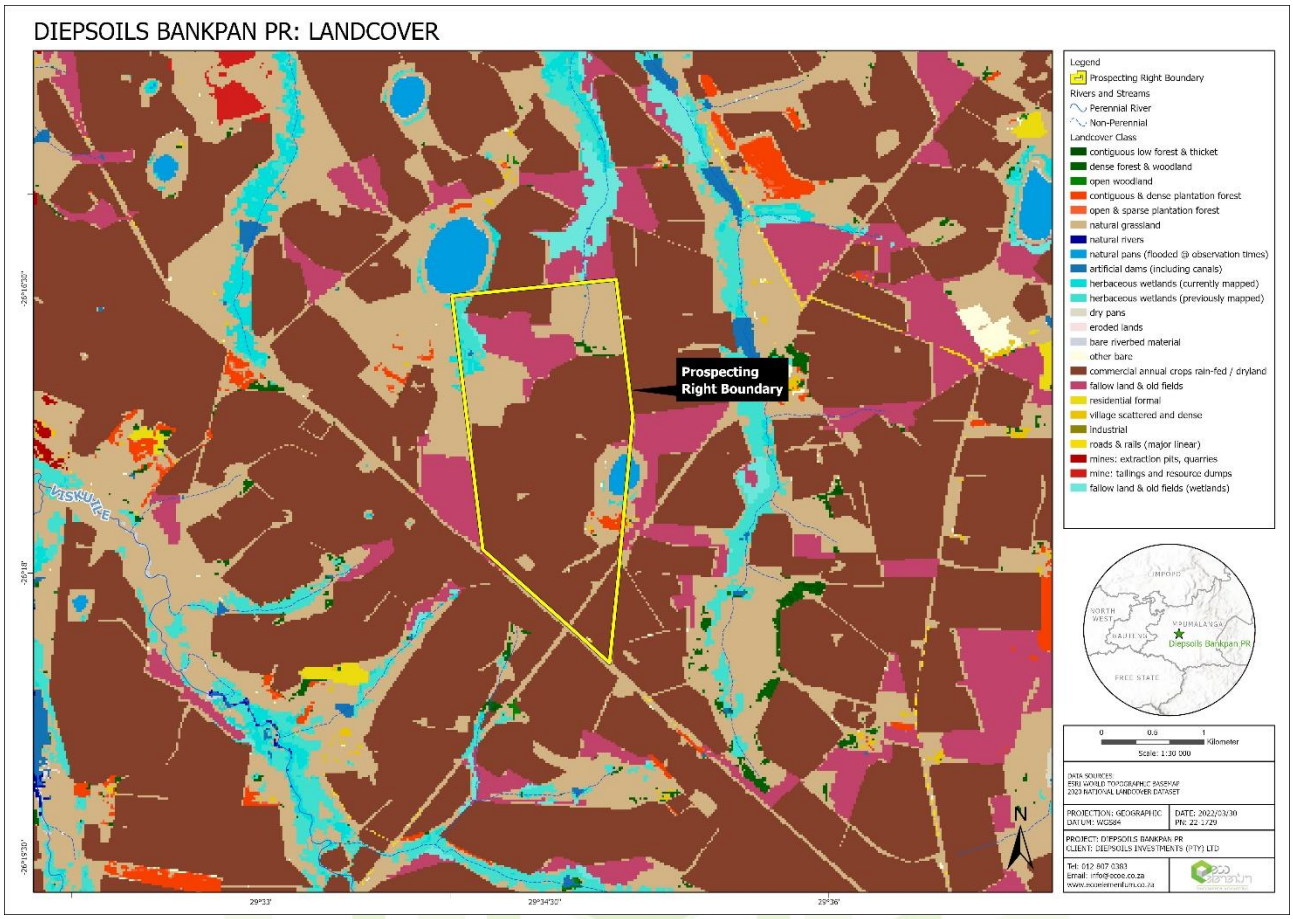

Figure 19: Landcover of the prospecting area

10. ENVIRONMENTAL IMPACTS AND RISKS

iii. Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impact.

Table 11: Impact Assessment Register

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Topography						
Levelling of drilling sites	Change in natural topography of the site.	Topography	Construction	Stockpile soils removed for rehabilitation. Rehabilitate to original landform.	Neg Low	Neg Low
Geology						
Removal of geological core	Creation of conduits between geological strata.	Geology	Operations	Boreholes to be sealed with concrete.	Neg Low	Neg Low
Soils						
Erosion from soil disturbance at drilling sites	Potential loss of topsoil	Soils	Operations	Keep the footprint of disturbance as small as practicably possible. Vegetation to be left in place to protect soils where possible. Where vegetation clearance cannot be avoided, storm water management measures to be put in place if there is a risk of soil erosion. Erosion protection where cut and fill and levelling of the drill site occurred.	Neg Low	Neg Low
Erosion from soil disturbance on access roads	Potential loss of soil resource.	Soils	Construction & Operation	Utilise existing access roads as far as possible. Keep the footprint of disturbance as small as practicably possible. Access roads to follow slope contours where possible. Vegetation to be left in place at sides of the road to protect the soils.	Neg Low	Neg Low
Oil and diesel spills due to inappropriate storage, vehicle maintenance and washing operations.	Risk of soil contamination.	Soils	Construction, Operation and Closure	Impermeable liners or surfaces to be provided in areas where hydrocarbons are managed. Diesel storage areas to be bunded and regularly checked. Drip trays to be used when any vehicle maintenance is undertaken. Spill kits to be available at drill sites.	Neg Low	Neg Low

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Hydrology (Surface Water)						
Spillage from fuels, oils and lubricants	Contamination of surface water.	Surface Water	Construction, Operation and Closure	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Increase in sediment loads as a result of erosion and heavy rainfall		Surface Water	Construction, Operation and Closure	Implement measures for soil erosion control in accordance with risk assessment. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
General and Human Waste		Surface Water	Construction, Operation and Closure	Contractors may only use designated toilets and waste disposal facilities.	Neg Low	Neg Low
Hydrogeology (Groundwater)						
Seepage of fuels, oils and lubricants.	Contamination of groundwater.	Groundwater	Construction, Operation and Closure.	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50 year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Cross contamination of aquifers due to borehole construction.		Groundwater	Operation and Closure.	Boreholes that will not be used again will be backfilled with cement and sealed.	Neg Low	Neg Low
Noise						

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Machinery and drilling operations. Movement of vehicles.	Increase in ambient noise levels. Disturbance to people and animals.	Noise	Construction, Operation and Closure.	Avoid travelling past residences. Speed limit of 40 km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100 m from households. Drilling to take place during daylight hours. Borehole site and access route selection to give cognisance to the location of noise receptors and efforts must be taken to minimise such disturbance.	Neg Moderate	Neg Low
Air Quality						
Exhaust fumes from vehicles and machinery related to prospecting activities.	Release of gaseous emissions.	Air Quality	Construction, Operation and Closure	No unnecessary revving of vehicles should take place. No vehicles must stand idling when not in use.	Neg Low	Neg Low
Vehicles travelling on gravel roads	Dust fallout and fine particular matter emissions	Air Quality	Construction, Operation and Closure	Restrict traveling speed of vehicles to reduce vehicle entrainment of dust. Wet gravel roads if dust is found to be excessive.	Neg Low	Neg Low
Land use and Land Capability						
Intrusion due to drilling and prospecting activities in an area where agricultural land uses are prominent	Land use conflict	Land use	Construction & Operation	Drilling sites must be selected to minimise disturbance of current land use. Relevant agreements must be in place with land owners to define location and extent of drilling sites and rehabilitation measures that will be undertaken at the end of drilling.	Neg Moderate	Neg Low
Land clearing and transformation.	Reduction in land capability	Land use	Construction		Neg Low	Neg Low
Fauna, Flora and Ecology						
Establishment of drilling sites and access routes.	Removal / damage of natural vegetation	Fauna, Flora and avifaunal.	Construction	Site selection aimed at minimising disturbance to natural vegetation.	Neg Moderate	Neg Moderate

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Accidental fires.		Fauna, Flora and avifaunal	Construction, Operation and Closure	- No smoking at drilling sites. - Code of conduct to include measures for the prevention of fires. - Emergency equipment and procedures for firefighting to be in place. - Adhere to emergency procedures.	Neg Moderate	Neg Moderate
Establishment of drilling sites and access routes.	Disturbance/ poaching of animals.	Fauna, Flora and avifaunal	Construction	Site selection aimed at minimising disturbance to sensitive animal habitats and breeding areas.	Neg Moderate	Neg Moderate
Movement of drilling contractors.		Fauna, Flora and avifaunal	Construction, Operation and Closure	Drilling contractors are only allowed to move within the designated drilling area. Environmental awareness training should include poaching and disturbance of animals.	Neg Moderate	Neg Moderate
Sensitive and Protected Areas						
Establishment of drilling sites and access routes.	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened species.	Biodiversity	Construction, Operation and Closure	The extent of the buffer zone that will be maintained varies according to factors including rainfall, nature of lateral flows and inputs, surrounding slope and soil characteristics, and will be determined by a wetland specialist prior to any prospecting taking place. A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season. o Alternatively, restrict prospecting to modified land only.	Pos Moderate	Neg Moderate
Heritage Resources						
Drilling of boreholes will damage / destroy heritage resources in the area.	One area potentially associated with historical infrastructure remains (B01) and one area consisting of contemporary buildings (B02) were noted.	Heritage Resources	Construction and Operation	These areas will be avoided by the proposed prospecting activities. Prospecting will not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.	Pos Moderate	Neg Moderate
Palaeontological Resources						

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Drilling of boreholes on soils that preserve fossils	The Permian Vryheid Formation sediments could have preserved fossil plants of the *Glossopteris* Flora, including leaf impressions and fructifications of *Glossopteris,* and other extinct groups like the cordaitaleans, some lycopods, sphenophytes, wood and ferns, as well as early gymnosperms.	Palaeontology	Construction and Operation	It is extremely unlikely that any fossils would be found in the loose soils and sands that cover the area. Fossils are not recognisable in the coals but fossil plants might occur in shale lenses associated with the coal seams, below ground, therefore, a Fossil Chance Find Protocol should be added to the eventual EMPr.	Pos Moderate	Neg Moderate
Economic Development						
Employment and use of contractors and purchasing goods.	Contribution to the economy.	Economic Development	Construction and Operation	Preference to be given to the use of local employment, contractors and local suppliers.	Neg Moderate	Neg Moderate
Dust and noise from prospecting activities.	Creation of nuisance and disturbance to surrounding activities.	Economic Development	Construction, Operation and Closure	Implement measures to minimise air quality and noise impacts. Surrounding neighbours and land owners must be allowed to raise issues and complaints associated with prospecting activities. Their issues must be addressed promptly.	Neg Low	Neg Low
Visual and Sense of Place						
Visual intrusion due to drilling and prospecting activities.	Loss of sense of place due to prospecting activities	Visual and Sense of Place	Construction and Operation	Implement measures to reduce the visual impacts of prospecting activities, i.e. rehabilitation of drill sites and access roads.	Neg Moderate	Neg Low
Safety and Security						
Movement of drilling contractors and influx of workers.	Increase in crime.	Safety and Security.	Construction and Operation.	- Drilling contractors not allowed moving outside of designated areas. - Access of personnel related to the prospecting operations will only be allowed on approval by the project manager. - All personnel that have access to the property will be provided with access cards. - All personnel that have access to the property needs to be made visible.	Neg Moderate	Neg Low

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Overnight accommodation of drilling contractors.		Safety and Security	Construction, Operation and Closure.	Drilling contractors to be housed off the drilling property.	Neg Moderate	Neg Low
Stakeholder Acceptability						
Prospecting activities is a predecessor to mining.	Prospecting on private property.	Stakeholder Acceptability.	Construction, Operation and Closure.	Comply with the MPRDA & NEMA Implement and Comply with the EMP.	Neg Moderate	Neg Low
Prospecting activities is a predecessor to mining.	Prospecting seen as a predecessor to mining and this raises a risk to various environmental impacts.	Stakeholder Acceptability.	Construction, Operation and Closure	An application for a mining right will require a separate public participation process and IAP's will be provided with the opportunity to raise their concerns.	Neg Moderate	Neg Moderate

iv. 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).

Criteria of assigning significance to potential impacts

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, inter alia: the purpose and need for the project; views and concerns of interested and affected parties; social and political norms, and general public interest.

The methodology used for assessing impacts associated with the proposed project follows the philosophy of environmental impact assessments, as described in the booklet Impact Significance, Integrated Environmental Management Information Series 5 (DEAT, 2002b). The philosophy is summarised by the following extracts:

- The impact magnitude [or intensity] and significance should as far as possible be determined by reference to legal requirements, accepted scientific standards or social acceptability. If no legislation or scientific standards are available, the EIA practitioner can evaluate impact magnitude based on clearly described criteria. Except for the exceeding of standards set by law or scientific knowledge, the description of significance is largely judgemental, subjective, and variable. However, generic criteria can be used systematically to identify, predict, evaluate, and determine the significance of impacts (DEAT, 2002b).
- Determining significance [of impacts] is ultimately a judgement call. Judgemental factors can be applied rigorously and consistently by displaying information related to an issue in a standard worksheet format (Haug et al., 1984 taken from DEAT, 2002b).

The criteria and systematic approach to identify, describe, and assess impacts are outlined below.

Impact Ranking Criteria

The criteria used for assessing the significance of the impacts are given in Table 12. Cognisance was given to both positive and negative impacts that could result from prospecting.

Although the criteria used for the assessment of impacts attempts to quantify the significance, it is important to note that the assessment is generally a qualitative process and therefore the application of these criteria is open to interpretation. The assessment thus largely relies on the experience of the EAP, and the information provided by specialists appointed to undertake studies for the EIA.

Where the consequence of an event is not known or cannot be determined, the precautionary principle is adhered to and the worst-case scenario assumed. Where possible, mitigation measures to reduce the significance of negative impacts and to enhance positive impacts are recommended. The detailed actions, which are required to ensure that mitigation is successful, will be given in the EMPr which will form part of the BA report.

Consideration will be given to the phase of the project during which the impact occurs. This identification of the phase is provided to assist with the schedule for the implementation of the management measure.

Mitigation Measures

Mitigation measures were identified for significant impacts. The impacts were ranked before and after the implementation of the mitigation measures. Mitigation potential (risk of mitigation failure) was ranked as per the criteria in found in Table 14 below.

Table 12: Rating Criteria

Rating Criteria and Symbol / Short Description					Qualitative Description / Explanation of Rating Criteria
Environmental Impact Description					Description of the direct and indirect effect of human actions and project activities on the environment
Mitigation Measures / Enhancement Measures					Measures designed to avoid, reduce or remedy adverse potential negative impacts. Includes measures to compensate for residual impacts. Measures designed to expand and augment the effect of potential positive impacts.
Project Phase				Planning	Activities, impacts and mitigation measures applicable to the planning (or pre-implementation) phase.
				Construction	Activities, impacts and mitigation measures applicable to the construction phase.
				Operational	Activities, impacts and mitigation measures applicable to the operational (invasive prospecting) phase.
				Rehabilitation and Closure	Activities, impacts and mitigation measures applicable to rehabilitation and closure (includes progressive rehabilitation over time leading up to and including rehabilitation at the end of the life of the project). For this project it also covers activities, impacts and mitigation measures applicable to post-closure.
				Post Closure	Activities, impacts and mitigation measures that would be present after closure. For this project, due to the long life of the project, these are addressed under the Rehabilitation and Closure phase.
Impact Status				Negative	Impacts with a potential negative / adverse effect.
				Neutral	Neutral, no impact.
				Positive	Impacts with a potential positive / beneficial effect.
Consequence (Severity + Scale)	**Severity** (Intensity + Duration + Frequency)	**Intensity (Negative Impacts)**	1	low	Slight change, disturbance or nuisance. Targets, limits and thresholds of concern never exceeded. Impacts are rapidly and easily reversible. Require no or only minor interventions or clean-up actions. No complaints expected when the impact takes place.
			2	moderate	Moderate change, disturbance or discomfort. Real but not substantial. Targets, limits and thresholds of concern may occasionally be exceeded. Impacts are reversible but may require some effort, cost and time. Sporadic complaints can be expected when the impact takes place.
			3	high	Prominent change, disturbance or degradation. Real and substantial. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Regular complaints can be expected when the impact takes place.
			4	very high	Severe change, disturbance or degradation. May result in illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Interest group / community mobilisation against project can be expected when the impact takes place. May result in legal action if impact occurs.
		Intensity (Positive Impacts)	1	low	Slight change or improvement. Minor benefits.
			2	moderate	Moderate change or improvement. Real but not substantial benefits.
			3	high	Prominent change or improvement. Real and substantial benefits. General community support.
			4	very high	Considerable and large-scale change or improvement. Real and considerable benefit. Widespread support.

Rating Criteria and Symbol / Short Description					Qualitative Description / Explanation of Rating Criteria
		Duration	Refers to the total length of time (i.e. number of years) that the impact would or the impact source or risk will be present.		
			1	low	Short-term. May occur for hours and are rapidly reversible.
			2	moderate	Medium-term. May occur for a couple of days. Impacts reversible within a three day period.
			3	high	Long-term. May occur throughout the life of the project, but will cease after operations ceases either because of natural processes or human intervention.
			4	very high	Permanent and irreversible. Residual impacts will remain after rehabilitation.
		Frequency	Refers to the time intervals and how often (i.e. number of days per year) the impact would manifest over the entire duration of the impact.		
			1	low	Seldom. Impact would be intermitted (occurs 0-10 % of the time).
			2	moderate	Occasional. Impact would occur now and again (occurs 10-25% of the time).
			3	high	Often (occurs >50% of the time).
			4	very high	Continuous. Impact would occur all the time (occurs 100% of the time).
	Scale		0	none	None. Impact will not occur anywhere.
			1	low	Site impact. No effect beyond the prospecting site. Small area. No sensitive receptors outside prospecting area affected.
			2	moderate	Local. Seldom occurs beyond prospecting site. May affect immediate neighbours, never nearby townships. Small area or small number of sensitive receptors affected.
			3	high	Regional. Widespread impact. Extends beyond the prospecting boundary. Affects nearby townships. Large area or large numbers of sensitive receptors affected.
			4	very high	Local or regional impact. Impacts over a vast area or over vast numbers of sensitive receptors.
Probability			0	none	Never (0 % likelihood).
			1	low	Conceivable. Will only happen in exceptional circumstances (<10 % likelihood).
			2	moderate	Plausible. Could happen and has occurred here or elsewhere (11-40 % likelihood).
			3	high	Probable (>40-80 % likelihood).
			4	very high	Expected. Highly likely to happen (>80 % likelihood).
Significance (Consequence + Probability)			Neg Very High		Widespread negative effect. Negative impact that is of the highest order. Potential fatal flaw.
			Neg High		Substantial negative impact.
			Neg Moderate		Negative impact that is real but not substantial.
			Neg Low		Low to negligible negative impact with little real effect.
			Pos Low		Low to insignificant positive impact.
			Pos Moderate		Positive impact that is real but not substantial.
			Pos High		Substantial positive impact.
			Pos Very High		Widespread / substantial beneficial effect. An alternative means to achieve the same benefits not possible.
Precautionary Weighting (Value Judgement) (Negative Impacts)			Used when there is a potential understatement of the significance of a negative impact to increase the significance rating.		
			0	none	No weighting required. Significance rating is a true reflection of the potential effect of the impact.

Rating Criteria and Symbol / Short Description				Qualitative Description / Explanation of Rating Criteria
		1	low	There may be a slight understatement of the significance of the impact. Impact significance adapted to be slightly higher.
		2	moderate	There may be a moderate understatement of the significance of the impact. Impact significance adapted to be higher.
		3	high	The impact significance rating is highly understated. Impact significance adapted to be higher.
		4	very high	The impact significance rating is severely understated. Impact significance adapted to be higher.
	(Positive Impacts)	Used when there is a potential overstatement of the significance of a positive impact to reduce the significance rating.		
		0	none	No weighting required. Significance rating is a true reflection of the potential effect of the impact.
		1	low	There may be a slight understatement of the significance of the impact. Impact significance adapted to be lower.
		2	moderate	There may be a moderate understatement of the significance of the impact. Impact significance adapted to be lower.
		3	high	The impact significance rating is highly understated. Impact significance adapted to be lower.
		4	very high	The impact significance rating is severely understated. Impact significance adapted to be lower.
Risk of Mitigation Failure		The likelihood of mitigation failure rated based on: - research and technology, - timing, and thus secondary potential of outside influences occurring over time (i.e. climate change, political instability, inter/national economic instability).- financial considerations,- skills and labour availability and potential for human error.		
		0	Very Low Risk	Less than 10% likelihood that mitigation measures could fail. Mitigation implemented quickly, mitigation easy to implement, proven technology used, no special labour skills required.
		1	Low Risk	10-30% likelihood that mitigation measures could fail.
		2	Moderate Risk	30 to 60% likelihood that mitigation measures could fail.
		3	High Risk	60 to 80% likelihood that mitigation measures could fail.
		4	Very High Risk	>80% likelihood that mitigation measures could fail. May need research and new technologies to be developed, and/or may have to take place over many years after closure, and/or may involve exorbitant/prohibitive expenses to implement successfully, and/or may require highly skilled personnel with special training, and/or have a high risk of human error during the execution of the mitigation.
IAP Interest		Neg Very High		Widespread concern and/or concerns of very high importance. Concerns difficult to be addressed to satisfaction of authorities or concerned parties. Appeals against project anticipated if not addressed.
		Neg High		Several concerns and/or concerns of high importance. Real and substantial.
		Neg Moderate		Limited concerns. All concerns addressed. Real but not substantial.
		Neg Low		Very minor or minor concerns.
		Neutral		No interest.
		Not defined		Level of interest has not been tested.
		Pos Low		Very little support for project.
		Pos Moderate		Limited support for project.
		Pos High		General support. May be associated with high community expectations.

Rating Criteria and Symbol / Short Description				Qualitative Description / Explanation of Rating Criteria
		Pos Very High		Widespread support. May be associated with extremely high community expectations.
		Diverse Low		Minor interest. Some support. Some concerns.
		Diverse Moderate		Limited interest. Some support. Some concerns.
		Diverse High		General interest. Some support. Some concerns.
		Diverse Very High		Widespread interest. Some support. Some concerns.
Assessment Confidence		Complete		No information gaps exist. Decision-making can go ahead.
		Adequate		Minor information deficiencies exist but this does not affect decision-making. Decision-making can still go ahead.
		Incomplete		Not enough information for decision-making. Current data to be supplemented with further monitoring or research.
Impact Rating Methodology	**Weighting**	**Formula**	**Example**	**Rating Criteria**
	1.0	I	1.0	Intensity (I)
	1.0	D	1.0	Duration (D)
	1.0	F	1.0	Frequency (F)
	1.0	S=(I+D+F)/3	1.0	Severity (S)(Intensity + Duration + Frequency)
	1.0	E	4.0	Scale (Extent) (E)
	1.0	C=(S+E)/2	2.5	Consequence (Severity + Extent) (C)
	0.5	P	3.0	Probability (P) WEIGHING OF 0.5 USED TO INCREASE THE CONSERVANCY OF THE ASSESSMENT
		S1=(C+P)/2	2.7	Significance (S1) (Consequence + Probability)
		W	0.0	Precautionary Weighting (W)
		S2=(S+W)	2.7	Significance with Precautionary Weighting (S2)
Impact Rating		**Formula**	**Level**	**Level**
		<=	-3.6	Neg Very High
		<=	-3.0	Neg High
		<=	-2.0	Neg Moderate
		<	0.0	Neg Low
		>	0.0	Pos Low
		>=	2.0	Pos Moderate
		>=	3.0	Pos High
		>=	3.6	Pos Very High

v. 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 potential impacts of drilling, if it is determined that additional drilling is required on site, will be similar regardless of the exact drill location(s), considering the constraints imposed on site selection, including:

- No prospecting or associated activities (camp establishment, access tracks etc.) may occur within 500 m of any identified wetland on site. Prior to activities commencing, a registered ecologist must undertake a screening of the area to confirm the absence of wetlands and protected species in the area that will be affected, and a 500 m radius of that area.
- No prospecting activities (drilling, disposal of drill muds etc.) may occur within 100 m of any river, private road not owned by the applicant, powerline, private residence, or infrastructure existing on the site, without the express and written consent of the owner. of that infrastructure.
- There is a small chance that fossils may occur in the below ground shales or mudstones of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr.

The advantages of imposing these constraints on drill site selection include:

- Avoidance of damage to sensitive environmental features that may be present on site, including avoidance of edge effects from on-site activities impacting surrounding water resources; and
- Avoidance of unnecessary public disturbance (noise, visual impacts) and damage to infrastructure.

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

This is the Draft Basic Assessment Report and affected parties have not yet had a chance to comment on the report. The report will be updated with comments received from affected parties before being submitted to the DMRE for decision-making. Therefore, the following mitigation can be implemented for sections of the proposed properties falling within the important areas. The following environmental management/mitigation plans can be followed if requested:

- Drill site selection must be aimed at minimising disturbance to natural vegetation;
- The site selection should be overseen by environmental scientists.
- No-go areas are to be identified where habits are considered to be sensitive.
- Environmental awareness training is to be given to all employees responsible for drilling.
- In order to minimise the impact of drilling activities on surface water a 100-meter buffer was allocated for each stream, river and wetlands.
- The drill sites are still located within the community land, but agreement or compensation will need to be sought should the specific site be developed.
- The drilling sites themselves will be provided with safety netting, fencing and signage to ensure no person or animal can access these sites.
- Workers and operators will not be housed on site. In addition, rehabilitation objectives will include ensuring that the site is safe.
- **Motivation where no alternative sites were considered.**

No Alternative drill site locations were considered during the study. The project location was however bound to the current location due to the underlying geology. The prospecting right is dependent on the area chosen being susceptible to possible mineral deposits and therefore no alternative site could be considered.

vii. Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)

The final layout for the drilling can only be completed once the non-invasive aerial geological surveys have been completed. Invasive prospecting (drilling) will avoid servitudes, suitable habitat for the Globally threatened Red Data avifaunal species, wetlands and 100 m buffer zones, rivers, and 100 m buffer zones / 1:100-year flood lines (whichever is greatest), and 50 m buffer zones from potential historical sites, graves and identified protected plants. Drill site locations are not fixed and need approval by an environmental control officer before drilling. The ECO will, as a minimum, consider:

- The Protected Environment;
- Plant and animal (avi faunal) sensitivity;
- Current land use;
- Servitudes;
- Sensitive features such as households;
- Heritage sites (including graveyards).

11. 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 are 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.)

The same impact ranking criteria and methodology was employed as discussed in Section VI of this report.

11.1 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 13: Impact Assessment Table with Mitigation

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Topography						
Levelling of drilling sites	Change in natural topography of the site.	Topography	Construction	Stockpile soils removed for rehabilitation. Rehabilitate to original landform.	Neg Low	Neg Low
Geology						
Removal of geological core	Creation of conduits between geological strata.	Geology	Operations	Boreholes to be sealed with concrete.	Neg Low	Neg Low
Soils						
Erosion from soil disturbance at drilling sites	Potential loss of topsoil	Soils	Operations	Keep the footprint of disturbance as small as practicably possible. Vegetation to be left in place to protect soils where possible. Where vegetation clearance cannot be avoided, storm water management measures to be put in place if there is a risk of soil erosion. Erosion protection where cut and fill and levelling of the drill site occurred.	Neg Low	Neg Low
Erosion from soil disturbance on access roads	Potential loss of soil resource.	Soils	Construction & Operation	Utilise existing access roads as far as possible. Keep the footprint of disturbance as small as practicably possible. Access roads to follow slope contours where possible. Vegetation to be left in place at sides of the road to protect the soils.	Neg Low	Neg Low
Oil and diesel spills due to inappropriate storage, vehicle maintenance and washing operations.	Risk of soil contamination.	Soils	Construction, Operation and Closure	Impermeable liners or surfaces to be provided in areas where hydrocarbons are managed. Diesel storage areas to be bunded and regularly checked. Drip trays to be used when any vehicle maintenance is undertaken. Spill kits to be available at drill sites.	Neg Low	Neg Low
Hydrology (Surface Water)						

ASSESMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	**Potential impact**	**Affected Aspects**	**Phase**	**Mitigation Measures / Enhancement Measures**	**Significance (Consequence + Probability)**	**Significance (Consequence + Probability)**
Spillage from fuels, oils and lubricants	Contamination of surface water.	Surface Water	Construction, Operation and Closure	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Increase in sediment loads as a result of erosion and heavy rainfall		Surface Water	Construction, Operation and Closure	Implement measures for soil erosion control in accordance with risk assessment. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
General and Human Waste		Surface Water	Construction, Operation and Closure	Contractors may only use designated toilets and waste disposal facilities.	Neg Low	Neg Low
Hydrogeology (Groundwater)						
Seepage of fuels, oils and lubricants.	Contamination of groundwater.	Groundwater	Construction, Operation and Closure.	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50 year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Cross contamination of aquifers due to borehole construction.		Groundwater	Operation and Closure.	Boreholes that will not be used again will be backfilled with cement and sealed.	Neg Low	Neg Low

Noise						
Machinery and drilling operations. Movement of vehicles.	Increase in ambient noise levels. Disturbance to people and animals.	Noise	Construction, Operation and Closure.	Avoid travelling past residences. Speed limit of 40 km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100 m from households. Drilling to take place during daylight hours. Borehole site and access route selection to give cognisance to the location of noise receptors and efforts must be taken to minimise such disturbance.	Neg Moderate	Neg Low
Air Quality						
Exhaust fumes from vehicles and machinery related to prospecting activities.	Release of gaseous emissions.	Air Quality	Construction, Operation and Closure	No unnecessary revving of vehicles should take place. No vehicles must stand idling when not in use.	Neg Low	Neg Low
Vehicles travelling on gravel roads	Dust fallout and fine particular matter emissions	Air Quality	Construction, Operation and Closure	Restrict traveling speed of vehicles to reduce vehicle entrainment of dust. Wet gravel roads if dust is found to be excessive.	Neg Low	Neg Low
Land use and Land Capability						
Intrusion due to drilling and prospecting activities in an area where agricultural land uses are prominent	Land use conflict	Land use	Construction & Operation	Drilling sites must be selected to minimise disturbance of current land use. Relevant agreements must be in place with land owners to define location and extent of drilling sites and rehabilitation measures that will be undertaken at the end of drilling.	Neg Moderate	Neg Low
Land clearing and transformation.	Reduction in land capability	Land use	Construction		Neg Low	Neg Low
Fauna, Flora and Ecology						
Establishment of drilling sites and access routes.	Removal / damage of natural vegetation	Fauna, Flora and avifaunal.	Construction	Site selection aimed at minimising disturbance to natural vegetation.	Neg Moderate	Neg Moderate

Accidental fires.		Fauna, Flora and avifaunal	Construction, Operation and Closure	- No smoking at drilling sites. - Code of conduct to include measures for the prevention of fires. - Emergency equipment and procedures for firefighting to be in place. - Adhere to emergency procedures.	Neg Moderate	Neg Moderate
Establishment of drilling sites and access routes.	Disturbance/ poaching of animals.	Fauna, Flora and avifaunal	Construction	Site selection aimed at minimising disturbance to sensitive animal habitats and breeding areas.	Neg Moderate	Neg Moderate
Movement of drilling contractors.		Fauna, Flora and avifaunal	Construction, Operation and Closure	Drilling contractors are only allowed to move within the designated drilling area. Environmental awareness training should include poaching and disturbance of animals.	Neg Moderate	Neg Moderate
Sensitive and Protected Areas						
Establishment of drilling sites and access routes.	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened species.	Biodiversity	Construction, Operation and Closure	The extent of the buffer zone that will be maintained varies according to factors including rainfall, nature of lateral flows and inputs, surrounding slope and soil characteristics, and will be determined by a wetland specialist prior to any prospecting taking place. A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season. o Alternatively, restrict prospecting to modified land only.	Pos Moderate	Neg Moderate
Heritage Resources						
Drilling of boreholes will damage / destroy heritage resources in the area.	One area potentially associated with historical infrastructure remains (B01) and one area consisting of contemporary buildings (B02) were noted.	Heritage Resources	Construction and Operation	These areas will be avoided by the proposed prospecting activities. Prospecting will not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.	Pos Moderate	Neg Moderate
Palaeontological Resources						
Drilling of boreholes on soils that preserve fossils	The Permian Vryheid Formation sediments could have preserved fossil plants of the *Glossopteris* Flora, including leaf impressions and fructifications of *Glossopteris,* and other extinct groups like the cordaitaleans, some lycopods,	Palaeontology	Construction and Operation	It is extremely unlikely that any fossils would be found in the loose soils and sands that cover the area. Fossils are not recognisable in the coals but fossil plants might occur in shale lenses associated with the coal seams, below ground, therefore, a Fossil Chance Find Protocol should be added to the eventual EMPr.	Pos Moderate	Neg Moderate

	sphenophytes, wood and ferns, as well as early gymnosperms.					
Economic Development						
Employment and use of contractors and purchasing goods.	Contribution to the economy.	Economic Development	Construction and Operation	Preference to be given to the use of local employment, contractors and local suppliers.	Neg Moderate	Neg Moderate
Dust and noise from prospecting activities.	Creation of nuisance and disturbance to surrounding activities.	Economic Development	Construction, Operation and Closure	Implement measures to minimise air quality and noise impacts. Surrounding neighbours and land owners must be allowed to raise issues and complaints associated with prospecting activities. Their issues must be addressed promptly.	Neg Low	Neg Low
Visual and Sense of Place						
Visual intrusion due to drilling and prospecting activities.	Loss of sense of place due to prospecting activities	Visual and Sense of Place	Construction and Operation	Implement measures to reduce the visual impacts of prospecting activities, i.e. rehabilitation of drill sites and access roads.	Neg Moderate	Neg Low
Safety and Security						
Movement of drilling contractors and influx of workers.	Increase in crime.	Safety and Security.	Construction and Operation.	- Drilling contractors not allowed moving outside of designated areas. - Access of personnel related to the prospecting operations will only be allowed on approval by the project manager. - All personnel that have access to the property will be provided with access cards. - All personnel that have access to the property needs to be made visible.	Neg Moderate	Neg Low
Overnight accommodation of drilling contractors.		Safety and Security	Construction, Operation and Closure.	Drilling contractors to be housed off the drilling property.	Neg Moderate	Neg Low
Stakeholder Acceptability						
Prospecting activities is a predecessor to mining.	Prospecting on private property.	Stakeholder Acceptability.	Construction, Operation and Closure.	Comply with the MPRDA & NEMA Implement and Comply with the EMP.	Neg Moderate	Neg Low

Prospecting activities is a predecessor to mining.	Prospecting seen as a predecessor to mining and this raises a risk to various environmental impacts.	Stakeholder Acceptability.	Construction, Operation and Closure	An application for a mining right will require a separate public participation process and IAP's will be provided with the opportunity to raise their concerns.	Neg Moderate	Neg Moderate

11.2 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):-Various specialist studies were undertaken due to the prospecting right. The project team consists of qualified environmental assessment practitioners that have sufficient experience to inform the report on potential impacts and the baseline environment. The EAP also considered the temporary nature and limited footprint of the proposed project prospecting sites.

A preliminary desktop study was conducted to focus on topology, surface water, wetlands, soils, land capability, noise, socio-economic and habitat availability for species of vegetation, mammals, avifauna (birds), reptiles and amphibians of the study area. The data was supplemented by previous surveys conducted in the area, literature investigations, personal records, and historic data.

Table 14: List of Studies, Findings and Recommendations

List of Studies Undertaken	Findings and Recommendations of Specialist Reports
Archaeological Desktop study	The following recommendations are made in order to avoid the destruction of heritage remains within the area demarcated for prospecting: • Although Site B01 appears not to be associated with historical surface remains, subsurface culturally significant material might be present. The possibility also exists that historical surface remains exceeding 60 years of age are present, but are not detectable on aerial imagery. Therefore, it is recommended that the demarcated area be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should first inspect Site B01 in order to determine the potential presence of surface remains. • The buildings associated with Site B02 do not exceed 60 years of age and are unlikely to be significant from a heritage perspective. However, should impact to the site be unavoidable, it is recommended that a qualified archaeologist first inspect the site. • The 500 m buffer zones surrounding the non-perennial river and perennial pans are potentially sensitive from a heritage perspective. Although the previously/currently cultivated areas that intersect the 500 m buffer are disturbed, the potential for subsurface cultural material is slightly higher compared to areas falling outside of the buffer zone. Care should be exercised when prospecting in this vicinity. • The least sensitive areas are located more than 500 m from a water source, fall within previously/currently cultivated fields and are not located within close proximity of potential heritage sites or contemporary infrastructure. These areas should therefore be considered when selecting prospecting sites. • Apart from the identified potential sites, open and undisturbed areas falling outside of the previously/currently cultivated areas are considered to be the most sensitive from a heritage perspective, especially due the presence of LIA, Historical and burial sites in the general area. Care should therefore be exercised when prospecting in these areas. • Should uncertainty regarding the presence of heritage remains exist, it is advised that a qualified archaeologist be contacted. Alternatively, once the prospecting localities have been identified, a qualified archaeologist can inspect the proposed sites and produce recommendations that will aid the protection of heritage resources. • Prospecting should not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures. • Should the prospecting outcome result in further development or construction, a full Phase 1 Archaeological Impact Assessment must be conducted on the affected area if triggered. Also, a full Phase 1 AIA must be conducted should the cumulative impact of the proposed prospecting exceed 0.5 ha. • Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)). • From a heritage point of view, prospecting may proceed on the demarcated portions, subject to the abovementioned conditions and recommendations.

Ecological Desktop Study	The following findings and recommendations can be made: • Although some portions of the prospecting area and surrounds have been modified by cultivation, there are still some portions of remaining – assumed to be primary -vegetation and habitats of which many are considered CBA Optimal, especially riparian and wetland areas. These habitats must be considered of very high sensitivity, and their CBA status investigated by a verification study as per DFFE survey protocols. Of note is that the most recent classification and delineation of Threatened Ecosystems (not formally gazetted yet) regards remnants of primary (indigenous) vegetation in the study area as Endangered. • Prospecting activities must aim to avoid wetlands and riparian areas (such would require a WULA), ensuring also that no prospecting-related pollution or runoff from coal-ore seeps into such areas. • It would be advisable to do a protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season. o Alternatively, restrict prospecting to modified land only. • It is anticipated that due to historical disturbance levels, alien invasive plant species will be present on all sites. A full alien invasive plant survey is thus also recommended, as part of an analysis of the risk of prospecting and potential mining in spreading and/or further establishing such undesirable plants. From an ecological perspective, prospecting could proceed using a cautionary approach by following above recommendations. It is advisable to have above findings verified during the wet season on the ground before any ground disturbance occurs.
Palaeontological Desktop Study (Phase 1)	• Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and some do contain fossil plant, insect, invertebrate and vertebrate material. • The sands of the Quaternary period would not preserve fossils. No fossils will be visible in the ploughed fields but there might be plant fossils in the shales and mudstones below ground. None has been recorded to date from this site. • Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils and sands of the Quaternary. • There is a small chance that fossils may occur in the below ground shales or mudstones of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr. • If fossils are found by the contractor, environmental officer, or other responsible person once prospecting activities have commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. • The impact on the palaeontological heritage during prospecting would be low, so as far as the palaeontology is concerned, the project should be authorised.

12. ENVIRONMENTAL IMPACT STATEMENT

12.1 SUMMARY OF THE KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The environmental impacts associated with the proposed project are largely **low**, **moderate** with high impacts anticipated. The most significant impacts are:

Table 15: Summary of key findings

IMPACT	SIGNIFICANCE – WITHOUT MITIGATION	SIGNIFICANCE – WITH MITIGATION	COMMENT	MITIGATION
Negatively affecting the Ecological Support Areas (ESAs)	High	Medium	According to the MBSP (2014), the study area contains large extents of the following: • CBA Optimal Areas and Other natural Areas, mostly including wetland areas • Wetlands (all NFEPA) draining into the Olifants NFEPA River • Moderately Modified – Old Lands (these are secondary grasslands) • Heavily Modified Areas (currently under cultivation, high agricultural value)	A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season. • Alternatively, restrict prospecting to modified land only.
Negatively affecting sensitive bird species and the Biodiversity in the area.	Moderate	Negative Low	Although some portions of the prospecting area and surrounds have been modified by cultivation, there are still some portions of remaining – assumed to be primary -vegetation and habitats of which many are considered CBA Optimal, especially riparian and wetland areas. These habitats must be considered of very high sensitivity, and their CBA status investigated by a verification study as per DFFE survey protocols. Of note is that the most recent classification and delineation of Threatened Ecosystems (not formally gazetted yet) regards remnants of primary (indigenous) vegetation in the study area as Endangered.	A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season. • Alternatively, restrict prospecting to modified land only.
Negatively affecting the Heritage sites.	Moderate	Negative Low	Although Site B01 appears not to be associated with historical surface remains, subsurface	Therefore, it is recommended that the demarcated area be avoided by the proposed

IMPACT	SIGNIFICANCE – WITHOUT MITIGATION	SIGNIFICANCE – WITH MITIGATION	COMMENT	MITIGATION
			culturally significant material might be present. The possibility also exists that historical surface remains exceeding 60 years of age are present, but are not detectable on aerial imagery.	prospecting activities. Should this not be possible, a qualified archaeologist should first inspect Site B01 in order to determine the potential presence of surface remains.
Negatively affecting the surface water quality.	Moderate	Negative Low	The study area falls within in the B11A quaternary catchment of the Olifants Water Management Area. The closest perennial rivers to the study area are the Viskuile River 2.8 km to the southwest and Bankspruit 4.7 km to the northeast. Several non-perennial streams are also located directly east and southwest of the demarcated study area, while perennial pans intersect the eastern boundary and north-western corner. The Trichardtsfontein Dam is located approximately 41 km to the southwest of the study area and the Willem Brummer Dam 41 km to the southeast. Several minor dams, pans and non-perennial rivers are found in the general vicinity of the study area.	Prospecting activities must aim to avoid wetlands and riparian areas (such would require a WULA), ensuring also that no prospecting-related pollution or runoff from coal-ore seeps into such areas.
Conflicting land uses (agriculture and prospecting).	Moderate-High	Negative Low	Annual crop cultivation / Planted Pastures Rotation.	- Prospecting will be planned to take place outside of farming activities where possible. - where not possible compensation will be discussed and agreed with the affected party. - rehabilitation will consider further use of the land.

The nature of prospecting involves invasive drilling of sites not exceeding 64 m^2. The drill sites are not fixed and can be relocated by 1-50 meters. Due to the flexibility of the drill sites and small size the key mitigation is to approve each site on environmental factors by a competent environmental officer. Each active site will be rehabilitated to its natural status before sampling. The success of the proposed mitigation is high.

i) 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. **Attach as Appendix C.**

ii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

Please refer to Table 13.

13. 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 impact mitigation and management are to:

- Primarily pre-empt impacts and prevent the realisation of these impacts -PREVENTION.
- To ensure activities that are expected to impact on the environment are undertaken and controlled in such a way so as to minimise their impacts – MODIFY and/or CONTROL.
- To ensure a system is in place for treating and/or rectifying any significant impacts that will occur due to the proposed activity – REMEDY.
- Implement an adequate monitoring programme to:
    - Ensure that mitigation and management measure are effective.
    - Allow quick detection of potential impacts, which in turn will allow for quick response to issue/impacts.
    - Reduce duration of any potential negative impacts.

Environmental impact management outcomes are:

- Conduct prospecting activities responsibly and ensure operation is compliant with legislative requirements.
- Protect the biophysical environment as far as possible, specifically wetlands and riverine areas and any protected species observed on site.
- Protect the water resources in the area as far as possible.
- Ensure atmospheric pollution is kept to a minimum:
- Ensure adequate rehabilitation to allow continued grazing land use.
- Ensure socially responsible activities.
- Protect historical and cultural sites if they are observed on site.

14. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

Any aspects which must be made conditions of the Environmental Authorisation

- A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season.
    - Alternatively, restrict prospecting to modified land only.
- Heritage sites and 50 m buffer zones will be preserved at all times unless the necessary permits are obtained under SAHRA.
- There is a small chance that fossils may occur in the below ground shales or mudstones of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr.
- No activity is to occur within 100 m of any road servitude, wetlands, and their 100 m buffer zones, within rivers and their 100 m buffer zone / 1:100-year flood line without the necessary authorisation under NEMA and NWA.
- Planning before carrying out prospecting activities in a particular area, and surveying the area before conducting invasive prospecting, is critical to ensure the sensitive areas are preserved and to ensure prospecting proceeds in a manner compliant with national legislation.
- Rehabilitation must be applied on an on-going basis and no sites must be left exposed for more time than necessary to obtain the necessary data. All areas disturbed during the drilling process must be rehabilitated to previous land use capability.

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

(Which relate to the assessment and mitigation measures proposed)

At this stage, the exact locations of the invasive prospecting are unknown due to the fact that the locations will be dependent on the findings of the non-invasive techniques. This is not seen as a major gap as the lack of this knowledge has been worked into the EMP as well as the proposed conditions stipulated above. In general, the approach will be as follows for invasive prospecting:

- Activities must remain outside all wetland areas until authorisation has been obtained under NEMA and NWA.
- Specialist opinions and recommendations to be adhered to.

16. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

16.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORIZED OR NOT.

- Approval of the project and granting of the prospecting right to the applicant will result in security of tenure to the Applicant and enable the Applicant to further investigate the feasibility of developing the coal resource on the Property. Non-invasive prospecting (desktop review of previous prospecting results) will have no environmental impact. If additional drilling is required on the site to confirm or supplement previous prospecting results, the resultant environmental impacts can be managed to acceptable levels.
- The risks of the remaining proposed prospecting activity are minimal and can be easily mitigated by following the mitigation measures stipulated in the EMPr, which will reduce impacts significantly to acceptable levels which will easily recover.
- The EAP takes note of the nearby wetlands that occur on site and realises that should prospecting identify viable coal resources that mining could have a detrimental effect on these sensitive areas. However, the EAP is of the decision that the nature and sensitivity of the area and the method of mining should be re-evaluated should a Mining Right be applied for, as prospecting at this stage will not have a significant impact.

16.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

- The awarding of the prospecting right to the Applicant should be conditional to the implementation of the EMPr commitments and management measures contained in this report.
- A protected/threatened fauna and flora species search and rescue operation on the prospecting footprint prior to commencement of activities, to be conducted during the growing season.
    - Alternatively, restrict prospecting to modified land only.
- There is a small chance that fossils may occur in the below ground shales or mudstones of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr.
- Heritage sites and 50 m buffer zones will be preserved at all times unless the necessary permits are obtained under SAHRA.
- No activity is to occur within 100 m of any road servitude, wetlands, and their 100 m buffer zones, within rivers and their 100 m buffer zone / 1:100-year flood line without the necessary authorisation under NEMA and NWA.
- Planning before carrying out prospecting activities in a particular area, and surveying the area before conducting invasive prospecting, is critical to ensure the sensitive areas are preserved and to ensure prospecting proceeds in a manner compliant with national legislation.
- Rehabilitation must be applied on an on-going basis and no sites must be left exposed for more time than necessary to obtain the necessary data. All areas disturbed during the drilling process must be rehabilitated to previous land use capability.

17. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

The prospecting right may not be valid for a period exceeding 5 years (Section 17(6) of the MPRDA) and therefore it is requested that the Environmental Authorisation pertaining to prospecting, if granted, also remains valid for a period of 5 years. After 5 years, the Applicant will have to apply for renewal of the prospecting right, relinquish the right or apply to convert the prospecting right to a mining right, which will then also be subject to the granting of Environmental Authorisation, pending the outcome of a full Scoping and EIA Process.

18. 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.

The applicant representative, Mr. Nicolus Maloba hereby confirms the undertaking to ensure implementation and compliance with the basic assessment report and environmental management programme.

19. FINANCIAL PROVISION

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

19.1 EXPLAIN HOW THE AFORESAID AMOUNT WAS DERIVED.

The Quantum was calculated using the guideline document developed by the Department of Mineral Resources in 2005. In addition, consideration has been given to Section 41 of the Mineral & Petroleum Resource Development Act, N0 28 of 2002.

The quantum has been aligned with the rehabilitation and allows for the site to be rehabilitated back to the original status of the site. This will include:

1. Ensuring all pollution generating activities are eliminated.
2. Ensuring all infrastructure is removed from site.
3. Ensuring that the existing land use can continue.
4. Ensuring that the site is safe for humans and animals.

Application for Prospecting right in respect of portion of 8 of the farm Bankpan 225 IS Situated in the Gert Sibande District Municipality and Msukalikwa Local Municipality, Mpumalanga Province of South Africa with maximum of 10 drill boreholes are required to determine the available resource. Only one prospecting site will be active at a time as there is only one drill rig that will be used. This therefore allows minimum exposure and impact as concurrent rehabilitation can be carried out. Once drilling is complete at one site (usually within one day) the rehabilitation can be done immediately and soils and vegetation replaced.

Existing roads will be used as far as possible, and it is not possible to identify any new access roads at this stage as its route will be determined in conjunction with the landowner and activities on the property at that time. No other infrastructure, offices, or housing will be present within the prospecting area and all employees will be housed in nearby towns. Vegetation establishment is monitored after the first rain to ensure sustainability in the rehabilitation efforts.

19.2 Confirm that this amount can be provided for from operating expenditure.

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

The provision forms part of the capital expense of the project and is not included in the operational budget allocated in the prospecting works programme. Allowance has been made for environmental reporting in the operational budget.

20. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

20.1 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:-

20.1.1 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.

The proposed prospecting activities are expected to be limited and thus opportunities for employment will be low. However, consideration will be given to local procurement of goods and services where practicable.

There may be concern that the introduction of the prospecting workforce into the farm communities can result in disputes. The prospecting workforce is not to interfere with any farm labourers or communities. No persons are to reside on the properties during prospecting activities.

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

(a) 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 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

Section 3(2) of the National Heritage Resources Act, No. 25 of 1999 provides a description of all items that is classified as national estate. The EAP has evaluated the list in comparison with the project site. The results of the assessment are provided below with recommendations to the environmental officer where there was uncertainty. A heritage assessment must be initiated prior to invasive drilling.

21. 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.

Section 24(4)(b)(i) of the Act requires the EAP to investigate of the potential consequences of impacts of alternatives to the activity on the environment and assessment of the significance of those potential consequences. Alternatives to the project are limited to the location of drill sites within the project area. Prospecting sites are not fixed and will only be confirmed during the desktop study if the prospecting right is warded. The EAP has however provided a grid of possible drill site locations. The prospecting site locations were amended on consideration of watercourses and biodiversity. This consideration has given value to alternative sites by removing sites that pose a high significance impact to the project.

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- http://sabap2.adu.org.za/pentad_info.php?pentad=2620_2840&section=species
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- http://sabap2.adu.org.za/pentad_info.php?pentad=2625_2840&section=species
- http://sabap2.adu.org.za/pentad_info.php?pentad=2625_2845&section=species
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PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

22. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

22.1 DETAILS OF THE EAP

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

(3) **The qualifications of the EAP**
(with evidence).

Name	Vernon
Surname	Siemelink
Company	Eco Elementum (Pty) Ltd
Position	Senior Environmental Consultant
Location	Glenfield Office Park, 361 Oberon Avenue, Faerie Glen, Pretoria
Email	vernon@ecoe.co.za
Telephone Number	012 807 0383
Education	**M (EnvMan) - Masters in Environmental Management** Master's Degree at University of Pretoria in Pretoria, South Africa (Gauteng) **BSSc. GeoScience - Honours in Geographical Science** Honours Degree at University of Pretoria in Pretoria, South Africa (Gauteng)
Professional skills	viii. Specialist Co-ordination. ix. Project Management. x. Monitoring and Compliance. xi. Compilation of Environmental Management. xii. Compilation of Environmental Impact Assessment. xiii. Government Department Liaison. xiv. Assessment of Wetland Status and Functionality. xv. Determination of Wetland Boundaries.

Name	Lian
Surname	Roos
Company	Eco Elementum (Pty) Ltd
Position	Junior Environmental Consultant
Location	Glenfield Office Park, 361 Oberon Avenue, Faerie Glen, Pretoria
Email	lian@ecoe.co.za
Telephone Number	012 807 0383
Education	**BSc Hons (App Sci) Water Utilisation,** University of Pretoria **B.Sc. Environmental Science,** University of Pretoria
Professional skills	Specialist Co-ordination. Project Management. Monitoring and Compliance. Compilation of Environmental Management.

Name	Lian
	Compilation of Environmental Impact Assessment. Government Department Liaison.

Please refer to the CVs attached in Appendix A.

(4) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure)

Table 16: Qualifications of EAP

Skills	**xvi. Environmental Impact Assessments.** xvii. Basic assessments, WULA reports. xviii. Water use license application. xix. Prospecting and Mining Right Authorizations. xx. Environmental Management Plans. xxi. Public Participation. **xxii.** Environmental Authorizations.
EAP Experience	With more than 14 years' experience in the environmental consulting industry he has a firm understanding of Environmental Management. He can adapt to a wide range of working environments, has a strong problem-solving ability and work towards team and client satisfaction. Vernon has a passion for Environmental Authorisation Processes (Basic Assessments, Environmental Impact Assessments, Monitoring, Environmental Management Plans, Waste Licence Applications, Closure Application and Integrated Water Use License Applications) in terms of the South African legislative regime.

In terms of section 13 (2&3) of the 2014 National Environmental Management Act EIA regulations (GNR. 982 of 2014): In the event where the EAP or specialist does not comply with sub regulation (1)(a) (which is the independence clause), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of these Regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicant's cost. The external reviewer however needs to be independent. To satisfy the above requirements Diepsoils Investments (Pty) Ltd appointed Eco Elementum (Pty) Ltd as the Independent Environmental Assessment Practitioners (EAP) to review the BA Report and to oversee the PPP for the Prospecting Right Application.

Please refer to Appendix A for the detailed CV's.

22.2 Description of the Aspects of the Activity

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

The following section presents a detailed description of all the activities associated with the proposed prospecting application. Due to the nature of the Prospecting Works Programme, and the fact that the specific prospecting activities required are dependent on the preceding phase, assumptions are presented where required.

Access Roads

Access to the site will be required during mapping and drilling activities (Phase2). Access requirements can only be determined after Phase 1 has been concluded. A number of existing roads and tracks already traverse the proposed prospecting site and where practicable, these roads will be used. All access on farms will be conducted in terms of a written agreement with the landowner. In instances where no access roads are available to the site location a single track will be selected as the best alternative on the basis of least environmental impact with natural habitat considered the last option.

During mapping activities, vehicle access will be gained to site through the veld and the establishment of a track to gain repeated access to a mapping site will not be required.

Once the drill sites have been identified, temporary access roads may be established for repeated access to the prospecting site if the identified drill site cannot be accessed via existing roads and tracks.

Vegetation and topsoil stockpile areas (if required)

Vegetation and topsoil will only be stockpiled in instances where settling sumps are required i.e., core drilling. During the excavation process the topsoil and available vegetation will be placed adjacent to the sumps. This will also serve as a storm water diversion berm. The excavated material will be backfilled into the rehabilitated sumps on completion of the drilling process.

Water Supply

Currently it is not known whether there are any water boreholes located on the site and whether access and supply will be granted by the landowner. Water will be trucked from identified sources to the identified drill sites, water bowsers will be deployed to these sites as and when required.

Continuous water supply will be required during drilling, and on-site water storage tanks with a capacity of 15,000 ℓ for water supply to the drill, will be used.

When core drilling will be undertaken, a number of settling sumps will be excavated and lined with impervious plastic sheets. The purpose of these sumps are to recycle water and drilling fluids by means of gravity which leads to heavier materials (e.g., drill cuttings) to settle and clean water being produced for re-use. The drill cuttings form a sludge which will be collected in the sumps. These sumps will be fenced, where required, to prevent livestock and public access. The plastic sheets will be removed, and sumps will be backfilled on completion of drilling. If required, the remaining sludge in sumps is to be treated with a suitable bio-remediation product prior to backfilling or disposal.

Additional water requirements relate to the potable water supply for employees and workers. A temporary 260 ℓ on-site vertical water storage tank for drinking water and generalise by persons will be provided at the drill site.

Ablution

Ablution facilities at the drill site will involve the hiring of drum or tank type portable toilets.

Accommodation

No accommodation for staff and workers will be provided on- site. Workers will be transported to and from the prospecting site on a daily basis. Night security staff will be employed once equipment has been established onsite.

Storage of Dangerous Goods

During the diamond drilling activities limited quantities of diesel fuel, oil and lubricants will be used onsite, all chemicals and dangerous goods will be stored on the drilling trucks and be packed up at night and removed. The only dangerous good that will be stored in any significant quantity is diesel fuel. A maximum amount of 60 m^3 will be stored in above ground diesel storage tanks. Storage and use of hydrocarbons and other chemicals may only take place on impermeable surfaces with bunds to contain any accidental spills.

Hazardous material will be stored in appropriate containers and clearly marked. Drip trays and or impermeable surfaces with bunds must be placed under machinery that has the potential to leak. Material Safety Data Sheets will be available for all drilling and other chemicals kept on site.

Drill rig

In most cases, the drill rig will be a self-contained, truck-mounted unit that will be accompanied by a compressor and a generator. The drill rig will be driven to site and mobilised in the desired location, positioned over the hole site, and will be stabilised.

The footprint of disturbance for a prospecting rig and associated equipment is generally smaller than 25 m^2 -64 m^2. Plastic sheets and trip trays will be placed underneath the rig for the duration of the drilling process at each site in order to avoid hydrocarbon spills and contamination. The full extent of the drill sites will be staked out and the drill crew will not operate beyond these boundaries. Depending on the locality, this perimeter may be fenced, marked with bunting or barricading. Please refer to Figure 5 for a layout plan of the drilling site.

Drill core storage area

During core drilling, a laydown area for the extracted core samples will be established within the footprint of the drill site. This area is usually 8 m × 2 m and is used to place the extracted core in sequence (according to depth) for later analysis by an appointed geologist. Core trays will be used to contain the core samples.

Storm water berms

Berms will be constructed on the upstream side of the mini pit to divert any clean water around the pit and into the natural environment.

22.3 COMPOSITE MAP

(Provide a map **(Attached as an Appendix C**) 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).

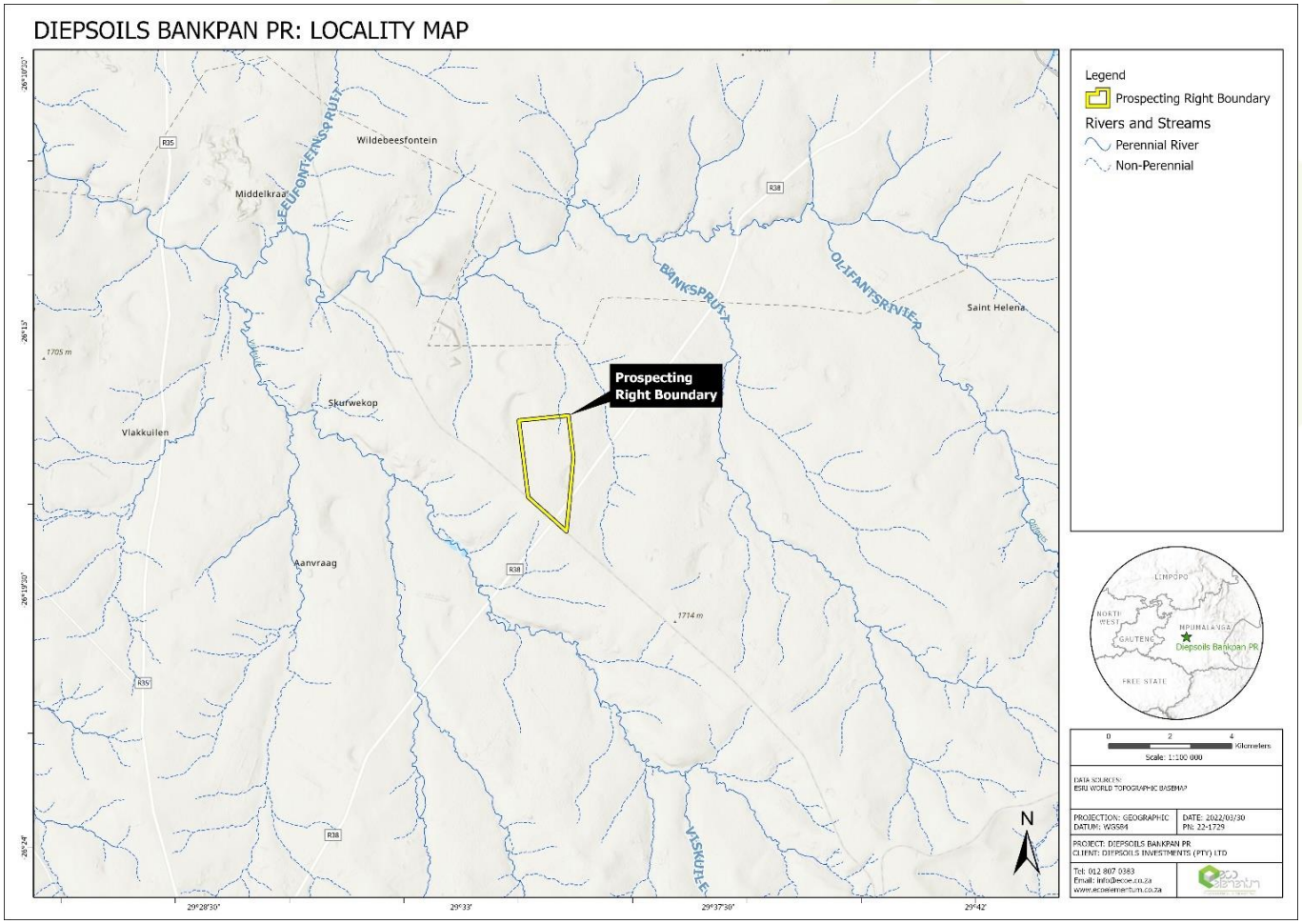

Figure 20: Conceptual prospecting site proposed layout

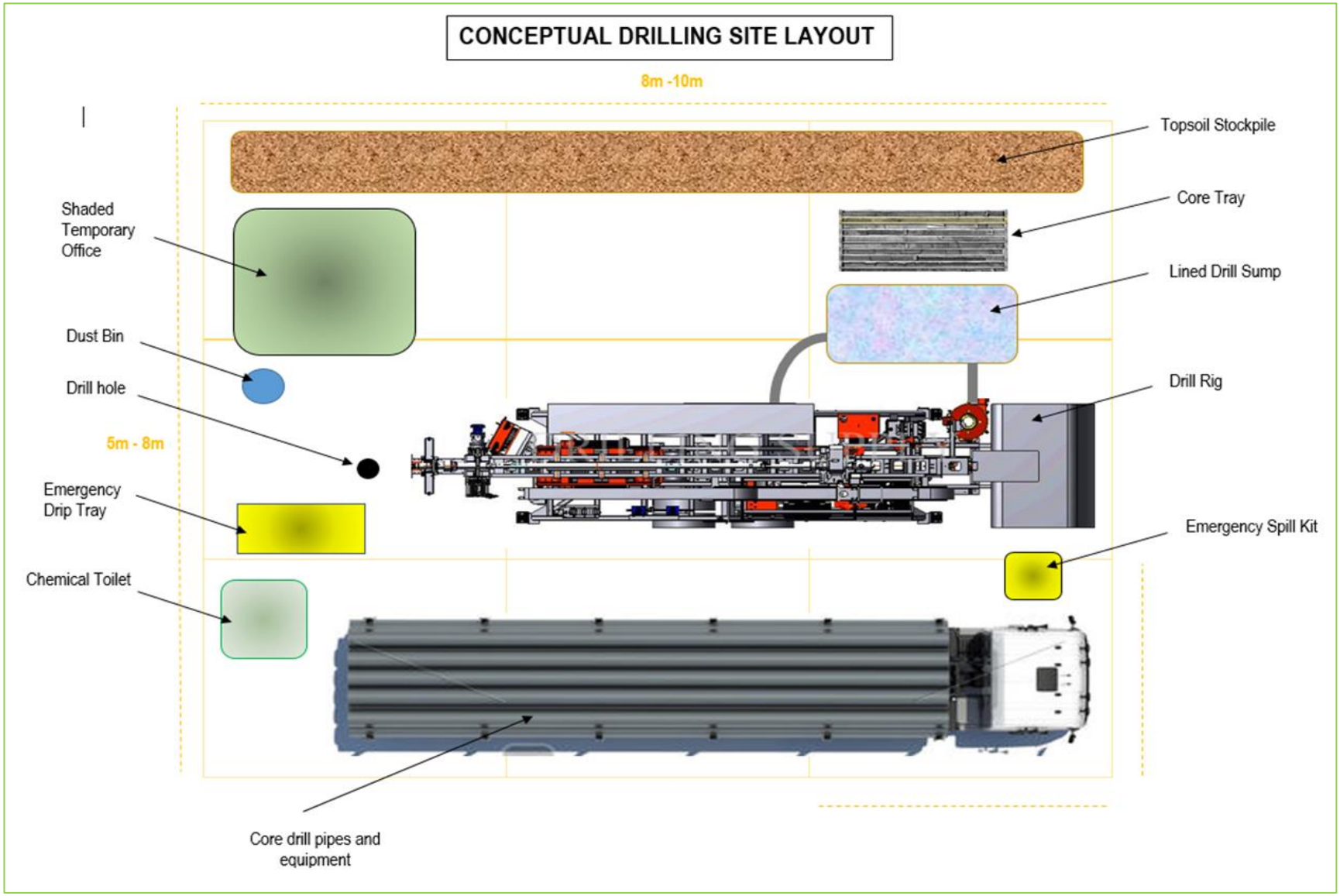

Figure 21: Conceptual drilling site layout

22.4 Description of Impact Management Objectives including Management Statements

The closure objective allows for the site to be rehabilitated back to the original status of the site. This will include:

1. Ensuring all pollution generating activities are eliminated.
2. Ensuring all infrastructure is removed from site.
3. Ensuring that the existing land use can continue.
4. Ensuring that the site is safe for humans and animals.

Vegetation establishment is monitored after the first rain to ensure sustainability in the rehabilitation efforts.

22.4.1 Volumes and rate of water use required for the operation.

Only a small volume of water will be required during drilling. Approximately 15 m^3 of water will be used per day for a maximum of 20 days. This amounts to a total maximum of 300 m^3.

Water will also be brought onto site for potable use, this is estimated at 5 litres per person / day.

22.4.2 Has a water use licence been applied for?

No water use licence or water use registration has been applied for yet. The project aims to utilise water from existing lawful users, an irrigation board or water services provider. Should water be required from a water resource if the above is unsuccessful a water use registration will be applied for.

No watercourses will also be impacted by the activity and a 100 m buffer has been created around all watercourses to limit the need for 21(c) or 21(i) water use licences or registration.

22.4.3 Impacts to be mitigated in their respective phases. Measures to rehabilitate the environment affected by the undertaking of any listed activity

22.4.3.1 Objectives

This section provides for the environmental management of all prospecting activities to be undertaken in the prospecting area. The objective of this section is to detail actions required to address the potential impacts resulting from the identified activities to be undertaken during the establishment, operation, and rehabilitation of drilling sites within the prospecting right area. This section elaborates on the implementation of the mitigation measures documented in the detailed impact assessment.

22.4.3.2 Environmental Impacts

The aim of this section is to reduce the significance of negative impacts and enhance positive impacts as far as practicably possible. The overall objectives are thus to:

- Minimize disturbance on the physical environment including the protection of soils, surface water and groundwater during drilling operations;
- Minimize disturbance to the ecological environment and prevent disturbance to sensitive sites;
- prevent disturbance of sites of cultural and historical importance;
- Minimize disturbance to current land uses and neighbouring activities;
- Provide for a forum for consultation with land owners and affected parties; and
- Facilitate socio-economic development where practicable.

22.4.4 Rehabilitation

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of pre-disturbance land capabilities. The primary objectives for rehabilitation include the:

- Removal of all infrastructure and material introduced to site;
- Removal of all wastes and their appropriate disposal;
- Promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology; and
- Facilitation of the re-establishment of the land use and land capability to as close as reasonably possible to the original conditions.

22.4.4.1 Action Plan

The various actions that need to be implemented, to ensure that the environmental objectives are met, are detailed in this section. The actions are aimed at preventing or mitigating environmental impacts and implementing the rehabilitation plan. The management actions are stated in a manner that ensures that they can be audited during the performance assessment programme.

22.4.4.2 Time Schedule

Timeframes detail the implementation schedule of management actions. The successful implementation and commencement within the timeframes is to be monitored as part of the performance assessment programme.

22.4.4.3 Requirements for Implementation

Additional measures that will need to be put in place to allow for the successful implementation of the action plan are listed where relevant. The table below presents the actions that need to be implemented to address the potential impacts resulting from the identified activities to be undertaken during the establishment, operation, and rehabilitation of drilling sites within the prospecting right area. The management actions are stated in a manner that ensures that they can be audited during the performance assessment programme. Once approved by the relevant authorities, the provisions of the EMP are legally binding on the project applicant and all its contractors and suppliers.

Table 17: Impacts to be mitigated in their respective phases

ACTIVITIES **(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.)	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 recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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 when the measures in the environmental management programme must be implemented Measures must be implemented when required. Regarding Rehabilitation specifically this must take place at the earliest opportunity. Regarding Rehabilitation, therefore state: -. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling, or alluvial diamond prospecting as the case may be.
Prospecting (drill) site clearance	Construction	640 m²	Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region, aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified. Environmental awareness training of all employees responsible for drilling. A heritage assessment and paleontological impact assessment need to be undertaken prior to any invasive site activities. ECO to approve drill site location considering biodiversity, water resources, heritage, and land use, consult with landowner on drill site location , demarcates drill site for safety, create an upstream berm to divert, clean	NEM: BA SANBI Resources Act Implementation of the Impact management hierarchy to avoid, minimise, mitigate, and rehabilitate. Compliance to GN704 of the National Water Act	Prior to construction

ACTIVITIES (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.)	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 recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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 when the measures in the environmental management programme must be implemented Measures must be implemented when required. Regarding Rehabilitation specifically this must take place at the earliest opportunity. Regarding Rehabilitation, therefore state: -. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling, or alluvial diamond prospecting as the case may be.
			stormwater around the site, create a downstream berm to contain any dirty water.		
Establish water recycling sumps	Construction	2 m²	Remove topsoil where sumps will be placed for rehabilitation. Line drill sumps with plastic to limit groundwater seepage.	- to meet rehabilitation Standards. - to limit groundwater contamination	During construction.
Clearance of access roads	Construction	800 m²	ECO to approve access road Route. Limit clearance to two lane tracks.	-Implementation of the Impact management hierarchy to avoid, minimise, mitigate, and rehabilitate.	During construction.
Establish prospecting site	Construction	25 – 64 m²	Chemical toilets need to be placed in close proximity to the drill site. - All chemicals and fuels need to be stored in a bunded area. - bins for general waste need to be provided. - signage indicating hazards need to be placed at the entrance of the site. - drill rig operators and labourers need to be provided with identification cards.	Occupation Health requirement. Management of hazardous substances.	During construction.

ACTIVITIES **(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.)	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 recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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 when the measures in the environmental management programme must be implemented Measures must be implemented when required. Regarding Rehabilitation specifically this must take place at the earliest opportunity. Regarding Rehabilitation, therefore state: -. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling, or alluvial diamond prospecting as the case may be.
			- no labourers are to be housed on site.		
Operation of the drill site	Operation	25 – 64 m²	General waste need to be collected and disposed at a licensed facility. - during rainfall events the drilling sumps need to be covered with plastic. - no employee are allowed outside of the drill site barricading without permission from the site manager. - water is to be sourced from existing users. - working hours is only permitted during daytime hours. - vehicles are not permitted to exceed 30 km/h within the drill properties.	- impact mitigation.	During operations.
Decommissioning and rehabilitation of the drill site Access roads.	Rehabilitation	25 – 64 m²	- All infrastructure need to be removed from the site. - All waste and spillage need to be cleaned and disposed of appropriately. - drill sump water should be reused or allowed to evaporate.	- Rehabilitation standards and objectives.	Rehabilitation.

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(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.)	(Of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	(volumes, tonnages and hectares or m²)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(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)	Describe the time when the measures in the environmental management programme must be implemented Measures must be implemented when required. Regarding Rehabilitation specifically this must take place at the earliest opportunity. Regarding Rehabilitation, therefore state: -. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling, or alluvial diamond prospecting as the case may be.
			- plastic from drill sumps need to be removed. - Chemical toilets need to be cleaned before I can be moved to the following drill site. - The drill hole must be capped or sealed to limit water ingress and ensure safety for humans and animals. - vehicles are not permitted to exceed 30 km/h within the drill properties.		

Table 18: Impact Management outcomes

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Prospecting (drill) site clearance	Dust pollution	Air quality	Construction	Control through dust suppression Control through minimisation of vehicle movement.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.
	Soil erosion, compaction, and contamination.	Soil		Prevent through restricting the disturbed area Prevent through restricting spillage from haulage vehicles. Control through removal of all utilisable soil and storage of the same. Control through implementation of storm water management measures. Remedy through treatment of contaminated soils.	Rehabilitation standards/ objectives.
	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species.	Biodiversity Avifaunal.		Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region, aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified.	As per detailed avifaunal survey and report- with the necessary recommendations

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
				Environmental awareness training of all employees responsible for drilling.	
	Visual impact	Visual receptors		Avoid / prevent leaving any building material or waste on site.	Rehabilitation standards/ objectives.
	Heritage	Archaeological or heritage features		Prevent through reporting and evaluation of any archaeological or heritage features found.	Impact avoided
	Social impact	Noise and visual Health, safety, and security		Control through appropriate management measures; Prevent through SHE management measures.	Objectives of Social & Labour plan
Clearance of access roads	Dust pollution	Air quality	Construction	Control through dust suppression Control through minimisation of vehicle movement.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	Soil erosion, compaction, and contamination.	Soil		Prevent through restricting the disturbed area. Prevent through restricting spillage from haulage vehicles. Control through removal of all utilisable soil and storage of the same. Control through implementation of storm water management measures. Remedy through treatment of contaminated soils	Rehabilitation standards/ objectives.
	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species.	Biodiversity Avifaunal.		Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region, aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified. Environmental awareness training of all employees responsible for drilling.	As per detailed avifaunal survey and report- with the necessary recommendations.
	Visual impact	Visual receptors		Avoid / prevent leaving any building material or waste on site.	Rehabilitation standards/ objectives.

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	Heritage	Archaeological or heritage features		Prevent through reporting and evaluation of any archaeological or heritage features found.	Impact avoided.
	Social impact	Noise and visual Health, safety, and security		Control through appropriate management measures; Prevent through SHE management measures.	Objectives of Social & Labour plan.
Operation of the drill site	Dust pollution	Air quality	Operational	Control through dust suppression Control through minimisation of vehicle movement. Control through monitoring of dust fall to determine if measures are effective.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
	Soil erosion, compaction, and contamination.	Soil		Prevent through restricting the disturbed area Prevent through restricting spillage from haulage vehicles. Control through removal of all utilisable soil and storage of the same. Control through implementation of storm water management measures. Remedy through treatment of contaminated soils. All infrastructures need to be removed from the site. All waste and spillage need to be cleaned and disposed of appropriately. Prevent - drill sump water should be reused or allowed to evaporate. Plastic from drill sumps need to be removed. Control - Chemical toilets need to be cleaned before it can be moved to the following drill site.	Rehabilitation standards/ objectives.

ACTIVITY	POTENTIAL IMPACTS	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(Whether listed or not listed) (E.g., 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, Powerlines, conveyors, etc...)	(E.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)		In which impact is anticipated (E.g., Construction, commissioning, operational Decommissioning, closure, post-closure).	(modify, remedy, control, or stop) through (e.g., noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc.) E.g., •Modify through alternative method. •Control through noise control. •Control through monitoring and management. •Remedy through rehabilitation.	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
				Prevent - The drill hole must be capped or sealed to limit water ingress and ensure safety for humans and Animals.	

Table 19: Potential Impact Mitigation type

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Whether listed or not listed.				
(E.g. 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...)	**(E.g. Dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc…)**	**(modify, remedy, control, or stop) through (e.g., Noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity, etc…)**	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard the 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 as the case may be.	(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by competent authorities)
Prospecting (drill) site clearance.	Dust pollution	Control through dust suppression Control through minimisation of vehicle movement.	Construction.	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.
	Soil erosion, compaction and contamination.	Prevent through restricting the disturbed area Prevent through restricting spillage from haulage vehicles Control through removal of all utilisable soil and storage of the same. Control through implementation of stormwater management measures Remedy through treatment of contaminated soils.		Rehabilitation standards / objectives.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species. Loss of vegetation. Invasion by alien invasive species.	Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region, aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified. Environmental awareness training of all employees responsible for drilling. Modify by vegetating soil stockpiles Control though alien invasive eradication programme.		As per detailed avifaunal survey and report- with the necessary recommendations.
	Visual impact	Avoid/prevent leaving any building material or waste on site.		Rehabilitation standards / objectives.
	Heritage	Prevent through reporting and evaluation of any archaeological or heritage features found.		Impact avoided.
	Social impact	Control through appropriate management measures; Prevent through SHE management measures.		Objectives of Social & Labour Plan
Clearance of access roads	Dust pollution	Control through dust suppression Control through minimisation of vehicle movement.	Construction	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.
	Soil erosion, compaction and contamination.	Prevent through restricting the disturbed area Prevent through restricting spillage from haulage vehicles Control through removal of all utilisable soil and storage of the same. Control through implementation of storm water management measures. Remedy through treatment of contaminated soils.		Rehabilitation standards / objectives.
	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species.	Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region, aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified. Environmental awareness training of all employees		As per detailed avifaunal survey and report- with the necessary recommendations.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	Loss of vegetation Invasion by alien invasive species.	responsible for drilling. Modify by vegetating soil stockpiles. Control though alien invasive eradication programme.		
	Visual impact	Avoid / prevent leaving building material or waste on site.		Rehabilitation standards / objectives.
	Heritage	Prevent through reporting and evaluation of any archaeological or heritage features found.		Impact avoided.
	Social impact	Control through appropriate management measures; Prevent through SHE management measures.		Objectives of Social & Labour Plan.
Operation of the drill site	Dust pollution	Control through dust suppression Control through minimisation of vehicle movement. Control through monitoring of dust fall to determine if measures are effective.	Operation	Conduct dust suppression techniques to ensure that applicable standards for PM10 and PM2.5 are not exceeded.
	Soil erosion, compaction, and contamination	Prevent through restricting the disturbed area Prevent through restricting spillage from haulage vehicles Control through removal of all utilisable soil and storage of the same. Control through implementation of storm water management measures Remedy through treatment of contaminated soils. All infrastructures need to be removed from the site. All waste and spillage need to be cleaned and disposed of appropriately. Prevent - drill sump water should be reused or allowed to evaporate plastic from drill sumps need to be removed. Control - Chemical toilets need to be cleaned before it can be moved to the following drill site. Prevent - The drill hole must be capped or sealed to limit water ingress and ensure safety for humans and Animals.		Rehabilitation standards / objectives.

23. FINANCIAL PROVISION

The project closure and rehabilitation vision is founded on the following principles:

- Sustainable exploitation of natural resources without limiting the ability of future generations to live off the same land.
- Limiting to the greatest extent possible, disruption of natural ecosystems, and where necessary and possible, restoring the environment to its original state (baseline environment) after cessation of activities. Alternatively, restore all land to a status and land-use agreed upon between Diepsoils Investments (Pty) Ltd and the relevant authorities, communities, and other stakeholders.
- To transfer all useful infrastructure to local authorities and communities should they be required by such authorities or communities.
- To ensure that the safety of people and animals is not compromised at any stage during and after any activities.

The closure objective allows for the site to be rehabilitated back to the original status of the site. This will include:

- Ensuring all pollution generating activities are eliminated.
- Ensuring all infrastructure is removed from site.
- Ensuring that the existing land use can continue.
- Ensuring that the site is safe for humans and animals.

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

The basic assessment report and environmental management programme will be provided to IAPs for review and comment between 14 April 2022 to 19 May 2022. The objective to communicate to IAP's during the public consultation process. Please refer to Appendix C for more details.

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

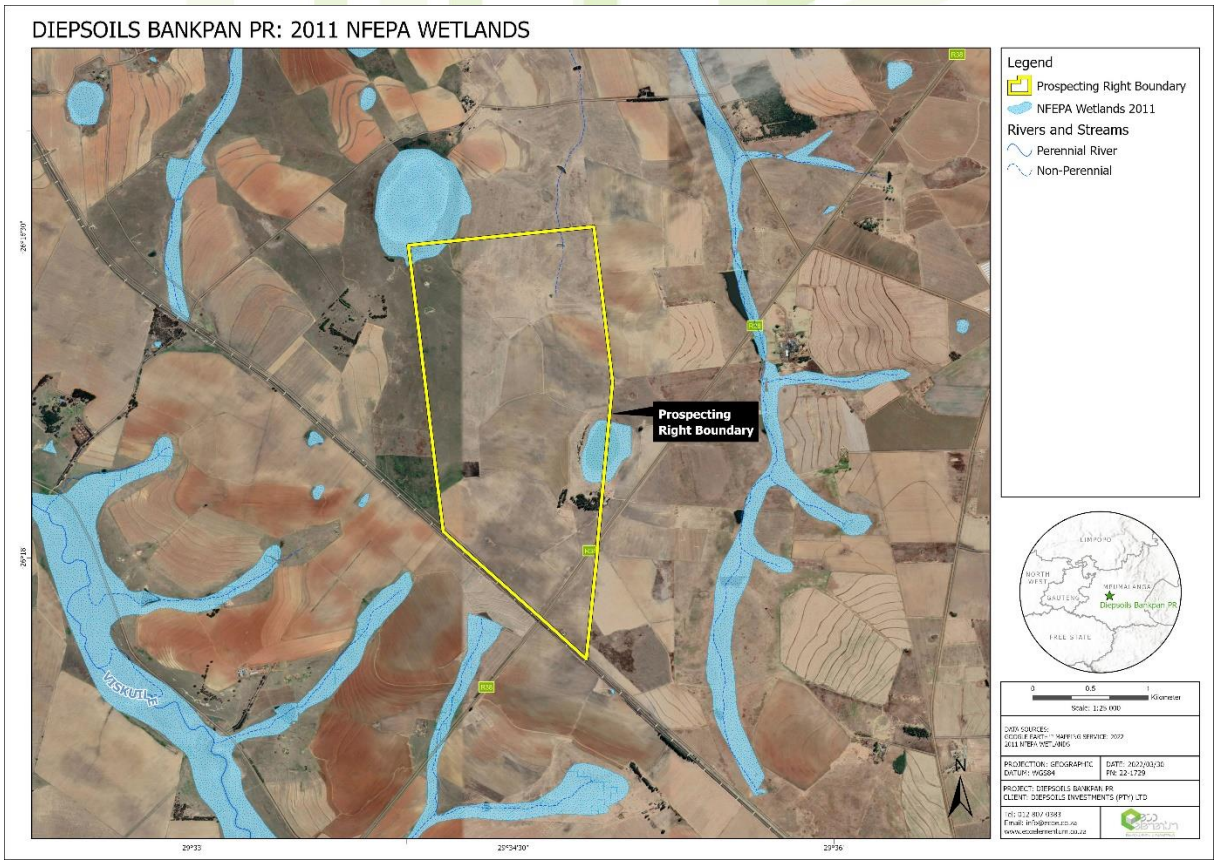

Figure 22: Conceptual prospecting plan and rehab plan

23.2 EXPLAIN WHY IT CAN BE CONFIRMED THAT THE REHABILITATION PLAN IS COMPATIBLE WITH THE CLOSURE OBJECTIVES.

The rehabilitation plan aims to provide a project site that is similar to the pre-prospecting environment through the removal of infrastructure, capping of boreholes, and vegetating of disturbed areas (where not within cultivated lands).

23.3 CALCULATE AND STATE THE QUANTUM OF THE FINANCIAL PROVISION REQUIRED TO MANAGE AND REHABILITATE THE ENVIRONMENT IN ACCORDANCE WITH THE APPLICABLE GUIDELINE.

The total provision amounts to the number of holes requiring rehabilitation at any given moment. This ensures that should the project application become insolvent prematurely the costs of rehabilitation can be recovered. Existing roads will be used as far as possible, and it is not possible to identify any new access roads at this stage as its route will be determined in conjunction with the landowner and activities on the property at that time. No other infrastructure, offices, or housing will be present within the prospecting area and all employees will be housed in nearby towns. The quantum as calculated using the Department's guideline is provided in the Table below.

Table 20: Closure Quantum

CALCULATION OF THE CLOSURE QUANTUM - PROSPECTING RIGHT							
Operation: PROSPECTING RIGHT WITHOUT BULK SAMPLING					**Province: Mpumalanga**		
Evaluators: Eco Elementum (Pty) Ltd					**Date: April 2022**		
General Information	**Risk Class**	**High (A)**	**MP 30/5/1/1/2/17030PR**				
	Environmental Sensitivity	**Medium**					
	WF 1: Nature of Terrain Weighting Factor	**Flat 1.00**					
	WF 2: Proximity to Urban Area Weighting Factor	**Peri Urban 1.05**					
Component No	**Main Activities Itemized Descriptions**	**[B] CPI Adjusted Master Rate**	**[A] Quantity**	**Units**	**[C] Multiplication Factor**	**[D] Weighting Factor 1: Nature of Terrain**	**Sub Totals [E = A*B*C*D]**
		STEP 4.3	**STEP 4.5**		**STEP 4.3**	**STEP 4.4**	
1	Dismantling of processing plant and structures	R 16.59	0.00	m3	1.00	1.00	R 0.00
2(A)	Demolition of steel buildings and structures	R 231.09	0.00	m2	1.00	1.00	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	R 340.55	0.00	m2	1.00	1.00	R 0.00
3	Rehabilitation of access roads	R 41.35	850.00	m2	1.00	1.00	R 35 147.50
4(A)	Demolition and rehabilitation of electrified railway lines	R 401.36	0.00	m	1.00	1.00	R 0.00
4(B)	Demolition and rehabilitation of non-electrified railway lines	R 218.92	0.00	m	1.00	1.00	R 0.00
5	Demolition of housing and facilities	R 462.17	0.00	m2	1.00	1.00	R 0.00
6	Opencast rehabilitation including final voids and ramps	R 235 221.83	0.00	ha	0.52	1.00	R 0.00
7	Sealing of shafts, adits and inclines	R 124.06	0.00	m3	1.00	1.00	R 0.00
8(A)	Rehabilitation of overburden and spoils	R 161 517.37	0.00	ha	1.00	1.00	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	R 201 116.96	0.00	ha	1.00	1.00	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	R 584 284.21	0.00	ha	0.80	1.00	R 0.00
9	Rehabilitation of subsided areas	R 135 246.47	0.00	ha	1.00	1.00	R 0.00
10	General surface rehabilitation, including grassing of denuded areas	R 25 000.00	0.31	ha	1.00	1.00	R 7 750.00
11	River diversions	R 127 949.00	0.00	ha	1.00	1.00	R 0.00
12	Fencing	R 145.95	0.00	m	1.00	1.00	R 0.00

13	Water management (Separating clean and dirty water, managing polluted water, and managing the impact on groundwater, including treatment, when required)	R 48 649.81	0.00	ha	0.67	1.00	R 0.00
14	2 to 3 years of maintenance and after care	R 17 027.43	0.395	ha	1.00	1.00	R 6 725.83
15	Specialist study	n/a	0.00	report	1.00	1.00	n/a
						Subtotal (1 to 15 above)	**R 49 623.33**
		Subtotal 1			**Weighting Factor 2**	**1.05**	**R 52 104.50**
1	**Preliminary and General**					**12% of Subtotal 1 if less than R100mil**	**R 6 252.54**
						6% of Sub Total 1 if more than R100mil	
2	**Contingency**					**10% of Sub Total 1**	**R 5 210.45**
						Subtotal 2 (Subtotal 1 plus sum of management and contingency)	**R 11 462.99**
						Subtotal 3	**R 63 567.49**

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

The applicant, Diepsoils Investments (Pty) Ltd, hereby commits to undertaking to provide the calculated amount of R 63 567.49 (excl. VAT) in the form of either method provided in section 53 of the MPRD Regulations and the financial provisioning regulations, 2015 Published under Government Notice R1147 (GN R. 39425 of 2015). It should however be noted that no new guideline for determining the quantum for closure and rehabilitation has been published and therefore the guideline published under the MPRDA regulation was used to assess the quantum for closure liability.

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

a) **Monitoring of Impact Management Actions**
b) **Monitoring and reporting frequency**
c) **Responsible persons**
d) **Time period for implementing impact management actions**
e) **Mechanism for monitoring compliance**

Table 21: 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
Drill site establishment, moving and rehabilitation	Disturbance of vegetation, Degradation, and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species. Contamination of ground and surface water. Disturbance of heritage Resources. Land use conflicts Noise and dust generation Rehabilitation sustainability	Pre-site establishment, with no go areas and approval by EO and avifaunal specialist. The following portion will then be excluded/buffered as the Gauteng Visual assessment. Pre-site establishment risk Assessment Pre-site establishment risk assessment. Complaint register. Rehabilitation closure report.	Project environmental officer. Site manager Project environmental officer Project environmental officer	Prior to site establishment. (once off) During operations and closure. (bi-monthly) Prior to site establishment Prior to site establishment (once off) During operations and closure (continuous) Post closure
Entire operational site	All activities and impacts identified.	Auditing all site activities in compliance with the management commitments.	Project environmental officer.	During life of project. (monthly)

24. INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT / ENVIRONMENTAL AUDIT REPORT.

A performance assessment/ Environmental audit will be undertaken as stipulated in the Environmental Authorisation OR once in Phase 2 and in rehabilitation, which should include the assessment of the financial provision. The performance assessment will be conducted by an external consultant throughout the life of prospecting as required under NEMA. This is conducted to assess the adequacy and compliance to the EMP, EA and the relevant legislation. The reports should be submitted to the DMRE.

25. ENVIRONMENTAL AWARENESS PLAN

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

An environmental awareness training manual will be developed for the prospecting project.

All employees must be provided with environmental awareness training to inform them of any environmental risks that may result from their work and of the manner in which the risks must be dealt with to avoid pollution or the degradation of the environment.

Employees should be provided with environmental awareness training before prospecting operations start. All new employees should be provided with environmental awareness training. Environmental awareness and training is an important aspect of the implementation of the EMP. The onus is on the different parties involved in the various stages of the life cycle of the project to be environmentally conscious. Hence, it is suggested that all members of the project team are familiar with the findings of the site-specific EA report and the EMPr. For instance, the contractor is responsible for the lack of environmental knowledge of his/her crew members. The contractor could forward internal environmental awareness and training procedures to the project manager and environmental officer for comment prior to the commencement of the project. Likewise, the above is applicable to the programming, design, operations and maintenance, and decommissioning teams. Environmental awareness ensures that environmental accidents are minimized, and environmental compliance maximized.

All staff and contractors will be submitted to an annual training / awareness course as to inform the staff of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment.

Section 39 (3) (c) requires that an applicant who prepares an Environmental Management Programme or Environmental Management Plan must "develop an environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risks which may result from the work and the manner in which the risks must be dealt with in order to avoid pollution and degradation of the environment". Environmental Awareness is required not only for management and employees (as described in Section 39 (3) (c) but also for visitors to the site. the following strategies and plans will be put into place for each of the parties.

25.2 Visitor Environmental Awareness

Visitor / sub-contractor environmental awareness will be generated through the provision of a signboard describing very briefly the environmental considerations applicable to them. The signboard should contain the following information:

- Statement of the applicant's commitment to environmental principles.
- List of the "rules" to which the visitor must abide. This will include:
    - No littering. Dispose of all waste in the bins provided;
    - No fires;
    - Stay on demarcated roadways and paths only;
    - Kindly report any environmental infringements they may notice;
    - Check your vehicle/equipment for diesel/oil leaks.

25.3 Senior and Middle Management Environmental Awareness:

Achieving environmental awareness at upper levels of management is slightly different from the process at the operational level. There is often a fair level of the general value of environmental awareness, but site-specific issues will most often need to be communicated. This will be achieved by:

- Management must make themselves fully familiar with the EMPr;
- Ensuring that there is a spare copy of the approved EMPr at his / her disposal; management is encouraged to make notes in the document regarding the difficulty / ease of implementing the environmental management measures. These notes should be sent to the consultants to assist in future revisions of the EMPr;

- The manager must ensure that the operators perform regular monitoring of their workstations / areas.

During the management's execution of their activities/being at the site, the management must be constantly aware of and observant of especially the following:

- Dust levels - movement outside of demarcated areas;
- Litter management - general housekeeping;
- Erosion during rainy season.

Topsoil management – fuel / oil management / leaks / changes;

- Success of operational re-vegetation; and
- Alien vegetation.

25.4 Operator / Workforce Environmental Awareness:

Achieving environmental awareness amongst the operators and labour is probably the most important because they are usually present at the place where most environmental transgressions take place or in fact cause them. It is the aim of increased environmental awareness to reduce any such environmental transgressions.

Increasing environmental awareness at these levels can be achieved through the following strategies:

- Induction environmental training must take place prior to any contract period.
- Training: Each and every employee (contractor or not) must go through an environmental training process where at least the following items area covered:
    - The oil/fuel management policy must be explained to the employees. The reason for the policy must also be explained (i.e. to not impact on groundwater, surface water, soil quality etc.);
    - The domestic and industrial waste management policy & method must also form part of the training;
    - The topsoil handling method and the reasons for preserving topsoil (i.e., post prospecting re vegetation, erosion prevention etc.);
    - Alien vegetation management: How to recognize and remove such species;
    - Protection of the natural veld by not driving/manoeuvring or walking through the demarcated protection areas. Reporting that demarcation posts/tape is broken or removed.

Emergency management procedures such as dealing with oil spills or fires must also be drilled; and

- Such training will, in this case, be carried out by the site manager/resident engineer.

25.5 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Training, as detailed above, will address the specific measures and actions as listed in the EMPr and also conditions of the EA. In this way the prospecting team will be provided the knowledge required to conduct the prospecting activities without resulting in environmental non-compliance, the liability of which would lie with Diepsoils Investments (Pty) Ltd. Secondly, informing the prospecting team of the EMPr will also assist the team in identifying if an impact is likely to occur / has occurred and communicate this appropriately to the Environmental.

In order for appropriate action to be taken, proper communications network and reporting protocol must be established, with the prospecting team and the site manager reporting all environmental issues to the Environmental Manager and all social issues to the General Manager.

25.6 Specific information required by the Competent Authority

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

The following specific information will be required by the competent authority:

- The financial provision will be reviewed annually.

26. UNDERTAKING

The EAP herewith confirms

a. the correctness of the information provided in the reports ☒

b. the inclusion of comments and inputs from stakeholders and I&APs ; ☒

c. the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and

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

Signature of the Environmental Assessment Practitioner:

Eco Elementum

Name of Company:

15/04/2022

Date:

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APPENDIX A: EAP CV

APPENDIX B: PUBLIC PARTICIPATION REPORT

APPENDIX C: CONCEPTUAL LAYOUT AND SENSITIVE RECEPTORS MAP

APPENDIX D: SPECIALIST STUDIES