PROPOSED PROSPECTING RIGHT OVER FARM NO 570 (ZAAI PLAATS) IN THE HAY ADMINISTRATIVE DISTRICTS OF THE NORTHERN CAPE

DRAFT BASIC ASSESSMENT REPORT

FEBRUARY 2025

DEPARTMENTAL REFERENCE NUMBER:
NC 30/5/1/1/2/14264 PR

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EXECUTIVE SUMMARY

The Applicant, K2022641005 (South Africa) (Pty) Ltd, applied for a prospecting right (PR) (without bulk sampling), and environmental authorisation (EA) for diatomite (SiO_2_nH_2O) / diatomaceous earth / kieselguhr over 560.118 ha of Farm No 570 (Zaai Plaats) in the Hay Administrative Districts of the Northern Cape.

Should the PR be issued, the proposed project will comprise of six phases divided into non-invasive and invasive prospecting (Table 4). The targeting of all drilling activities will be dependent on the results obtained during the preceding phases of prospecting (Phases 1, 2, 4). The prospecting activities do not require the use of permanent equipment/infrastructure. A central site camp will be established at an area agreed to by the landowner where mobile containers will be used as office space and for storage. Chemical ablutions will be established, and the site camp will be fenced to control access. All chemicals/hydrocarbons will be kept in the storage containers or bunded areas with impermeable surfaces. Rehabilitation will include continuous reinstatement of prospected areas, and the management of invasive plant species and/or erosion.

OUTCOME OF PROJECT ALTERNATIVES

a) The property on which, or location where, it is proposed to undertake the activity.

The Applicant applied for a prospecting footprint of 560.118 ha over Farm No 570 (Zaai Plaats). The prospecting project is dependent upon the presence of the desired minerals which are again dependent upon geological formations. The earmarked farm shows potential and if mineralisation is confirmed (during non-invasive prospecting), the study area/s will be geologically mapped to determine the extents of the mineralisation and provide a basis for additional exploration (invasive prospecting) to quantify the mineralisation. Invasive prospecting will then only target the area/s with promising results. As the application footprint extends over the entire property, no viable alternative locations/sites were identified that could be assessed.

b) Type of activity to be undertaken.

The project proposal is to prospect the area without bulk sampling.

c) Design and layout of the activity.

The invasive prospecting plan (showing drilling, and trenching, locations) will be determined based on the outcome of Phases 1, 2, and 4. Thus far the remote sensing data and initial freshwater- and terrestrial sensitivity results were the main factors steering the design/layout proposal regarding invasive prospecting. Remote sensing identified a target area of ±44 ha on

the farm, and the initial freshwater- and terrestrial studies indicated that the aquatic- and terrestrial sensitivity of the area is Low. Once the drill plan is available, borehole locations will first be assessed by a qualified ecologist and hydrologist and approved by the DMRE. No prospecting will occur in any highly sensitive freshwater areas without prior approval of the DWS. A chance find protocol will be implemented to safeguard against impacts on archaeological and/or palaeontological artefacts/features.

d) Technology to be used in the activity.

Air drills and diamond drill rigs will be used for core drilling. Geophysical equipment will be needed for ground electro-magnetic, magnetic and gravity surveys. Although sample collection will require various mechanical equipment, the process do not require highly specialised technology as secondary processing and metallurgical testing will occur off-site.

e) Operational aspects of the activity.

The project allows some flexibility in terms of when, where, and how the sampling and surveying is conducted. Should the proposed mitigation measures be implemented no need for alternative operational aspects could be identified.

f) Option of not implementing the activity (No-go Alternative).

The Northern Cape is known for its mineral riches, and the remote sensing study showed that the earmarked area has a high mineral potential. Therefore, should the no-go option be applied to this application, the areas will most likely see another application by another party within the near future. Therefore, applying the no-go option presently will not prevent the prospecting of the area but most likely only postpone it.

Considering this, it is proposed that if the recommended management and mitigation measures are implemented the environmental risks can be managed and the area will be rehabilitated that will allow the landowner to continue the use of the prospected area/s for agriculture. Based on the above it is proposed that the no-go option is not a viable alternative for this application.

PUBLIC PARTICIPATION PROCESS

The relevant landowner, stakeholders and I&AP's will be informed of the prospecting right application by means of an advertisement in the Noordkaap Bulletin, and on-site notices that will be placed at the farm and the Postmasburg Municipal Offices. A notification letter inviting comments on the DBAR (until 12 March 2025) will also be distributed. The comments received on the DBAR will be

incorporated into the final Basic Assessment Report (FBAR) to be submitted to the DMRE for consideration.

BASIC ASSESSMENT REPORT:

The basic assessment report identifies the potential positive and negative impacts that the proposed activity will have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons and proposes possible mitigation measure that could be applied to modify / remedy / control / stop the identified impacts.

The key finding of the environmental impact assessment entail the following:

a) Land Use

The land capability of the earmarked area is mainly of Low concern, and the farm is used for grazing. The Applicant will engage the landowner of the earmarked property regarding a co-existence agreement prior to commencement of invasive prospecting, and no site camp and/or drill site will be sited on sensitive areas. Once rehabilitated, all drill sites will again be available for agricultural use.

b) Topography

The prospecting activities will not impact the topography of the area as the project does not require bulk sampling. All boreholes will be capped, and the trenches will be refilled after sampling. Should the mitigation measures be implemented, the activity will have no residual impact on the topography.

c) Visual Characteristics

The area of disturbance is expected to be ±400 m² per drill site that will continuously be rehabilitated as prospecting progresses. The prospecting activities do not require the alteration of vast vegetated areas, and no permanent infrastructure will be erected. Considering this, the potential impact of the prospecting operation on the visual characteristics of the receiving environment is deemed to be of low significance once the mitigation measures are implemented.

d) Air and Noise Quality

The prospecting activity does not trigger an application in terms of the NEM:AQA, 2004. Emissions to be generated will mainly consist of dust due to drilling and driving on site. Due to the small scale of the operation (per sample site) the noise levels to be generated will be low and will mainly stem from the operation of the prospecting equipment and vehicles driving on the roads. The dust emissions

and/or noise levels that may arise from the proposed prospecting activities, if mitigated by the Applicant, will therefore have a Low impact on the receiving environment.

e) Geology and Soil

The remote sensing study showed that the earmarked farm hold a great kieselguhr potential and invasive prospecting should be confined to the target area/s to be identified during the non-invasive prospecting phase.

f) Hydrology

According to the Minrom study, the position of the target area on Farm No 570 (Zaai Plaats) does not appear to correspond with any identified watercourse. However, Eco-Pulse recommends that no prospecting occur prior to a second phase investigation that groundtruth the sensitivity of the earmarked area and inform the invasive prospecting programme. The findings of the second phase investigation must be approved, with the sampling plan, by the DMRE prior to commencement.

g) Groundcover, Fauna, and Biodiversity Conservation

The position of the target area on Farm No 570 (Zaai Plaats) is within an area classified as Low terrestrial sensitivity, and Eco-Pulse supports targeted prospecting activities within such areas. However, it is anticipated that additional fieldwork to refine the ecological sensitivity assessment will be necessary once the area/s where invasive prospecting will occur were selected. The second phase fieldwork will be commissioned by the Applicant once the said areas were identified even though the target area has a Low terrestrial sensitivity.

h) Cultural and Heritage Environment

The desktop HIA study provides an overview of potential heritage resources that could be affected by the proposed activity. The impact to heritage resources is expected to be Low provided that the recommendations of the specialists are adhered to, based on SAHRA's approval. Once the drill sites have been confirmed these areas have to be subjected to a heritage walk down, prior to the commencement of invasive prospecting activities. Burial sites, memorials and graves must be avoided with a 30 m buffer zone.

i) Palaeontology

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The aeolian sands do not preserve fossils but might cover features such as palaeo-pans or palaeo-springs that trap or form fossils but no such feature is visible in the satellite

imagery. Since there is an extremely high chance that diatoms will be found and destroyed, and a small chance that trapped or transported fossils occur in the sands and may be disturbed a Fossil Chance Find Protocol has been proposed by the specialist. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely high. Therefore, samples must be collected and deposited in a recognised repository, such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action was taken.

j) Site Specific Infrastructure

The prospecting method is such that it can be moved away from build structures and existing infrastructure. Jeep-tracks, to some of the drill sites, will need to be developed/upgraded in agreement with the landowner. Presently it is not expected that the proposed activity will impact on other existing infrastructure.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 191 899.40.

LIST OF ABBREVIATIONS

ASTM	American Society for Testing and Materials
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DAERL	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
DBAR	Draft Basic Assessment Report
DD	Diamond Drilling
DFFE	Department of Forestry, Fisheries, and the Environment
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIAge	Early Iron Age
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
ESAge	Earlier Stone Age
FBAR	Final Basic Assessment Report
FEL	Front-end-loader
FEPA	Freshwater Ecosystem Priority Area
GDP	Gross Domestic Product
GNR	Government Notice Number
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
LIA	Late Iron Age
LN	Listing Notice
LSA	Late Stone Age
LT	Least Threatened
MHSA	Mine Health and Safety Act, 1996 (Act No 29 of 1996)
MIA	Middle Iron Age
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)

MSA	Middle Stone Age
NCNCA	Northern Cape Nature Conservation Act, 2009 (Act No 9 of 2009)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998)
NFA	National Forest Act, 1998 (Act No 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No 25 of 1999)
NWA	National Water Act, 1998 (Act No 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No 85 of 1993)
PCB's	Polychlorinated Biphenyls
PCO	Pest Control Officer
PES	Present Ecological State
PIA	Palaeontological Impact Assessment
PKSDM	Pixley Ka Seme District Municipality
POC	Potential Occurrence
PPE	Personal Protection Equipment
PR	Prospecting Right
PSM	Palaeontological Sensitivity Map
RAB	Rotary air blast
RC	Reverse Circulation
RS	Remote Sensing
SAHRA	South African Heritage Resources Agency
SAMRAD	South African Mining Mineral Resources Administration System
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SCC	Species of Conservation Concern
SLM	Siyancuma Local Municipality
SWMA	Sub-Water Management Area
ToPS	Threatened or Protected Species
WMA	Water Management Area
VU	Vulnerable
ZAR	Zuid-Afrikaansche Republiek

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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL 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:	K2022641005 (SOUTH AFRICA) (Pty) Ltd
TEL NO:	078 045 0316
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PHYSICAL ADDRESS:	Suite 2.1 On the Greens, Golf Village, De Beers Avenue, Somerset West
FILE REFERENCE NUMBER SAMRAD:	NC 30/5/1/1/2/14264 PR

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 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 can 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.

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, signification, 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

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental (Pty) Ltd

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the Act. K2022641005 (South Africa) (Pty) Ltd (hereinafter the "Applicant") appointed Greenmined Environmental (Pty) Ltd (hereinafter "Greenmined") to undertake the study needed. Greenmined has no vested interest in the Applicant or the proposed project and declares its independence as required by the EIA Regulations, 2014 (as amended).

i) Details of the EAP

Name of the Practitioner:	Ms Christine Fouché (Senior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	christine.f@greenmined.co.za

ii) Expertise of the EAP.

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

Ms. Fouché has a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology. Full cirriculum vitae with proof of expertise is attached as Appendix J.

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

Ms Fouché has twenty years' experience in doing environmental impact assessments and mining related applications in South Africa. Ms Fouché is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA (Environmental Assessment Practitioners Association of South Africa). See a list of past project attached as Appendix J.

b) Location of the overall Activity.

Table 1: Location of the prospecting area.

Farm Name:	Farm No 570 (Zaai Plaats)
Application area (Ha)	560.118 ha
Magisterial district:	Hay
Distance and direction from the nearest town	Farm No 570 (Zaai Plaats) is ±57 km south-west of Postmasburg when driving on the R383 in a southern direction.
21 digit Surveyor General Code for each farm portion	C03100000000057000000

c) Locality map

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

The requested map is presented as the Regulation 2.2 Project Map compiled in terms of the MPRDA requirements and attached as Appendix A to this document.

Figure 1: Satellite view showing the proposed prospecting right footprint over Farm No 570 (Zaai Plaats) where the yellow triangle shows the application- as well as the farm boundaries. (Image obtained from Google Earth).

d) Description of the scope of the proposed overall activity.

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

The Applicant, K2022641005 (South Africa) (Pty) Ltd, applied for a prospecting right (PR) (without bulk sampling), for diatomite / diatomaceous earth / kieselguhr over ±560 ha of Farm No 570 (Zaai Plaats).within the Hay Administrative District of the Northern Cape.

Should the relevant authorisations be granted, and the project commence the principal prospecting activities will entail the following:

- Non-Invasive Prospecting:
  - Desktop geological studies (Phase 1),
  - Geological field mapping (Phase 2),
  - Feasibility studies and target selection (Phase 4),
  - Analytical desktop pre-feasibility study (Phase 6).

- Invasive Prospecting:
  - Exploration boreholes (Phase 3 & 5),
  - Sloping, landscaping, and rehabilitation the affected areas (Phase 3 & 5).

The proposed project triggers listed activities (see following table) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures in cooperation with specialists, to ultimately culminate in an environmental management programme (EMPR) that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation.

The site layout plan (drilling plan) can only be compiled once the sampling target area/s were identified following the non-invasive prospecting phases. However, Figure 3 shows the layout of a typical drill site, and Appendix D includes a Preliminary Site Plan.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated prospecting activities.

NAME OF ACTIVITY (All activities including activities 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...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 324, GNR 325 OR GNR 327)/NOT LISTED
Phase 1: Non-Invasive Prospecting: Desktop Geological Study: Literature Survey / Review	N/A: Non-invasive Prospecting	N/A	Not listed.
Phase 2: Non-Invasive Prospecting: Geological Field Mapping	N/A: Non-invasive Prospecting		
Phase 3: Invasive Prospecting Exploration Boreholes (40 RC holes – 80 m each, totalling 3 200 m)	40 RC Holes of 400 m² each (±1.6 ha)	Activity 20	GNR 983 Listing Notice 1 of 2014 (as amended)
EIA Regulations GNR 983 of 2014 (as amended) Activity 20: *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, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.*			
Phase 4: Non-Invasive Prospecting: Geological Feasibility, Target Selection, Metallurgical Testing and Analysis.	N/A: Non-invasive Prospecting	N/A	Not Listed
Phase 5: Invasive Prospecting: Exploration Boreholes (30 RC holes – 80 m each, totalling 2 400 m) (20 DD holes – 80 m each totalling 1 600 m)	30 RC Holes of 400 m² each (±1.2 ha) + 20 DD Holes of 400 m² each (±0.8 ha)	Activity 20	GNR 983 Listing Notice 1 of 2014 (as amended)

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
Phase 6: Non-Invasive Prospecting Analytical Desktop Pre-Feasibility Study. Feasibility Study and Mining Right Application (if applicable).	N/A: Non-invasive Prospecting	N/A	Not listed.

ii) Description of the activities to be undertaken

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

1. MINERAL BACKGROUND INFORMATION

(Information obtained from the article by Hobart M. King: Diatomite; The sedimentary rock used as a filter, absorbent, filler, abrasive and more. https://geology.com/rocks/diatomite.shtml)

Kieselguhr, diatomaceous earth and diatomite are the names commonly used for remarkably light, dull white or pale-coloured, massive to finely laminated chalky-looking, highly porous sediment composed mainly of the minute hollow opaline protective shells of unicellular aquatic plants known as diatoms.

Diatomite (kieselguhr) is a very porous rock with a fine particle size and a low specific gravity. These properties make it useful as a filter media, an absorbent, and as a lightweight filler for rubber, paint, and plastics. Crushed diatomite is usually called "diatomaceous earth".

Diatoms are members of a large, diverse group of algae that drift freely in the waters of oceans and lakes. A few types of diatoms live on the bottom of these water bodies and in soils. Most diatoms are microscopic, but a few species are up to two millimetres in length. As a group, diatoms are unique because they are single-celled organisms that produce an external cell wall composed of silica, called a frustule. These frustules are very thin and have a delicate structure. (H.M. King).

Dr King further notes that when diatoms die, their siliceous frustules sink. If the associated sediment is composed of over 30% diatom frustules by weight, it would be called a "diatom ooze" or a "siliceous ooze." These are the sediments that are lithified into the rock known as diatomite.

Figure 2: Images of white diatomite (first frame), and in the second frame diatomaceous earth that is crushed diatomite. (Images from geology.com)

According to the U.S. Geological Survey (USGS), the production of diatomite in the USA in 2022 was estimated to be 1.1 million tons. Approximately 55% of the diatomite is used in filtration products, while the remaining 45% is used in absorbents, fillers lightweight aggregates and other applications. Less than 1% is used for specialized pharmaceutical and biomedical purposes. The amount of domestically produced diatomite sold or used by USA producers in 2022 was 10% higher than that in 2021. The United States remained the leading global producer and consumer of diatomite. Filtration (including the purification of beer, liquors, and wine and the cleansing of greases and oils) continued to be the leading end use for diatomite. An important application for diatomite is the removal of microbial contaminants, such as bacteria, protozoa, and viruses in public water systems. Domestically, diatomite used in the production of cement was the second-ranked use. Other applications for diatomite include filtration of human blood plasma, pharmaceutical processing, and use as a nontoxic insecticide (Crangle, RD [(703) 648-6410, rcrangle@usgs.gov]).

2. APPLICATION BACKGROUND

In 2023, the Applicant applied for a prospecting right (with reference number: NC 30/5/1/1/2/13826 PR) for kieselguhr over various properties in the Hay and Kuruman Administrative Districts. The said application did not include Farm No 570 (Zaai Plaats) but extended up to the farm Vaalwater No 84 that borders onto Farm No 570 (Zaai Plaats) (see Figure 22). Subsequently, the Applicant identified the need for a prospecting right on Farm No 570 (Zaai Plaats) and this application was submitted in August 2024.

3. PROJECT PROPOSAL

The Applicant applied for a prospecting right (PR) for diatomite / diatomaceous earth / kieselguhr (hereafter referred to as “kieselguhr”) over ±560 ha of Farm No 570 (Zaai

Plaats). The following table lists the GPS coordinates of the proposed prospecting area as shown on the Regulation 2(2) Project Plan attached as Appendix A.

Table 3: GPS coordinates of the prospecting right.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°43'47.05"	22°46'04.91"	-28.729736°	22.768030°
B	28°45'57.40"	22°47'33.54"	-28.765945°	22.792651°
C	28°45'45.08"	22°45'46.76"	-28.762523°	22.762990°

Also refer to Figure 1 for satellite image of the proposed prospecting area in relation to the surrounding landscape.

Should the PR be issued, and the activities be allowed, the proposed project will comprise of six phases that can be divided into non-invasive- and invasive prospecting as presented in the following table.

Table 4: Proposed prospecting activities to be implemented.

PHASE	ACTIVITY	SKILL(S) REQUIRED	TIMEFRAME	OUTCOME
1	**Non-Invasive Prospecting** Desktop Geological Study: Literature Survey / Review	Geologist	Month 1-6	Initial geological targeting report supported by historical records and existing data.
2	**Non-Invasive Prospecting** Geological Field Mapping	Geologist & Field Crew	Month 6-12	Detailed geological targeting report accompanied by maps & plans of ground truthing of initial geological targeting.
3	**Invasive Prospecting** Exploration Boreholes (40 RC holes – 80 m each, totalling 3 200 m)	Geologist / drill rig team / field crew / laboratory technicians. Geological modelling team	Month 12-36	Borehole core data & RAB data: lithological logs, geophysical down hole surveys, assay results for mineralized intercepts. Modelling of data. Interpretation and 3D modelling of potential deposit. Generation & ranking of mineralized targets.
4	**Non-Invasive Prospecting**	Geologist / laboratory technicians /	Month 36-42	Borehole data & RAB data: lithological logs, geophysical down hole surveys, assay results

PHASE	ACTIVITY	SKILL(S) REQUIRED	TIMEFRAME	OUTCOME
	Geological Feasibility Target Selection Metallurgical Testing and Analysis	metallurgical specialists		for mineralized intercepts, results for metallurgical testing and analysis.
5	**Invasive Prospecting** Exploration Boreholes (30 RC holes - 80 m each, totalling 2 400 m) (20 DD holes - 80 m each totalling 1 600 m)	Geologist / Excavator Team / Field Crew / Laboratory Technicians	Month 36-54	Exploration pit data: lithological logs, geophysical exploration pit surveys, assay results for mineralized intercepts. Modelling of data. Interpretation and 3D modelling of potential deposits. Generation and ranking of mineralized targets. Resource estimation work producing a SAMREC Mineral Resource.
6	**Non-Invasive Prospecting** Analytical Desktop Pre-Feasibility Study. Feasibility Study and Mining Right Application.	Economic geologist / mining engineer / project engineer / consulting company	Month 48-60	Geological and pre-feasibility reports, maps, and plans. Risk assessment study to determine if a full feasibility is warranted.

Invasive Prospecting:

(1) Site Commencement/Establishment Phase

Once the target area/s were identified (during non-invasive prospecting) and the invasive prospecting commences (phase 3 & 5), site commencement/establishment will entail discussions with the landowner regarding access to the property, the clearance of vegetation (where necessary) from the areas to be sampled, the stripping and stockpiling of the topsoil (where applicable), and the introduction of the prospecting equipment.

The prospecting activities do not require bulk sampling nor the use of any permanent equipment/infrastructure. A central site camp will be established at an area agreed to by the landowner where mobile containers will be used as office space and for storage. Chemical ablutions will be established, and the site camp will be fenced to control access. All chemicals/hydrocarbons will be kept in the storage containers or bunded areas with impermeable surfaces.

- **Clearing of Vegetation**

The proposed footprint of a typical drill site will be ±400 m² in size. The prospecting contractor will need to remove the vegetation cover from the largest part of the earmarked area to allow the sampling activities. The vegetation cover will only be removed from the exact area to be prospected and immediately prior to commencement, no blanket clearing will be allowed. The plant material that will be removed will be stockpiled with the topsoil to be returned during the rehabilitation of the area.

Also refer to *Part A(1)(h)(iv)(c) Description of Specific Environmental Features and Infrastructure on the Site - Site Specific Groundcover, Fauna, and Biodiversity Conservation.*

- **Topsoil Stripping**

Although kieselguhr usually extends up to surface level, it is proposed that any available topsoil in the earmarked areas will be stripped and stockpiled for the duration of the activities. Topsoil removal will be restricted to the exact footprint of each prospecting site during the invasive phases of the activity. The topsoil will be stockpiled at a designated signposted area to be replaced during the rehabilitation of the area. It will be the responsibility of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed when present. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 2 m in height.

- **Access Roads**

The R383 public road crosses through the earmarked property and will serve as the main access road. Access to the prospecting areas will, as far as possible, follow the existing internal farm roads. The farm roads will be upgraded where necessary to allow the comfortable movement of the prospecting machinery/vehicles. Where needed jeep-tracks will be opened from the main farm road to the specific prospecting sites in agreement with the landowners. These tracks will be temporary and will be rehabilitated once prospecting ceases and if the landowner do not wish the track to remain. The jeep-track route will as far as possible avoid sensitive vegetated areas (to be identified during the site walk through of the ecologist), watercourses, and cultivated area and must be approved by the ECO prior to use. Presently the maximum width of a track is expected to be ±5 m.

- **Establishment of Site Equipment/Infrastructure**

The prospecting activities do not require the use of any permanent equipment/infrastructure. A central site camp (with an approximate footprint of 0.5 ha) will be established at an area agreed to by the landowner where mobile containers will be used as office space and for storage. Chemical ablutions will be established, and the site camp will be fenced to control access. No bulk storage of fuel (>30 000 l) will be necessary. All chemicals/hydrocarbons will be kept in the storage containers or bunded areas with impermeable surfaces.

Presently, it is proposed that a typical drill site will entail the following:

> Drill rig,
> Sample laydown area,
> Chemical toilet,
> Refuse bins and bunded area for applicable chemicals.

(2) Operational Phase (Drilling, Trenching and Sample Pits)

The targeting of all drilling activities will be dependent on the results obtained during the preceding phases of prospecting, namely the geological mapping and geophysical surveying and as such it is currently not possible to include a finalized surface plan showing the intended location, extent, and depth of boreholes to be completed. However, the remote sensing study by Minrom (refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Geology*) identified a target area (±44 ha) with a high kieselguhr potential thereby narrowing the area earmarked for invasive prospecting.

The initial planned invasive exploration activities will consist of exploration drilling, trenches, and pits to appropriate depths to target anomalies and testable material identified during Phases 1 & 2 of the non-invasive prospecting. Down the hole geophysical surveying will take place upon completion of the exploratory trenching and pits along with ground surveys to determine positions of geological materials.

Percussion Rotary Air Blast (RAB) or Reverse Circulation (RC) drilling may be carried out for pre-collaring of diamond drill boreholes or for obtaining samples if significant depth of cover is encountered over particular targets. The work will consist of:

> Access and drill site preparation,
> Diamond core drilling,
> Sampling and assaying,
> Quality assurance and quality control programs,

> Down hole geophysics,
> Rehabilitation of drill sites, and
> Recording & Integration of data.

This phase of boreholes will determine the continuity of mineralization and potential deposit size. The work will consist of:

> Access and drill site preparation,
> Widely spaced diamond drilling and analyses to confirm grade / tonnage potential,
> Sampling and assaying,
> Quality assurance and quality control programs,
> Metallurgical test work,
> Geotechnical drilling,
> Rehabilitation of drill sites, and
> Recording & Integration of data.

This phase will provide enough information to be able to calculate an inferred resource. The work would consist of:

> Trenching and sample pits,
> Sampling and assaying,
> Quality assurance and quality control programs,
> Metallurgical test work,
> Rehabilitation of drill sites,
> Recording & Integration of data.

Figure 3: Example of a typical drill site.

- **Assaying:**

  Rock chip / soil samples will be sent to an off-site laboratory of the Applicant's choice to be crushed, split, pulverized, and assayed. Samples from core will be split using a core cutter before being sent to the laboratory for analysis.

- **Metallurgical Test Work:**

  Metallurgical test work will start during Phase 4 of the prospecting work programme. These tests will be done by and in consultation with a preferred and accredited Laboratory of the Applicant's choice. No metallurgical work will be done at the prospecting areas and/or site camp.

- **Electricity Need**

  The prospecting activities do not require electricity as all equipment will be powered with generators.

- **Water Use**

  The drilling operation for kieselguhr does not require water. Water will be used for dust suppression at the prospecting sites and access roads. Potable water will daily be transported to site by the employees, while the process water (for dust suppression) will be bought from registered local sources (to be identified) in the vicinity of the prospecting activities and transported to site in a water truck(s).

- **Waste Handling**

  Due to the nature of the project, the small scale of each prospecting site, and the fact that maintenance work will be done off-site, very little general waste will be generated as a direct result of the prospecting activities. All the general waste generated at the prospecting sites will be transported to the site camp where it will be contained in refuse bins. Once full the refuse bins will be emptied, and the waste will be disposed of at a registered landfill site in the vicinity of the project. Proof of safe disposal will be filed for auditing purposes.

  Hazardous waste will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and the contaminated soil will be contained in designated hazardous waste containers to be removed daily to the hazardous waste storage area at the site camp. A registered contractor will be appointed to collect and dispose of the hazardous waste at a registered

hazardous waste handling facility and the site will file the proof of safe disposal for auditing purposes.

The chemical toilets will weekly be serviced by an appropriately qualified sewerage handling contractor who will furnish the site with proof of safe disposal.

- **Servicing and Maintenance**

No workshop, wash bay or service areas will be established at the prospecting sites and/or site camp. When needed maintenance/servicing of the equipment will be performed at the contractor's off-site workshop.

(3) Decommissioning phase

Rehabilitation will include activities that can be divided into medium- and long term categories. In the medium term, rehabilitation will entail the continuous reinstatement of prospected areas, and the management of invasive plant species and/or erosion. In the long term, rehabilitation will involve the reinstatement of the remaining disturbed areas (not yet reinstated), prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The Applicant will further be responsible for the seeding of all rehabilitated areas should vegetation not establish through succession within the first six months.

The decommissioning activities will therefore consist of the following:

- Removal of all prospecting equipment from the borehole sites;
- Sealing and capping of all the boreholes;
- Removal of all prospecting related infrastructure/containers from the site camp; and
- Landscaping of any/all compacted areas.

Upon rehabilitation, the prospected areas will once again be available for grazing purposes, and the planting of the indigenous grass layer to protect the topsoil (if needed) will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

Rehabilitation of Site Camp Area:

- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- > Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- > The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

- Photographs, before and during the operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.
- On completion of operations, the surface of these areas, if compacted, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final Rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the invasive prospecting period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the prospecting area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the prospecting activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).

Once the prospecting area was rehabilitated the Applicant is required to submit a closure application to the Department of Mineral Resources in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or*

completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report". The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

Table 5: Policy and Legislative Context.

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 COMPLY 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)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) *Type of environment affected by the proposed activity: Physical Environment – Geology and Soil.* Part A(1)(h)(viii) *The possible mitigation measures that could be applied on the level of risk – Geology and Soil, Hydrology, Groundcover, Fauna, and Biodiversity Conservation*.	Assessment of biophysical environment and current land use. The mitigation measures proposed for the site includes specifications of the CARA, 1983.
IDP 2022-2027 Pixley Ka Seme District Municipality.	Part A(1)(h)(iv)(1)(a) *Type of environment affected by the proposed activity - Socio-Economic Environment*.	The description of the study area's socio-economic status is in accordance with that IDP's of the various municipal areas.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	Part A(1)(f) Need and desirability of the proposed activity.	The need and desirability of the project was assessed in accordance with these guidelines.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of	Part A(1)(d) Description of the scope of the proposed overall activity.	Application for a prospecting right. Reference number: NC 30/5/1/1/2/14264 PR.

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 COMPLY 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)
2002) read together with applicable amendments and regulations thereto.		
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ➢ EIA Regulations GNR 983 of 2014 (as amended) – Activity 20.	Part A1(d)(i) Listing and specified activities.	Application for environmental authorisation. Reference number: NC 30/5/1/1/2/14264 PR
National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air Quality and Noise Ambiance.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Air Quality and Noice Ambiance.*	The mitigation measures proposed for the project consider the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Groundcover, fauna, and biodiversity conservation.*	Assessment of biophysical environment. The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Waste Management*.	The mitigation measures proposed for the site consider the NEM:WA.

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 COMPLY 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 Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects.* Part A(1)(t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.	Assessment of the cultural and heritage environment. The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Road Traffic Act, 1996 (Act No. 93 of 1996)	Part A(1)(d)(ii) Description of the activities to be undertaken – Access Roads. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Existing Infrastructure.	The mitigation measures proposed for the project consider the NRTA, 1996.
National Water Act, 1998 (Act No. 36 of 1998) read together with applicable amendments and regulations thereto. Department of Water Affairs and Forestry Best Practice Guideline Series (2007).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk. Part B(1)(d)(iii) Has a water use licence been applied for?	Prospecting within proximity to watercourses may require a water use authorisation in terms of Section 39 of the NWA, 1998 for water uses as defined in section 21 of the Act. However, the proposed activities are not currently expected to need authorisation in terms of the NWA as sampling sites will remain >100 m from active watercourses.

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 COMPLY 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)
Northern Cape Nature Conservation Act, 2009 (Act No 9 of 2009) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment.*	Assessment of biophysical environment.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed.	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations
The South African Constitution.	-	To be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.

f) Need and desirability of the proposed activities.

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

As mentioned earlier, kieselguhr is a highly sought after mineral in the absorbent, cement, filtration, medical, and other industries. Other uses of kieselguhr include animal feed applications, natural de-wormer for animals, insect, and ant killer. Kieselguhr also has wide application for an anti-caking agent in grain storage as well as mixed feeds.

- **Filter Media**

Kieselguhr is used at drinking water treatment plants, swimming pools, breweries, wineries, chemical plants, and where juices and syrups are made. These fluids are forced through a layer of wet diatomaceous earth, and suspended particles are trapped because it cannot fit through the pores.

- **Cement Additive**

  Kieselguhr is often used as an additive in the manufacture of portland cement. High-quality kieselguhr contains over 80% silica, and it is added to the cement-making process to boost the silica content of the product.

- **Filler**

  Diatomaceous earth is used as a lightweight, inert filler in some manufactured products. It is added to paint as a whitening agent and extender. It is added to plastics as a lightweight filler. It is used as a filler and anti-stick agent in asphalt shingles and to improve adhesion resistance in many rubber products.

- **Absorbent**

  If dry diatomaceous earth is placed on a liquid spill, it can absorb and hold an amount of liquid equivalent to its own weight. This absorption facilitates containment, cleanup, and removal. These same properties make diatomaceous earth able to absorb skin oils when used in cosmetics and facial masks. Diatomaceous earth is an absorbent ingredient of some kitty litters. It is also used as a soil treatment to absorb and hold water.

- **Mild Abrasive**

  Diatomaceous earth is used as a mild abrasive in some toothpastes, facial scrubs, and metal polishes. Its silica particles are small, friable, have a high surface area, and are angular in shape. These are properties that help it perform well as a mild abrasive.

- **Gardening**

  Diatomaceous earth is used as a growing medium in hydroponic gardens. It is inert, holds water, and has a porosity that allows the soil to breathe. To help grain and other seeds from sticking together and remain dry, they are dusted with diatomaceous earth.

- **Insect and Slug Control**

  Diatomaceous earth is an abrasive and an absorbent. These properties make it effective in controlling slugs and certain insects.

- **Flea and Tick Control**

  Dogs and cats can be treated with food-grade diatomaceous earth to control fleas and ticks.

Within the Griqualand West area, kieselguhr appear to overlay either lava of the Ongeluk Sub-Group, or Dwyka shale (Base Kalahari Formation) along ancient water courses and paleo-marshes. This prospecting right application intends to identify feasible kieselguhr sources in the Northern Cape that can economically be exploited and contribute to the economy of the region.

The proposed labour component of the proposed project will be ±8 to 10 labourers that will be hired from the local communities.

The need and desirability of the proposed operation was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017). The following table shows the questions that were considered in this regard.

Table 6: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations considered? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? How were a risk-averse and cautious approach applied in terms of ecological impacts?	Kindly refer to the following discussions: ➢ *Part (A)(1)(h)(i) Details of the development footprint alternatives considered.* ➢ *Part (A)(1)(h)(iv) The Environmental attributes associated with the alternatives.* ➢ *Part (A)(1)(g) Motivation for the overall preferred site, activities, and technology alternative.* ➢ *Part (A)(1)(h)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.* ➢ *Part (A)(1)(l)(i) Summary of the key findings of the environmental impact assessment.*	Desirable should the management and mitigation measures be implemented.
How will this development pollute and/or degrade the biophysical environment? What waste will be generated by this development?	Kindly refer to the following discussions: ➢ *Part (A)(1)(d)(ii) Description of the activities to be undertaken – Invasive Prospecting.* Due to the nature of the project, very little general waste, as a direct result of the prospecting activities, is expected. The general waste will mainly consist of paper, plastic, glass, metal and potentially tin that will be contained in sealable refuse bins at the site camp from where it will be removed to a registered landfill site when the capacity of the containers is reached. Likewise, very little generation of hazardous waste is expected. Hazardous waste will mainly be the result of accidental spillages/breakdowns. The hazardous waste to be generated will be kept in designated hazardous waste containers to be removed from the site by a registered hazardous waste handling contractor. Chemical ablution facilities will be available to the employees that will weekly be serviced by a registered contractor. No waste will be disposed of or treated on the farm.	Highly desirable should the management and mitigation measures be implemented.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	Kindly refer to the following discussions: ➢ *Part (A)(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Cultural and Heritage Environment.* ➢ *Part (A)(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.* ➢ *Part (A)(1)(t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.*	Highly desirable should the management and mitigation measures be implemented.
How will this development use and/or impact on non-renewable natural resources?	The project entails prospecting through drilling of boreholes and does not necessitate bulk sampling, therefore the proposed impact on non-renewable natural resources is negligible.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	The proposed activity will make use of generators to power the site infrastructure and obtain water from legal sources. The water will mainly be needed for dust suppression purposes and a maximum use of 1 000 l/day is anticipated.	Highly Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	The proposed activity will be managed in accordance with the agricultural practices of the farm. As mentioned in *Part A(1)(t)(i)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the land use, visual characteristics of the surrounding environment and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the management and mitigation measures proposed in this report be implemented the potential impacts can be minimised and the project will not have an impact on the people's environmental right.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Describe the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	The Applicant will engage the landowner of the earmarked property regarding a co-existence agreement during the planning stage prior to the commencement of invasive prospecting. As mentioned earlier, the potential impacts associated with this project can be managed/minimised through the implementation of the proposed management and mitigation measures. Further to this, the landowner will be compensated for the use of his property, and the Applicant intends to employ between 8 and 10 residents from the community.	Desirable should the management and mitigation measures be implemented.
Based on all the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Kindly refer to the following discussions: ➢ *Part (A)(1)(h)(i) Details of the development footprint alternatives considered.* ➢ *Part (A)(1)(h)(iv) The Environmental attributes associated with the alternatives.* ➢ *Part (A)(1)(h)(iv) 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.* ➢ *Part (A)(1)(g) Motivation for the overall preferred site, activities, and technology alternative.* ➢ *Part (A)(1)(h)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.* ➢ *Part (A)(1)(l)(i) Summary of the key findings of the environmental impact assessment.*	
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Kindly refer to the following discussions: ➢ *Part (A)(1)(h)(iv)(1)(a) The of environment affected by the proposed activity – Socio-Economic Environment.*	Desirable should the management and mitigation measures be implemented.
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	The proposed activity will be managed in accordance with the agricultural practices of the farm. As mentioned in *Part A(1)(t)(i)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the land use, visual characteristics of the surrounding environment and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the management and mitigation measures proposed in this report be implemented the potential impacts can be minimised and the project will not have an impact on the people's environmental right. The project will contribute directly to the greater society through the employment of 8 to 10 residents as well as compensating the landowner for the use of his land. If the PR application is approved, the Applicant will prospect the area for commercially important minerals, and should the results be favourable and the areas proof feasible the project may lead to a mining right application that will further contribute to the local and national economy.	
How will this development address the specific physical, psychological, developmental, cultural, and social needs and interests of the relevant communities?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the prospecting activities will not affect the physical, psychological, cultural, or social needs of the community in a negative manner, nor will it impact negatively on the socio-economic status of the area. Also refer to the discussion under Part A(1)(h)(vii) *The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.*	

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Will the development result in equitable impact distribution, in the short- and long-term?	The Applicant intends to employ 8 to 10 people from the local community for the duration of the prospecting right (±5 years). This is of crucial importance in the municipal area with an unemployment rate of 28%. The landowner will also receive compensation for the use of his land.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The project was initiated to identify the kieselguhr resources in the earmarked area. Due to the nature of invasive prospecting activities, the location of drill holes and sampling sites can to a certain extend be moved to avoid structures and/or sensitive areas where possible. The landowner will also be compensated for the use of his land.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	The mitigation measures proposed in this report were compiled in consultation with the specialists to reduce the potential impact that the proposed activity may have on the receiving environment. Once approved, the management outcomes are legally binding, and to be implemented by site management for the duration of the site establishment-, operational- and decommissioning phases. The Applicant will also engage the landowner of the PR footprint regarding technical arrangements for the co-existence of the applicable entities on the same land.	Desirable
How will the socio-economic impacts resulting from this development impact on people's environmental right?	The proposed activity will be managed in accordance with the agricultural practices of the farm. As mentioned in *Part A(1)(t)(i)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the land use, visual characteristics of the surrounding environment and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the management and mitigation measures proposed in this report be implemented the potential impacts can be minimised and the project will not have an impact on the people's environmental right.	Desirable should the management and mitigation measures be implemented.

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Considering the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	As mentioned above should the prospecting activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity.	Desirable should the management and mitigation measures be implemented.
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The findings of the specialists were assessed, and their recommendations were incorporated into this document to minimise the impact of the activity on biophysical/culturally sensitive areas. These recommendations were also incorporated into the EMPR of this project that will, once approved, become a legally binding document. Also refer to the following discussions: ➢ *Part A(1)(h)(i) Details of the development footprint alternatives considered.* ➢ *Part A(1)(l)(i) Summary of the key findings of the environmental impact assessment.*	
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?		
What measures were taken to pursue equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by	Prospecting will operate in accordance with, amongst others, the following: ❖ CARA, 1983 – to ensure agriculture related compliance; ❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; ❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; ❖ MPRDA, 2002 (as amended) – to ensure prospecting related compliance; ❖ NEM:AQA, 2004 – to ensure air quality related compliance;	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
categories of persons disadvantaged by unfair discrimination? What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	❖ NEM:BA, 2004 – to ensure biodiversity related compliance; ❖ NEM:WA, 2008 – to ensure waste related compliance; ❖ NEMA, 1998 (as amended) – to ensure environmental related compliance; Should the proposed application be approved, the prospecting areas will also be subject to compliance with the above listed. As mentioned earlier, the Applicant will engage the landowner regarding technical arrangement for the co-existence of separate entities on the same land.	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	The Northern Cape is well known for its mineral riches. Prospecting for kieselguhr will contribute to the mineral wealth of the province and could assist the landowner to extend the land use of his property.	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The activities must operate in accordance with the specifications of the Mine Health and Safety Act, 1996 (MHSA). Site management will have daily discussions with the staff regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings. The MHSA further requires the submission of quarterly occupational hygiene reports that record site specific occupational hygiene exposure assessments.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Describe how the development will impact on job creation in terms of, amongst other aspects?	The Applicant intends to appoint 8 - 10 employees should the project advance to the invasive prospecting phases. These employees will be sourced from the local community.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	The proposed activity will operate under a valid environmental authorisation and prospecting right to be issued by the DMRE-NC. Compliance of the site with the approved EMPR and EA conditions will be reported on as per departmental specification. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	The mitigation measures proposed in this document are realistic and can be implemented (when needed). Should the prospected areas be rehabilitated successfully, no long-term management burden will be left behind.	Highly Desirable
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a prospecting right holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the activity. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the affected areas. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	Please refer to: ➢ Part A(1)(h)(i) *Details of the development footprint alternatives considered.* ➢ Part A(1)(h)(iv)(1)(a) *Type of environment affected by the proposed activity – Socio-Economic Environment.* ➢ Part A(1)(h)(vii) *The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected*. ➢ Part A(1)(t)(i)(1) *Impact on the socio-economic conditions of any directly affected person.*	Desirable should the management and mitigation measures be implemented.

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

Refer to *Part A(1)(h)(i) Details of the development footprint alternatives considered*.

The environmental impact assessment process assessed the feasibility of the proposed alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. Considering the above, the project proposal was updated to incorporate the project related management-, mitigation measures and monitoring programmes identified during this assessment process. The preferred development option was subsequently finalized and is summarised in Table 7.

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

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

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 4 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;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

a) <u>The property on which, or location where, it is proposed to undertake the activity.</u>

The Applicant applied for a prospecting footprint of 560.118 ha over Farm No 570 (Zaai Plaats) in the Hay Administrative District. Applicants can only apply for prospecting rights within areas where such rights are not yet held by other companies/applicants. Furthermore, the prospecting activities are dependent upon the presence of the desired minerals which are again dependent upon geological formations. As the intention of the proposed prospecting operations is to determine the presence of economically viable kieselguhr deposits in the Northern Cape, an area known/expected to contain this resource was selected.

As discussed in *Part A(1)(h)(iv)(c) Description of Specific Environmental Features and Infrastructure on the Site – Site Specific Geology and Soil* Minrom was

contracted to evaluate the mineralisation potential of the earmarked prospecting areas. Minrom concluded that Farm No 570 (Zaai Plaats) hold a target area of high kieselguhr potential (see Figure 23).

Current Project Proposal:

Considering the abovementioned, the earmarked farm shows potential and if mineralisation is confirmed (during non-invasive prospecting), the study area/s will be geologically mapped to determine the extents of the mineralisation and provide a basis for additional exploration to quantify the mineralisation. Invasive prospecting will then only target the area/s with promising results. As the application footprint extends over the entire property, no viable alternative locations/sites were identified that could be assessed.

b) Type of activity to be undertaken

The proposed activity entails prospecting without bulk sampling. Presently it is proposed that prospecting will be conducted using a combination of non-invasive and invasive activities. The invasive prospecting will include drilling and trenching that will entail the collection of core samples. The proposed sampling methods have been developed over many years by the mining industry and are the preferred method for resource estimation. These methods cannot easily be replaced by other methods.

The only other activity alternative would be to prospect the area with bulk sampling. Bulk sampling entails the digging of opencast pits/trenches to access large samples for metallurgical and production compatibility sampling. The bulk sampling trenches/pits are usually dug by excavator, upon which the loosened material is moved by FEL to a crushing/milling plant. The material is then crushed, screened, and sized to product stockpiles from where it is transported off-site by trucks. A typical bulk sampling site has a footprint ranging between 2 500 m² (0.25 ha) and 10 000 m² (1 ha).

The footprint of a typical drill site where bulk sampling is not necessary is ±400 m², and when compared with bulk sampling, will have a much lesser impact on the receiving environment.

Current Project Proposal:

Considering the abovementioned, the project proposal is to prospect the area without bulk sampling.

c) Design and layout of the activity.

As shown in Table 4, the invasive prospecting plan (showing drilling, and trenching, locations) will be determined based on the outcome of phases 1, 2, and 4. Thus far the remote sensing data and initial freshwater- and terrestrial sensitivity results (refer to *Part A(1)(h)(iv)(1)(c) Description of the specific environmental features and infrastructure on the site – Site Specific Geology and Soil*, and *Site Specific Groundcover, Fauna, and Biodiversity Conservation*) were the main factors steering the design/layout proposal regarding invasive prospecting. The following figure compares the mineral potential of the earmarked area (Farm No 570) with the initial freshwater- and terrestrial sensitivity rating, and as evident no sensitive areas were identified at or near the potential kieselguhr target area of the farm.

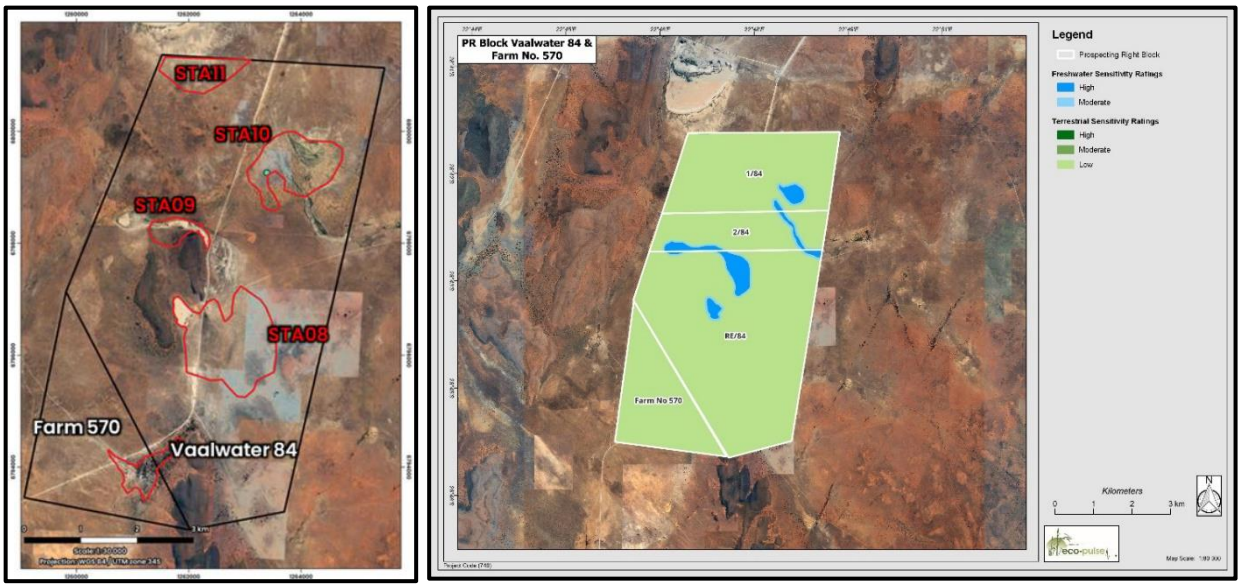


Figure 4: Comparison between the identified target area (red polygon on Farm No 570 in left pane) and the freshwater- and terrestrial sensitivity (right pane) of Farm No 570 (Zaai Plaats).

Current Project Proposal:

Remote sensing identified a target area of ±44 ha on Farm No 570 (Zaai Plaats). The initial freshwater study did not identify aquatic areas of concern, and the terrestrial sensitivity rating of the farm is Low. Considering the above, the Applicant proposes to the following regarding Farm No 570 (Zaai Plaats):

- Should the PR application be successful and Phases 1 and 2 identify Farm No 570 (Zaai Plaats) for sampling, the hydrologist and ecologist will revisit the target area and identify the least sensitive part of the proposed ±44 ha area where invasive prospecting will have the lowest impact.
- The Applicant will enter discussions with the landowner prior to prospecting.
- A chance find protocol will be implemented to safeguard against impacts of archaeological and/or palaeontological concern.
- The area will be backfilled once sampling concluded and rehabilitated.

d) Technology to be used in the activity.

Although several types of drilling tools and machinery exists for prospecting, the Applicant proposes to use air drills for RAB (rotary air blast) drilling and reverse circulation drilling; diamond drill rigs will be used for core drilling. Geophysical equipment will be needed for ground electro-magnetic, magnetic and gravity surveys.

Although sample collection will require various mechanical equipment to be on site, the process do not require highly specialised technology as secondary processing and metallurgical testing will occur off-site. Therefore no other technology alternatives were deemed viable for this project.

e) Operational aspects of the activity.

The operational aspects of the activity will be based on the non-invasive prospecting results. The project allows some flexibility in terms of when, where, and how the sampling and surveying is conducted. For instance, the site camp location and jeep-track routes will be determined in accordance with the landowner agreement and identified sensitive areas that must be avoided. The project also consider mitigating impacts such as dust generation, workhours, prospecting during agriculturally important seasons etc. These mitigation measures were incorporated into the EMPR (Part B) that forms part of this report and will become a legally binding document once approved.

Should the mitigation measures proposed in this report be implemented no need for alternative operational aspects could thus far be identified, however should alternatives be proposed during the review period of the DBAR, the inclusion of these will be considered.

f) Option of not implementing the activity (No-go Alternative)

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. If the no-go alternative is implemented the land in question will not be prospected by the Applicant and the *status quo* will prevail.

However, the reality is that the Northern Cape is known for its mineral riches, and the remote sensing study (by Minrom) showed that the earmarked area has a high mineral potential. Therefore, should the no-go option be applied to this application, the area will most likely see another application by another party within the near future. Applying the no-go option presently will therefore not prevent the prospecting of the area but most likely only postpone it.

Another cause of not pursuing this application is the potential loss of an economically viable natural resource that can be used in a variety of industries. The no-go option will further entail a loss of employment opportunities, as well as socio-economic benefits and growth development opportunities for the employees. Given the high level of unemployment and poverty in the earmarked magisterial district the loss of such opportunities is considered significant.

The positive implications of the no-go alternative are that there will (temporarily) be no impact on the current land use, bio- and geophysical environment of the earmarked areas.

Considering this, it is proposed that if the management and mitigation measures proposed in this report are implemented the environmental risks can be managed and the area will be rehabilitated afterwards that will allow the landowner to continue the use of the prospected area/s. The Applicant will also compensate the landowner should invasive prospecting proceed on his property.

Based on the above it is proposed that the no-go option is not a viable alternative for this application.

g) Final Project Proposal

The following table summarizes the final project proposal.

Table 7: Summary of the final project proposal.

EARMARKED FARM	NON-INVASIVE PROSPECTING	INVASIVE PROSPECTING	NO-GO OPTION	TYPE / TECHNOLOGY / OPERATIONAL ASPECTS
Farm No 570 (Zaai Plaats)	**YES**	**YES**	**NO**	➢ Non-invasive prospecting, ➢ Specialised coring equipment, ➢ Invasive prospecting, ➢ Management and mitigation measures proposed in the EMPR.

ii) Details of the Public Participation Process Followed

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

The relevant landowner, stakeholders and I&AP's will be informed of the prospecting right application by means of an advertisement in the Noordkaap Bulletin, and on-site notices that will be placed at the farm and the Postmasburg Municipal Offices. A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 12 March 2025) will be send to the landowner, neighbouring landowners, stakeholders, and any other I&AP that may be interested in the project. The notices and advertisement will be available in both Afrikaans and English. The comments received on the DBAR will be incorporated into the final Basic Assessment Report (FBAR) to be submitted to the DMRE for consideration.

The following table lists the I&AP's and stakeholders that will be informed/invited to comment/register on the project:

Table 8: List of landowner, I&AP's and stakeholders that will be informed/invited to comment/register on the project.

LANDOWNERS	SURROUNDING LANDOWNERS
Landowner: ➢ Abraham Willem Adriaan Van Wyk Testamentêre Trust Farm No 570 (Zaai Plaats) **Surrounding Landowners / Neighbours:** ➢ Mr AJC van Wyk Remaining Extent of Cone No 82	**Stakeholders:** ➢ Department of Agriculture, Environmental Affairs, Rural Development and Land Reform; ➢ Department of Agriculture, Land Reform and Rural Development; ➢ Department of Economic Development and Tourism; ➢ Department of Labour; ➢ Department of Roads and Public Works; ➢ Department of Water and Sanitation (DWS);

LANDOWNERS	SURROUNDING LANDOWNERS
➢ Abraham Willem Adriaan Van Wyk Testamentêre Trust (also landowner of Farm No 570) Remaining Extent of Vaalwater No 84 ➢ Mr FP van der Schyff Remaining Extent of Range No 93 ➢ Snymansnek Trust Langkloof No 94 ➢ Me DGS Murray care of Mr A Nel Remaining Extent of Zaai Plaats No 83	➢ Eskom; ➢ Pixley ka Seme District Municipality; ➢ Siyancuma Local Municipality; ➢ Siyancuma Local Municipality (Ward 1); ➢ South African Heritage Resources Agency;

Refer to the following table for an explanation on how the public participation process of this project will take the methods stipulated in Regulation 41 of the NEMA Regulations into account.

Table 9: Table comparing the required methods with the public participation process of this project.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
➢ Regulation 41(2)(a): *Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-* *(i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and* (ii) *Any alternative site.* ➢ Regulation 41(3): *A notice, notice board or advertisement referred to in subregulation (2) must—* *(a) give details of the application or proposed application which is subjected to public participation; and* *(b) state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application;* *(ii) the nature and location of the activity to which the application relates;* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the*	Notice boards will be fixed at the following conspicuous and public accessible areas: ➢ Postmasburg Municipal Office/Library; ➢ Boundary fence of Farm No 570 (Zaai Plaats) next to the R383. The notice boards complies with the requirements of Regulation 41(3). The notices were printed on notice boards of 60 x 42 cm in Arial font of sufficient size and were available in both Afrikaans and English.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
application or proposed application may be made. ➢ Regulation 41(4): *A notice board referred to in subregulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and* (b) *display the required information in lettering and in a format as may be determined by the competent authority.*	
➢ Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;* *(iv) the municipality which has jurisdiction in the area;* *(v) any organ of state having jurisdiction in respect of any aspect of the activity;* *(vi) any other party as required by the competent authority;*	(i) The Applicant is in contact with the landowner regarding the project. The landowner will also be invited to register on the project and comment on the DBAR. (ii) The directly surrounding landowners, and lawful occupiers of the land (if applicable) will be informed of the project. (iii) The Ward Councillor applicable to the application footprint will be invited to comment on the project and DBAR. (iv) Representatives from the following local and district municipalities will be invited to comment on the project and DBAR: ➢ Siyancuma Local Municipality; ➢ Pixley Ka Seme District Municipality; (v) As listed in Table 6 the relevant state departments and entities will be invited to comment on the project and DBAR. (vi) To date no other parties were identified that need to be contacted.
➢ Regulation 41(2)(c): *Placing an advertisement in-* *(i) One local newspaper; or* *(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.*	The project and availability of the DBAR were advertised in the Noordkaap Bulletin on 06 February 2025.
➢ Regulation 41(2)(d): *Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken…*	The Noordkaap Bulletin is a provincial newspaper distributed in Afrikaans and English, free of charge in the region applicable to this application.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
➢ Regulation 41(2)(e): *Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—* *(i) illiteracy;* *(ii) disability; or* (iii) *any other disadvantage.*	Not applicable to this application.
➢ Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d)…*	Not applicable to this application.
➢ Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and* (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	The DBAR containing all the facts in respect of this application will be available to the landowner, stakeholders and potential I&AP's for perusal and commenting over a 30-days commenting period. The DBAR will also be available on the Greenmined website. I&AP's and stakeholders will be invited to contact the EAP should additional information be required. The comments received on the DBAR will be incorporated into the FBAR to be submitted for departmental consideration.
➢ Regulation 41(7): *Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.*	Not applicable to this project.

iii) Summary of issues raised by I&APs

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

Table 10: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**	-	-	-	-
Landowner/s	**-**	-	-	-	-
Abraham Willem Adriaan Van Wyk Testamentêre Trust ➢ Farm No 570 (Zaai Plaats) ➢ Remaining Extent of Vaalwater No 84 (surrounding neighbour as well)	X	Any comments received from the landowner will be incorporated into the final BAR and EMPR.			
Lawful occupier/s of the land	-	-	-	-	-
N/A	-	-	-	-	-
Landowners or lawful occupiers on adjacent properties	**X**	-	-	-	-
Mr AJC van Wyk ➢ Remaining Extent of Cone No 82	X	Any comments received from the neighbours will be incorporated into the final BAR and EMPR.			
Mr FP van der Schyff ➢ Remaining Extent of Range No 93	X				
Snymansnek Trust ➢ Langkloof No 94	X				

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Me DGS Murray care of Mr A Nel ➢ Remaining Extent of Zaai Plaats No 83	X				
Municipal councillor	**-**	-	-	-	-
Siyancuma Municipality Ward 1	X	Any comments received from the ward councillor will be incorporated into the final BAR and EMPR.			
Municipality	**-**	-	-	-	-
Siyancuma Local Municipality (SLM)	X	Any comments received from the municipality will be incorporated into the final BAR and EMPR.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	-	-	-	-	-
Department of Roads and Public Works (DRPW)	X	Any comments received from the DRPW will be incorporated into the final BAR and EMPR.			
Department of Water and Sanitation (DWS)	X	Any comments received from the DWS will be incorporated into the final BAR and EMPR.			
Eskom	X	Any comments received from Eskom (on the DBAR and EMPR) will be incorporated into the final BAR and EMPR.			
Communities	No communities other than those listed as part of the neighbours were identified within the study area.				

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Dept. Land Affairs	X	A request was sent to the Commission on Restitution of Land Rights on 03 February 2025 to confirm whether any land claims appears on their database in respect of Farm No 570 (Zaai Plaats). The response of the Commission will be incorporated into the FBAR.			
Traditional Leaders	N/A	-	-	-	-
Dept. Environmental Affairs	-	-	-	-	-
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	X	Any comments received will be incorporated into the final BAR and EMPR.			
Other Competent Authorities affected	-	-	-	-	-
Department of Agriculture, Land Reform and Rural Development (DALRRD)	X	Any comments received from the DALRRD will be incorporated into the final BAR and EMPR.			
Department of Economic Development and Tourism (DEDT)	X	Any comments received from the DEDT will be incorporated into the final BAR and EMPR.			
Department of Labour (DoL)	X	Any comments received from the DoL will be incorporated into the final BAR and EMPR.			
Pixley ka Seme District Municipality (PSDM)	X	Any comments received from the PSDM will be incorporated into the final BAR and EMPR.			

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
South African Heritage Resources Agency (SAHRA)	X	Any comments received from the SAHRA will be incorporated into the final BAR and EMPR.			
OTHER AFFECTED PARTIES		-	-	-	-
N/A		-	-	-	-
INTERESTED PARTIES		-	-	-	-
N/A		-	-	-	-

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

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

This section describes the biophysical, cultural, and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the prospecting operation.

PHYSICAL ENVIRONMENT

CLIMATE

According to the saexplorer website, Postmasburg normally receives ±241 mm of rain per year, with most rainfall occurring mainly during summer. The chart below (lower left) shows the average rainfall values for Postmasburg per month. It receives the lowest rainfall (0 mm) in July and the highest (57 mm) in March. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Postmasburg range from 17°C in June to 32°C in January. The region is the coldest during July when the mercury drops to 0°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures.

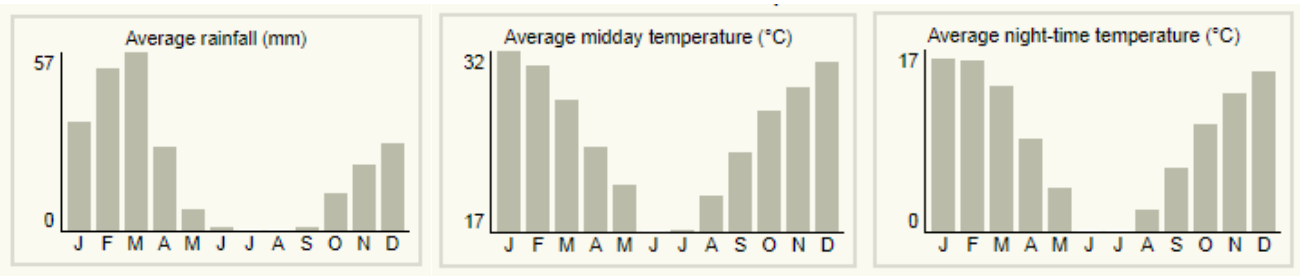


Figure 5: Charts showing the climatic averages of the Postmasburg region (information obtained from SAExplorer).

The dominant wind direction of Postmasburg is fairly constant ranging from north to west-northwest, with the average wind speed being ±6 knots (11.11 km/h) as shown in the following figure.

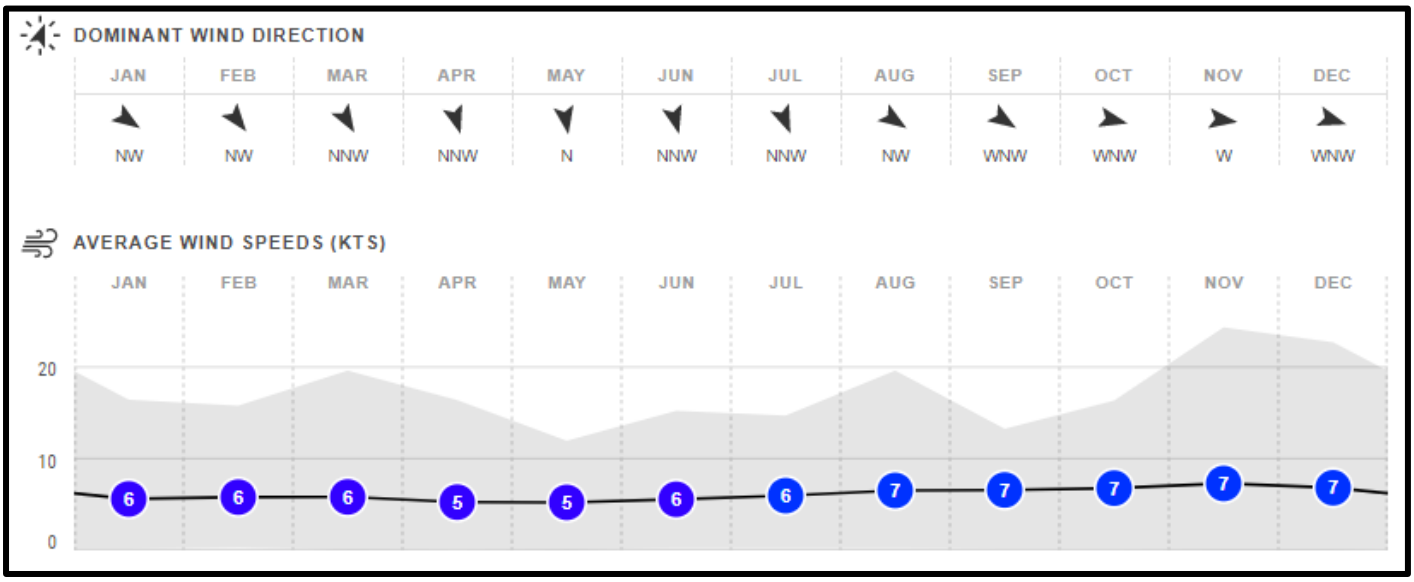


Figure 6: Image showing the dominant wind direction and average wind speed over a 12 month period for the Postmasburg area. (Image obtained from www.windfinder.com/windstatistics/postmasburg)

TOPOGRAPHY

The topography of the greater study area that includes Farm No 570 (Zaai Plaats) is shown in the following figure. The area forms part of the inland plateau of South Africa with elevations generally at ±1 100 amsl. The topography of Farm No 570 (Zaai Plaats) is flat with singular hills/koppies on specifically the neighbouring property known as the Remainder of Vaalwater No 84.

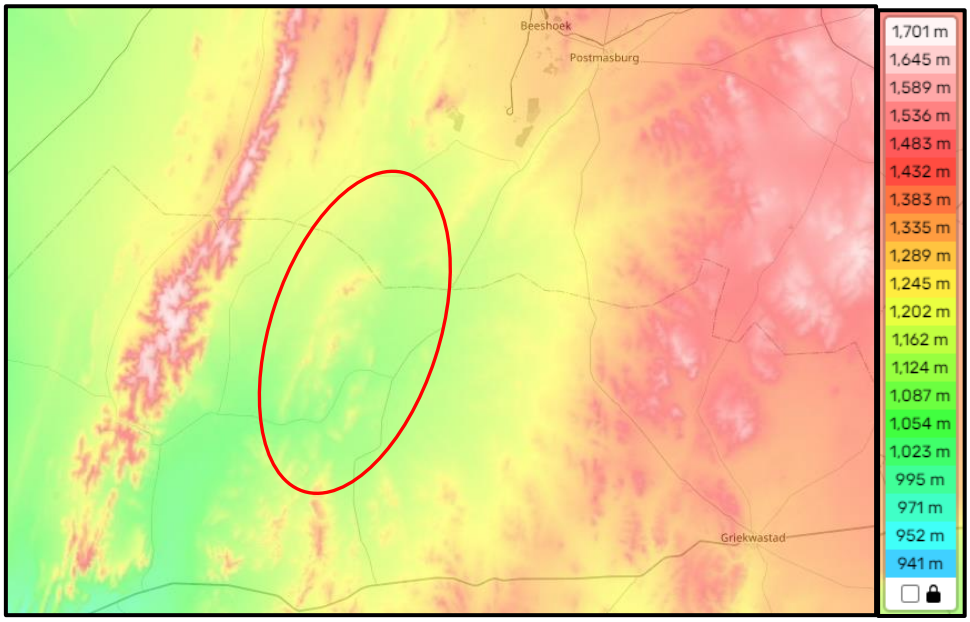


Figure 7: Map showing the topography of the greater Postmasburg area (image obtained from https://en-za.topographic-map.com/map-6m7zs/South-Africa/?center=-27.31565%2C22.96555&zoom=10).

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Topography.*

VISUAL CHARACTERISTICS

The visual character of the greater study areas (Hay District) mainly comprises of an agricultural setting intersected by mining, road-, railway- and electricity infrastructure. Through the years the Postmasburg (Hay) areas have become known for its manganese and iron ore potential and mines such as Kumba Iron Ore, Beeshoek-, Heuningkranz-, and Kolomela Mine were established. Postmasburg town has a low aesthetic value.

The immediate surrounding land uses, adjacent to the earmarked farm, comprise of agricultural activities (grazing). The aesthetic ambiance of the region is high and represents that of a rural area with highly natural landscapes.

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Visual Characteristics*.

AIR QUALITY AND NOISE AMBIANCE

Due to the low rainfall, the air quality of the study area is characterised as dry, arid, and dusty. Dust is the most important pollutant given the area's rural character predominantly affected by agriculture and/or mining. The noise ambiance of the study area is classified as ambient rural or pastoral with noise levels mainly affected by traffic along the R383 and farming related operations.

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Air Quality and Noise Ambiance.*

GEOLOGY AND SOIL

1. <u>REGIONAL GEOLOGY</u>

The regional geology of the study area forms part of the Transvaal Super Group. The Transvaal Super Group was deposited in two structurally controlled basins i.e. Transvaal and Griqualand West.

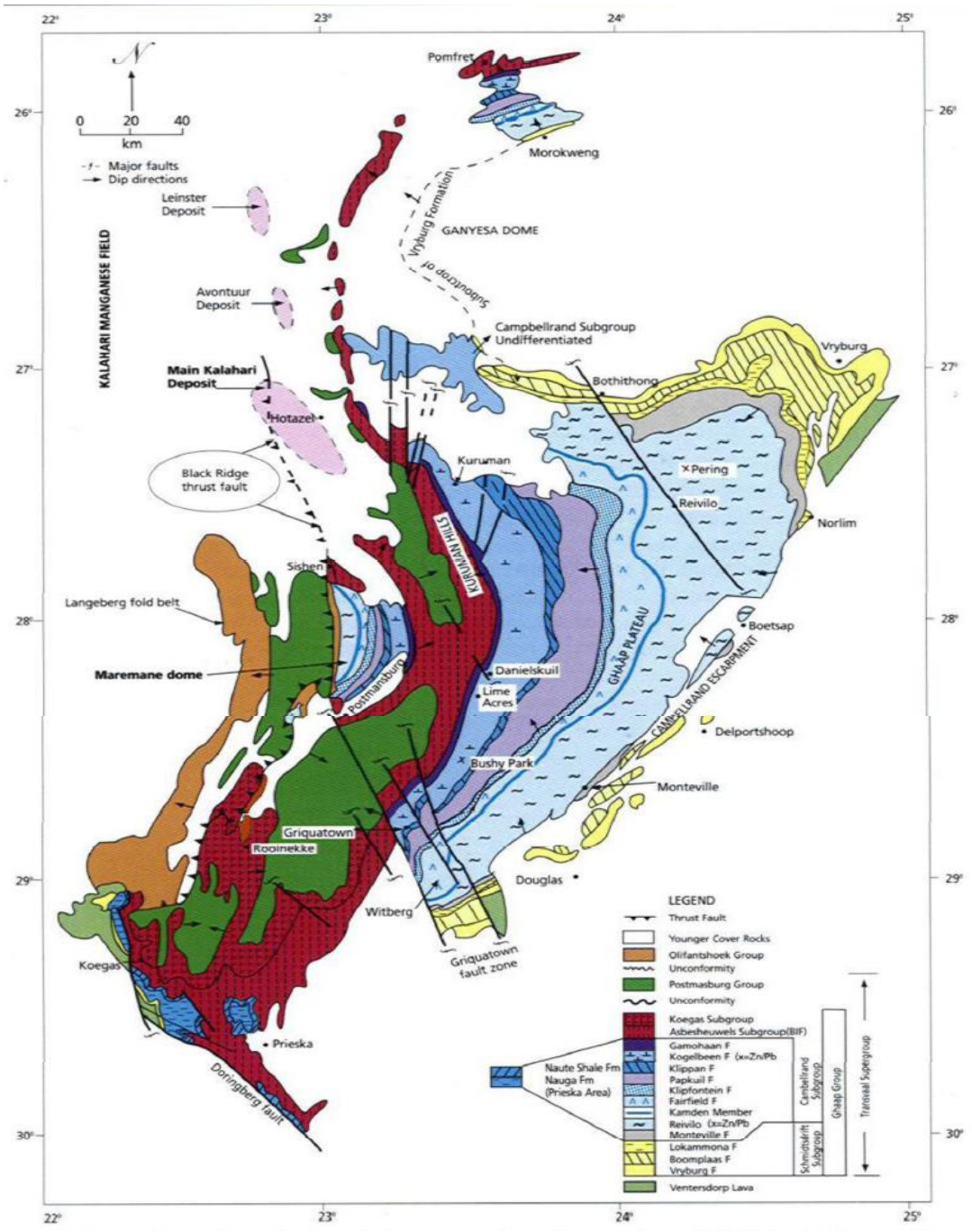


Figure 8: Geological map of Griqualand West (modified from Beukes 1986) (image obtained from Gamagara Resources (Pty) Ltd 2019).

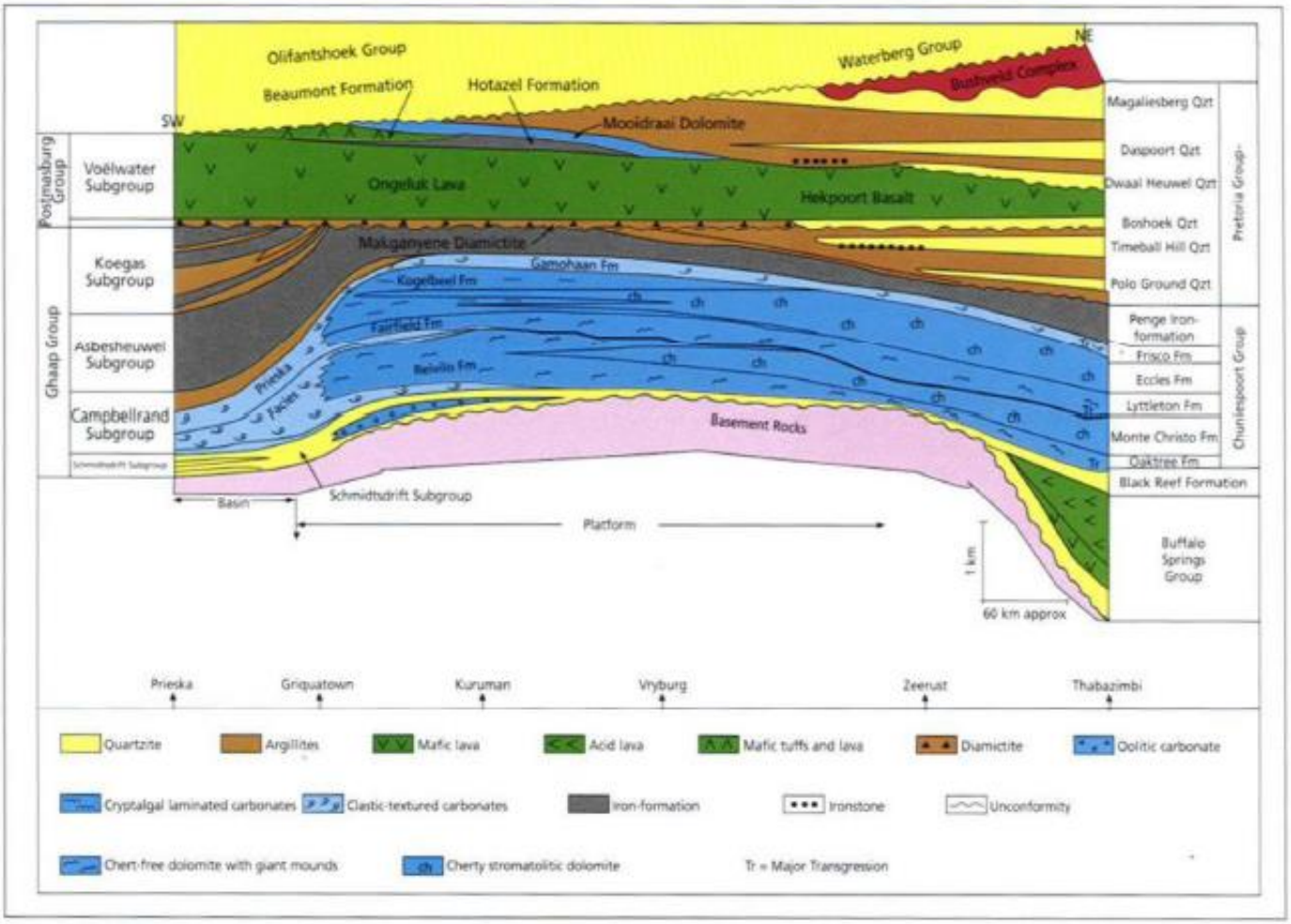


Figure 9: A southwest-northeast 600 km cross-section showing the simplified geology of the Transvaal Supergroup and the distribution of other important geological features (modified from Beukes 1983) (image obtained from Gamagara Resources (Pty) Ltd 2019).

The rock stratigraphy within the Griqualand West depository, forms part of the early Proterozoic-Transvaal Supergroup sequence. The Postmasburg Manganese Field is located along the western margin of the Kaapvaal Craton and on the eastern limb of the Maremane Dome.

In Griqualand West the succession can be broadly subdivided into a basal, chemical sedimentary unit, referred to as the Ghaap Group, which is overlain by a mixed volcanic-clastic-chemical sequence, known as the Postmasburg Group. The Ghaap and Postmasburg Groups represent two separate, major unconformity-bounded sequences (Cheney and Winter, 1995).

2. GHAAP GROUP

The Ghaap Group is subdivided, from the base upward, into the Schmidtsdrif Subgroup (interbedded siliclastics and carbonates), the Campbellrand Subgroup

(carbonates), the Asbesheuwel Subgroup (iron formation) and the Koegas Subgroup (interbedded siliclastics and iron formations).

2.1 Schmidtsdrif Subgroup

The basal Schmitsdrif Subgroup comprises fluvially deposited feldspatic quartz arenites, shallow marine and intertidal quartz arenites as well as a platformal carbonate sequence (Beukes, 1979).

2.2 Campbellrand Subgroup

The Campbellrand Subgroup consists of stromaolitic dolomite and limestone platform facies, which interfingers down slope with carbonate turbidites. The turbidites have been ankerized and silicified to form banded ferruginous chert. Toward the south the turbidites interfinger with carbonaceous shale (Prieska facies), which, according to Beukes, relates to deposition within a euxinic basin, in front of the carbonate platform.

2.3 Asbesheuwel Subgroup

Shallow water carbonate deposition was terminated during a major transgression, which drowned the shelf, resulting in a fairly sudden transition from carbonates through cherts and into the banded iron formation of the Asbesheuwel Subgroup. Beukes, 1978 subdivided the Asbesheuwel Subgroup into the Kuruman Iron Formation at the base followed by the Griquatown Iron Formation at the top. According to Beukes the Kuruman Iron Formation was deposited within a deep shelf setting over the entire Kaapvaal Craton. It comprises an upward-shallowing sequence consisting of carbonaceous shale deposited in an euxinic basin, ankerite-banded chert, representing distal carbonate turbidites which was deposited in a transition zone, between the euxinic basin and the open shelf. Magnetite-hematite-chert micro banded rhythmite macrocycles containing interbedded stilpnomelane band- lutites, were deposited on the deep open shelf, while greenalite-siderite rhythmites mark the toe-of-slope and slope areas of a shallow water platform. The Ouplaas Member, which marks the top of the Kuruman Iron Formation, represents a clastic-textured shallow-water platform deposit.

The Griquatown Iron Formation overlies the Kuruman Iron Formation and consists of upward coarsening megacycles, deposited in environments that vary from low energy, subtidal to high energy, intertidal and lagoonal settings.

2.4 Koegas Subgroup

The Koegas Subgroup was only deposited down slope and within the deeper part of the basin toward the south (Prieska area) and is absent toward the north (Sishen). The Koegas Subgroup was deposited during a transgressional phase and comprises a quartz-chlorite-mudstone unit at the base followed upward by iron formations with interbedded quartz-wackes, with more iron formations, containing interbedded carbonates toward the top. The Koegas Subgroup was subdivided by Beukes; (1978), from the base upward into the following formations:

- Pannetjie Formation: Quartz-chloritic mudstone.
- Dorasdale Formation: Iron-lutites.
- Kwakwas Formation: Greenalite-lutites and interbedded quartzwackes.
- Naragas Formation: Mudstones and carbonates.
- Rooinekke Formation: Iron band-lutites
- Nelani Formation: Mudstones with interbedded limestone, chert and grit beds

3. POSTMASBURG GROUP

Uplift and erosion of the platform strata took place prior to the deposition of the Makganyene Diamictite Formation at the base of the Postmasburg Group (Beukes, 1983, 1984). Visser (1971) and de Villiers and Visser (1977) considered the diamictite to be of glacial origin. The Postmasburg Group has been subdivided, from the base upward, into the following formations:

- Makganyene Formation (glacial diamictites).
- Ongeluk Formation (basaltic lavas).
- Hotazel Iron Formation (Banded iron stones, host to manganese deposits within the Kalahari Manganese Basin).
- Mooidraai Formation (dolomites).

The different formations within the Postmasburg Group, conformably follows on top of one another. During post Postmasburg times, the Postmasburg Group was exposed to intense weathering. The erosional unconformity progressively cuts down the Stratigraphy, moving from the north (Hotazel area) toward the south (Postmasburg area), truncating gradually the Mooidraai, the Hotazel, Ongeluk, Makganyene and Asbesheuwel Formations to finally rest on dolomites of the Campbellrand Subgroup on the Maremane Dome near Postmasburg.

4. OLIFANTSHOEK GROUP

The unconformity is overlain by the Olifantshoek Group, which comprises shales at the base (Mapedi Formation) followed by quartzites of the Lucknow Formation. In the Sishen-Postmasburg area the Olifantshoek Group, is referred to as the Gamagara Formation. The unconformity is marked by a hematitepebble conglomerate and shale unit. The Olifantshoek unconformity is of utmost economic importance within the area. Where it rests on the Asbesheuwel Subgroup, hematite iron ore was formed (Iscor and Beeshoek), where it truncates the Campbellrand dolomites, manganese mineralization is developed (Postmasburg Manganese Field).

5. DIATOMITE (KIESELGUHR)

Kieselguhr, diatomaceous earth and diatomite are the names commonly used for remarkably light, dull white or pale-coloured, massive to finely laminated chalky-looking, highly porous sediment composed mainly of the minute hollow opaline protective shells of unicellular aquatic plants known as diatoms.

Within the Griqualand West area, the diatoms appear to overlay either lava of the Ongeluk Sub-Group, or Dwyka shale (Base Kalahari Formation) along ancient water courses and paleo-marshes.

Figure 10: Example of kieselguhr (Van der Merwe)

Also refer to *Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on site – Site Specific Geology.*

HYDROLOGY

(Information extracted from the Development of ISPs for Central Region: Lower Orange WMA, July 2004. DWAF)

Farm No 570 (Zaai Plaats) is within the Orange SWMA that is managed as part of the Lower Orange Water Management Area. The Lower Orange WMA is the lowest WMA in the Orange/Vaal River Basin. The Vaal River is the main tributary to the Orange River, other tributaries are the Ongers and Hartebeest Rivers from the south, and the Molopo River and Fish River (Namibia) from the north. The Orange SWMA includes the Orange River over the whole of its length through the WMA together with minor tributary streams. Groundwater utilisation is of major importance across wide areas in the Lower Orange WMA and often constitutes the only source of water.

According to the SANBI BGIS National Wetlands and NFEPA map viewer the greater study area around Farm No 570 (Zaai Plaats) is classified as an Upstream River FEPA (Freshwater Ecosystem Priority Area). Upstream Management Areas are sub-quaternary catchments in which human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas. Upstream Management Areas do not include management areas for wetland FEPAs, which need to be determined at a fine scale. (WRC Report No TT 500/11, 2011). The map viewer does not indicate any watercourse, pan or wetland of significance in or near Farm No 570 (Zaai Plaats).

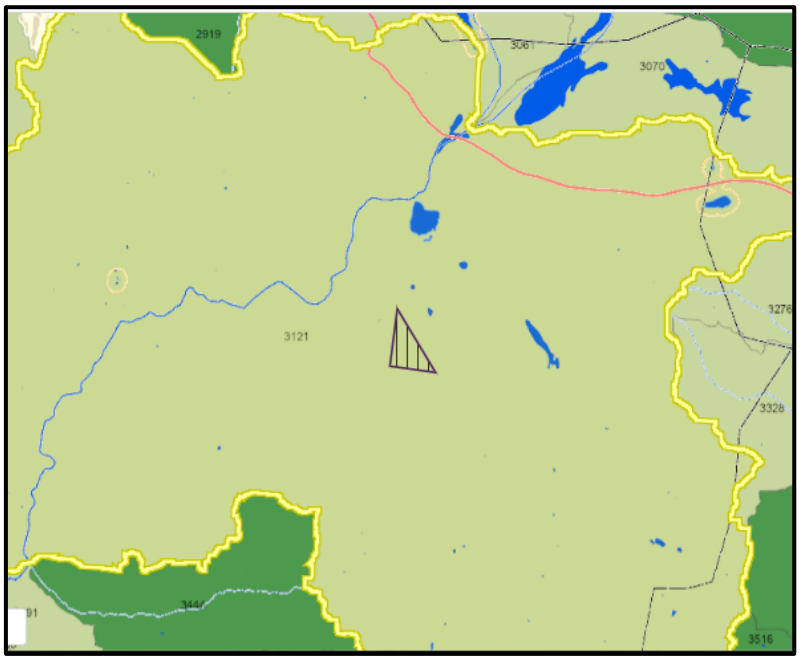


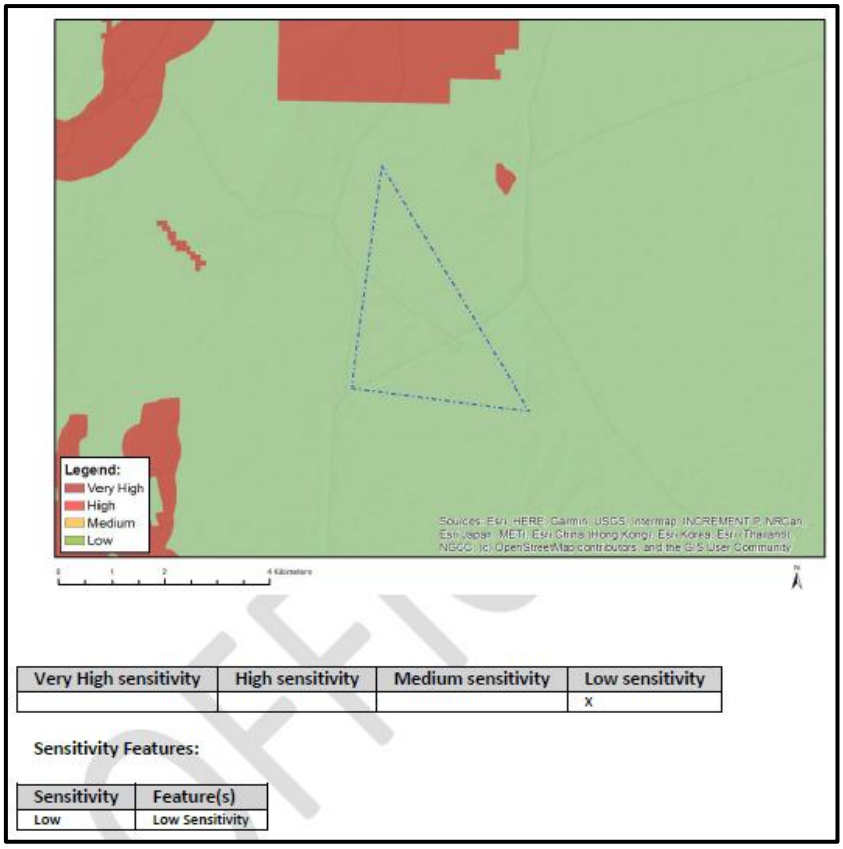
Figure 11: Map showing Farm No 570 (Zaai Plaats) (triangle) within the Upstream River FEPA (light green polygon with yellow edge). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

Also refer to *Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology.*

BIOLOGICAL ENVIRONMENT

BIODIVERSITY CONSERVATION AREAS

According to the DFFE Screening Report (following image) Farm No 570 (Zaai Plaats) does not extend into areas classified as Critical Biodiversity Areas (CBA) or Ecological Support Area (ESA).



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			x

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

Figure 12: Terrestrial Biodiversity theme sensitivity of the earmarked area according to the DFFE screening report.

Also refer to *Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Groundcover and Biodiversity Conservation Areas.*

GROUNDCOVER

According to Mucina and Rutherford (2012) and the National Vegetation Map (2018) two vegetation types are prevalent on Farm No 570 (Zaai Plaats) namely the Northern

Upper Karoo (NKu3), and the Kuruman Mountain Bushveld (SVk10) as presented in the following figure.

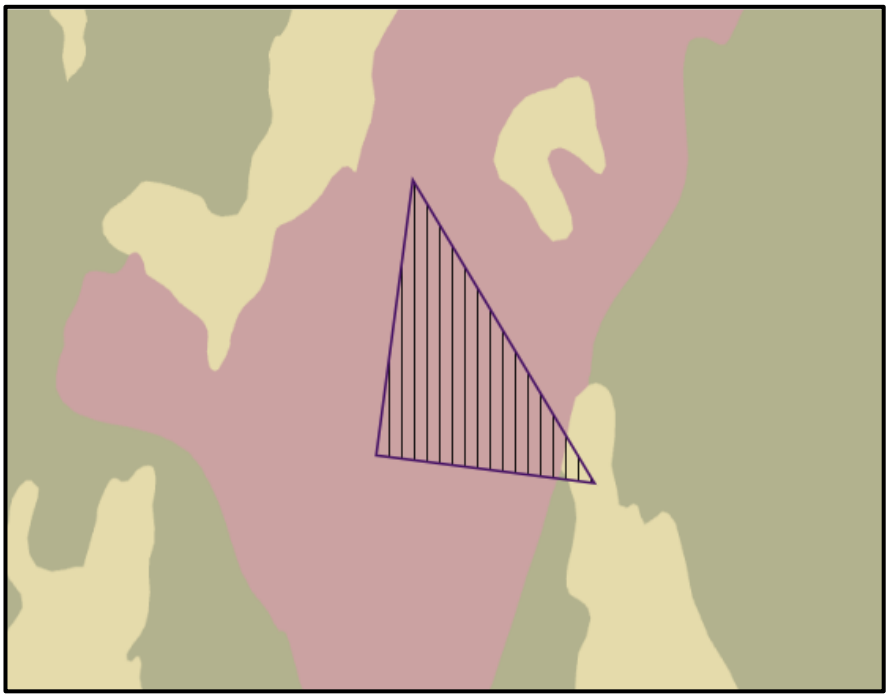


Figure 13: Map showing the distribution of the Northern Upper Karoo (purple shading), and the Kuruman Mountain Bushveld (lightest brown shading), as depicted on the SANBI 2018 National Vegetation Map in relation to the application area (vertical striped triangle). (Image obtained from the BGIS Map Viewer: 2018 National Vegetation Map).

1. KURUMAN MOUNTAIN BUSHVELD (SVk 10)

The Kuruman Mountain Bushveld is characterized by rolling hills with generally gentle to moderate slopes and hill pediment areas with an open shrubveld with *Lebeckia macrantha* prominent in places.

Some of the important taxa found in this vegetation type include Se*arsia lancea, S. pyroides, Diospyros austro-africana, Euclea crispa, E. undulate, Olea earopaea, Tarchonanthus camphoratus, Amphiglossa triflora, Anthospermum rigidum, Helichrysum zeyheri;* Grammnoids*: Andropogon chinensis, Anthephora pubescens, Aristida congesta, Digitaria eriantha, Themeda triandra.* Biogeographically Important Taxa: *Lebeckia macrantha* (Griqualand West endemics), *Tarchonanthus obovatus, Euphorbia wilmaniae, E. planiceps, Digitaria polyphylla, Sutera griquensis.*

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) none of it is conserved in statutory or private conservation areas. A conservation target of 16% was set for the vegetation type.

2. NORTHERN UPPER KAROO (NKu3)

The Northern Upper Karoo is a very wide unit that covers parts of the Northern Cape and Free State Provinces. The vegetation type is a shrubland dominated by dwarf karoo shrubs, grasses and *Senegalia mellifera* subs. *detinens* and some other low trees. The unit is flat to gentle sloping.

Some of the important taxa found in this vegetation type include *Senegalia mellifera subs detinens, Boscia albirunca.* Tall Shrubs: *Lycium cinereum, L. horridum, L. oxycarpum, Rhigozum trichotomum,* Low Shrubs*: Chrysocoma ciliata, Gnidia polycephala, Pentzia calcarean, Aptosimum marlothii, Eriocephalus eriocephalus subsp eriocoides, Euryops asparagoides, Limeum aethiopicum, Pentzia lanata, Zygophyllum lichtensteinianum,* Herbs*: Convolvulus sagittatus, Dicoma capensis, Gazania krebsiana, Radyera urens,* Graminoids*: Aristida adscensionis, A. congesta, Enneapogon desvauxii, Eragrostis lehmanniana, E. obtusa, Fingerhuthia africana, Themeda triandra.*

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) none is conserved in statutory conservation areas. *Prosopis* occurs in generally isolated patches, with densities ranging from very scattered to medium to localised closed woodland.

FAUNA

The greater study area is mainly used for stock grazing with some game farming. Apart from the domestic animals, the indigenous faunal action of the area is high and shows a rich diversity with various protected species still present. The following faunal species faunal species are known to occur in/around the study area (non-exhaustive list):

Mammals:

- Aardvark (*Orycteropus afer*)
- Bat-eared Fox (*Otocyon megalotis*)
- Black-footed Cat (*Felis nigripes*) (VU)
- Bushveld Gerbil (*Gerbilliscus leucogaster*)
- Cape Fox (*Vulpes chama*)
- Cape Porcupine (*Hystrix africaeaustralis*)
- Desert Pygmy Mouse (*Mus indutus*)
- Ground Squirrel (*Xerus inauris*)

- Namaqua Rock Mouse (*Aethomys namaquensis*)
- Slender Mongoose (*Galerella sanguinea*)
- Smith's Red Rock Hare (*Pronolagus rupestris*)
- Southern Multimamate Mouse (*Mastomys coucha*)
- Springhare (*Pedetes capensis*)
- Steenbok (*Raphicerus campestris*)
- Yellow Mongoose (*Cynictis penicillata*)

Birds:

- African March-harrier (*Circus ranivorus*)
- Black Stork (*Ciconia nigra*)
- Burchell's Courser (*Cursorius rufus*) (VU)
- Chestnut-banded Plover (*Charadrius pallidus*)
- Kori Bustard (*Ardeotis kor*i) (NT)
- Lanner Falcon (*Falco biarmicus*)
- Lappet-Faced Vulture (*Torgos tracheliotos*) (EN)
- Lesser Kestrel (*Falco naumanni*)
- Ludwig's Bustard (*Neotis ludwigii*) (EN)
- Martial Eagle (*Polemaetus bellicosus*) (VU)
- Secretary Bird (*Saggittarius sepentarius*) (VU)
- Sociable Weaver (*Philetairus socius*)
- Tawny Eagle (*Aquila rapax*) (EN)
- White-backed Vulture (*Gyps africanus*) (CR)
- Yellow-billed Stork (*Mycteria ibis*)

Invertebrates:

- Baboon Spiders
- Boomslang (*Dispholidus typus typus*)
- Burrowing Scorpions
- Cape Cobra (*Naja nivea*)
- Koringkriek (*Acanthoplus discoidalis*)
- Namaqua Plated Lizard (*Gerrhosaurus typicus*)
- Namaqua Sand Lizzard (*Pedioplanis namaquensis*)
- Puff Adder (*Bitis arietans*)
- Striped Skaapsteker (*Psammophylax tritaeniatus*)

According to the DFFE Screening Report (following image) the animal species theme sensitivity of Farm No 570 (Zaai Plaats) is mainly high. The following bird species are listed as the main reason for the high rating:

- Burchell's Courser (*Cursorius rufus*) (VU)
- Lappet-faced Vulture (*Torgos tracheliotos*) (EN)
- Ludwig's Bustard (*Neotis ludwigii*) (EN)
- Tawny Eagle (*Aquila rapax*) (EN)

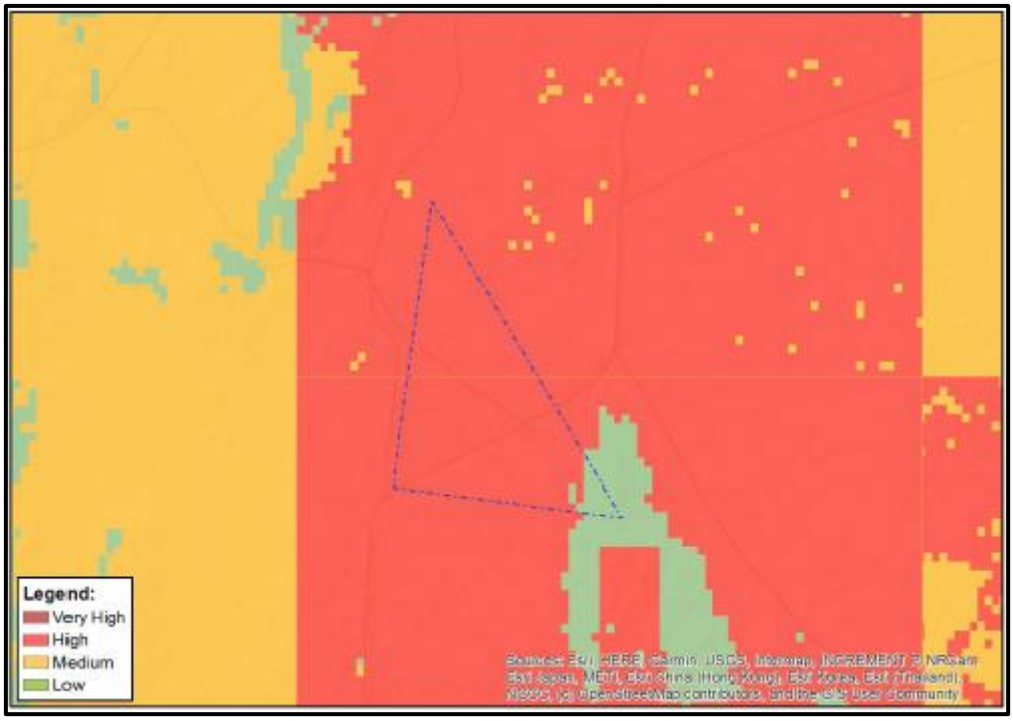


Figure 14: Animal Species theme sensitivity of Farm No 570 (Zaai Plaats) according to the DFFE screening report.

Also refer to *Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Fauna.*

HUMAN ENVIRONMENT

CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Prospecting Right with Bulk Sampling over various farms in the Hay and Kuruman Administrative District, Northern Cape, 2024 attached as Appendix G1, the Palaeontological Impact Assessment for the Prospecting Right with bulk sampling over various farms in the Hay and Kuruman Administrative Districts, Northern Cape Province attached as Appendix G2, and the Heritage Statement attached as Appendix G3).

In 2023, the Applicant applied for a prospecting right (with reference number: NC 30/5/1/1/2/13826 PR) for kieselguhr over various properties in the Hay and Kuruman Administrative Districts. Although the said application, did not include Farm No 570 (Zaai Plaats), the specialists considered the farm as part of their studies and therefore the findings of the specialist reports are relevant to this application (NC 30/5/1/1/2/14264 PR) and were subsequently incorporated into this report.

Archaeological Background

The following section discusses the archaeological background of the greater study area.

Stone Age:

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age, and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows

- **Later Stone Age (LSA);** associated with Khoi and San societies and their immediate predecessors. - Recently to ~30 thousand years ago.

- **Middle Stone Age (MSA);** associated with *Homo sapiens* and archaic modern human - . 30-300 thousand years ago.

- **Earlier Stone Age (ESAge);** associated with early *Homo* groups such as *Homo habilis* and *Homo erectus*. - 400 000-> 2 million years ago.

The area in and surrounding Kathu is referred to as the Kathu Complex which is comprised of several Stone Age sites of varying heritage significance. A series of 11 localities which have been exposed due to sinkhole formations belong to the Kathu

Complex (Beaumont 1990, Lukich et al 2019). The Kathu Pans form an important aspect of the study of human evolution due to the expansive occupation within the region. Evidence of the oldest lithic assemblage of the Fauresmith industry, dating back 500 thousand years can be found at the site of Kathu Pan 1 (Wilkins and Chazan 2012). Lithic assemblages found at Kathu Pan 1 show continued hominin occupation throughout the ESA, MA and LSA. Lithic technology at Kathu Pan 1 suggests one of the earliest evidence for the use of spears for hunting and blade production (Wilkens and Chazan 2012). On the farm Sims 462 Kathu Pan 6, 8,9,10, and 11 are found within a sinkhole that was caused by sediment collapse. Artefacts found on the farm Sims are associated with the Middle and Late Stone Age. Excavations on farm Sacha recovered Acheulean to Late Stone Age material from Kathu Pan 1. Stone tools recovered from the excavations are stored at the McGregor Museum (Beaumont 2000).

To the east of the town of Kathu, a site called the Townlands was discovered in 1980 by the landowner. Excavations and analysis of the site discovered the densest Stone Age scatter with over a million artefacts being recovered therefrom (Chazan 2021). An in-situ quarry is speculated to have been made use of at Kathu Townlands, indicating the local procurement of materials as well as the local production of stone tools within the area (Walker et al 2014). The site itself spans roughly 12 hectares in size and is an important archaeological site pertaining to early human activity within the country. In 2013, the Kathu Townlands was declared a Grade 1 National Heritage site (Walker et al 2014).

Excavations at the Wonderwerk Cave situated in the Kuruman Hills yielded a deep deposit rich with Stone Age materials. The cave shows a long period of hominin occupation as the cave was used throughout the Stone Age. Rock engravings can also be found within the cave (Beaumont and Vogel 2006). Due to the importance of the finds, the cave has been registered as a National Heritage Site by SAHRA. Closer to Kuruman two shelters on the northern and southern faces of GaMohaan (in the Kuruman Hills north-west of the town) contain Later Stone Age remains and rock paintings. Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks, and confluences to be prime localities for archaeological finds and specifically Stone Age sites, as these areas were utilized for settlement of base camps close to water and hunting ranges.

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA)

Khoisan groups, the so-called 'first people'. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is referred to as the Ceramic Late Stone Age (De Jong 2010) and is represented by the Blinkklipkop specularite mine near Postmasburg and a cluster of important finds at Kathu Pan. Kathu Pan has been the subject of numerous heritage studies and is a notable heritage site (Beaumont 2004, Wilkins et al 2012). Additional specularite workings with associated Ceramic Later Stone Age material and older Fauresmith sites (early Middle Stone Age) are known from Lylyfeld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester, and Mount Huxley (Morris 2005).

Iron Age:

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. It can be divided into three distinct periods:

- The **Early Iron Age (EIAge):** Most of the first millennium AD.
- The **Middle Iron Age (MIA):** 10th to 13th centuries AD.
- The **Late Iron Age (LSA):** 14th century to colonial period.

Iron Age expansion southwards past Kuruman into the Ghaap Plateau and towards Postmasburg dates to the 1600's (Humphreys, 1976 and Thackeray, 1983). Definite dates for Tswana presence in the Postmasburg area are around 1805 when Lichtenstein visited the area and noted the mining activities of the Tswana (probably the Thlaping) tribes in the area. The Thlaro and Thlaping settled the area from Campbell in the east to Postmasburg and towards the Langeberg close to Olifantshoek in the north-west before 1770 (Snyman, 1988). The Korana expansion after 1770 started to drive the Thlaro and Thlaping further north towards Kuruman (Shillington, 1985); Morris (2005) indicated that three Iron Age sites close to the study area are on record (Demaneng, Lylyveld and Kathu).

Historic Background:

The 'Eye' and the water course springing from it have been a focus of utilization and settlement and it was in its immediate vicinity that Kuruman, as town, evolved from the late nineteenth century. Kuruman's name is thought to be derived from the name of an 18th century San leader Kudumane.

The earliest documented exploration of this region by European explorers occurred in 1801 when P.J. Truter and Dr. W. Somerville crossed the Orange River near Prieska and traversing through Blinkklip en route to what is now Kuruman (Bergh 1999). In the same period, William Anderson, and Cornelius Kramer, representing the London Missionary Society, founded a mission station called Leeuwenkuil. Their primary focus was on a community referred to as 'the Bastards', a group characterized by a mix of cultural backgrounds stemming from various racial and cultural unions, including European and Khoi ancestry, as well as remnants of Khoi and San groups and liberated slaves. This diverse group eventually came to be known as the Griqua (Erasmus, 2004). Due to the persistent threat posed by lions in the vicinity of Leeuwenkuil, the mission station was relocated in 1805 to Klaarwater. In 1813, the settlement that had developed there was officially renamed Griquatown. This change was proposed by Reverend John Campbell, Director of the London Missionary Society, during his visit to the area (Raper 2004).

On the 20th of December 1820, Andries Waterboer was elected to replace Berend Berends as leader of Griquatown. This would lead to tensions between Waterboer and the Griqua and during the 1820s, a group of Griqua left Griquatown and settled along the Modder River and became known as the Bergenaars. The Bergenaars would often attack the Thlaro, Thlaphing, and Griqua. They also undertook various attacks on Griquatown and the mission station in Kuruman which Robert Moffat had established in 1824.

A treaty was signed on the 22nd of April 1842 between Griqua leader Andries Waterboer and Thlaping leader Mahura at Mahura's settlement near Taungs. This agreement was comprehensive, encompassing an allocation of the boundary between the two groups. However, it is essential to recognize that this boundary line was subject to change and negotiation. This demarcation closely resembled an earlier boundary, believed to have been established during the 1820's, marking the division between the Griqua and the Thlaping (Legassick, 2010).

Following the passing of Andries Waterboer, his son, Nicolaas Waterboer, assumed leadership in Griquatown. Nicolaas governed Griquatown until the British annexed the area in 1871 (Legassick 2010). It was under Nicolaas Waterboer's leadership that diamonds were uncovered in the region, sparking a contentious period of competing claims involving the Griqua, the Orange Free State, and the Zuid-Afrikaansche Republiek (ZAR). The area claimed as British territory became known as Griqualand

West. Tensions rose in Griqualand West which sparked a rebellion amongst Tswana communities against the British and spread as far as the Langberg mountains.

The British territory grew as the whole area between Griqualand West and the Modder River was proclaimed the Crown Colony of British Bechuanaland. This included various areas which had been occupied by Tswana communities. This led to various 'native reserves' being established in Deben, Gatlhose, Langberg, and Kathu (Snyman 1986). In 1895, the Crown Colony of British Bechuanaland was annexed by the Cape Colony.

In the late 1890s, Rinderpest became widespread, and the residents were unable to stop the spread of the viral disease in cattle. The Rinderpest epidemic also sparked the Langberg Rebellion of 1897 whereby conflicts rose between authorities and Galeshiwe, a Thlaping leader from Taung. The conflict erupted when government representatives destroyed infected cattle belonging to Galishewe as a measure to halt the spread of disease. In retaliation, Galishewe killed an officer and fled to seek refuge with the Thlaro leader Toto of the Langberg. This incident triggered a widespread rebellion (Breutz 1963). The British authorities responded by assembling a military force, which included units from the Cape Mounted Rifles and Bechuanaland Field Force. By March 14, 1897, this force numbered approximately 1,000 men. In contrast, the Tswana rebels, facing serious shortages of provisions and ammunition from the outset of the rebellion, fielded an army of around 1,500 men (Snyman 1986). Despite their numerical advantage, the rebels faced a formidable and well-equipped British force supported by artillery. The rebellion was quelled and concluded when rebel leader Toto, along with his son Robanyane and their Thlaro followers, surrendered on the 2nd of August 1897 (Snyman 1986).

Palaeontological Background

The project lies in the Griqualand West Basin of the Transvaal Supergroup with much younger sands and alluvium of the Kalahari Group overlying much of the area.

The Late Archaean to early Proterozoic Transvaal Supergroup is preserved in three structural basins on the Kaapvaal Craton (Eriksson et al., 2006). In South Africa are the Transvaal and Griqualand West Basins, and the Kanye Basin is in southern Botswana. The Griqualand West Basin is divided into the Ghaap Plateau sub-basin and the Prieska sub-basin.

The Transvaal Supergroup comprises one of world's earliest carbonate platform successions (Beukes, 1987; Eriksson et al., 2006; Zeh et al., 2020). In some areas there are well preserved stromatolites that are evidence of the photosynthetic activity of blue green bacteria and green algae. These microbes formed colonies in warm, shallow seas.

The Transvaal Supergroup rocks in the Griqualand West Basin can be correlated with the rocks in the Transvaal Basin, closely according to Beukes and colleagues, or not so closely according to Moore and colleagues. Nonetheless, these rocks represent on a very large scale, a sequence of sediments filling the basins under conditions of lacustrine, fluvial, volcanic and glacial cycles in a tectonically active region. The predominantly carbonaceous sediments are evidence of the increase in the atmosphere of oxygen produced by algal colony photosynthesis, the so-called Great Oxygen Event (ca 2.40 – 2.32 Ga) and precursor to an environment where diverse life forms could evolve. The Neoarchean-Paleoproterozoic Transvaal Supergroup in South Africa contains the well-preserved stromatolitic Campbellrand -Malmani carbonate platform (Griqualand West Basin – Transvaal Basin respectively), which was deposited in shallow seawater shortly before the Great Oxidation Event (GOE).

There were two large basins dominating southern Africa during the Cenozoic, with the Kalahari Basin to the west and the Bushveld basin to the east. Both basins are bounded along their southern extent by the more or less west-east trending Griqualand-Transvaal Axis (Partridge et al., 2006). These sediments are not easy to date but recent attempts are gradually filling in the history of the sands, sand dunes and inter-dunes (Botha, 2021).

Quaternary Kalahari sands cover large parts of the rocks in this region, especially to the west. This is the largest and most extensive palaeo-erg in the world (Partridge et al., 2006) and is composed of extensive aeolian and fluvial sands, sand dunes, calcrete, scree and colluvium. Periods of aridity have overprinted the sands, and calcrete and silcrete are common. Most geological maps indicate these sands simply descriptively (aeolian sand, gravelly sand, calcrete) or they are lumped together as the Gordonia Formation because the detailed regional lithostratigraphic work has not been done, Nonetheless, these sands have eroded from the interior and have been transported by wind or water to fill the basin. Reworking of the sands or stabilisation by vegetation has occurred. Probable ages of dune formation are around 100 kya (thousand years), 60 kya, 27-23 kya and 17-10 kya (in Botha, 2021).

Palaeontological Context

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the earmarked property is placed on the PSM, it confirms that the site is mostly covered by Tertiary Limestone that is highly sensitive (orange) with some patches of Kalahari Group sands (moderately sensitive; green) as presented in the following figure.

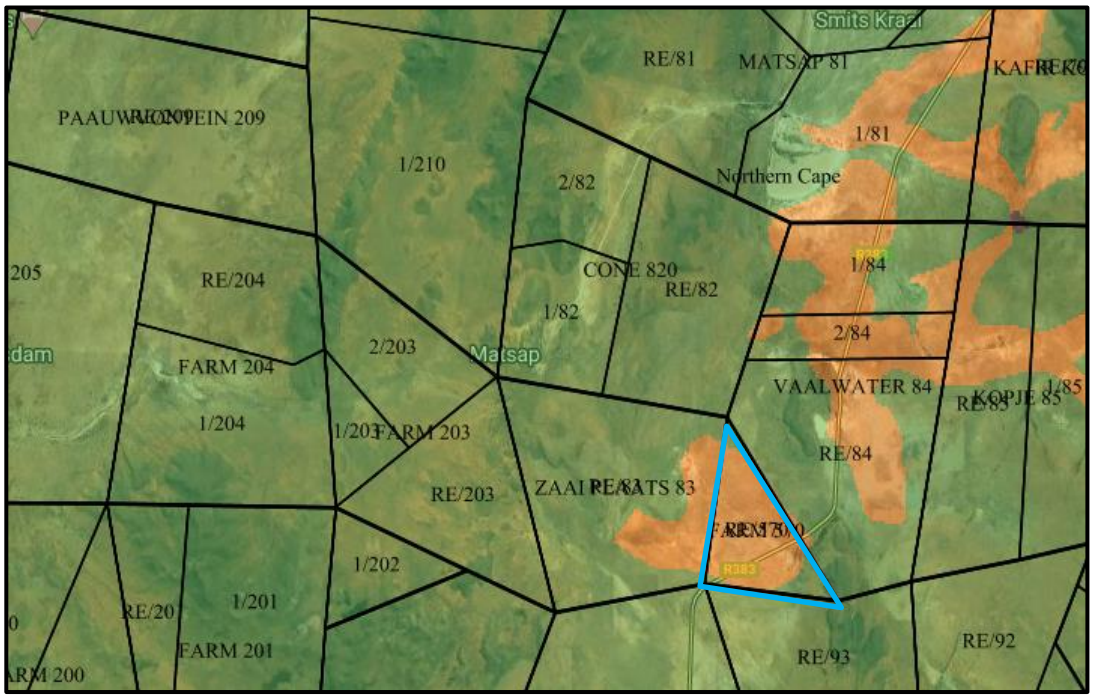


Figure 15: Farm No 570 (Zaai Plaats) (blue polygon) extends across areas of moderate – high concern according to the SAHRA palaeontological sensitivity map (image obtained from the PalaeoSensitivity Map on SAHRIS).

Quaternary aeolian sands and alluvium are fairly mobile and very porous so they do not provide suitable conditions for preservation of organic matter (Cowan, 1995). Only in places where the sands have been waterlogged, such as palaeo-pans or palaeo-springs, is there any chance of fossilisation. For example, roots can be encased in calcium-rich or silica-rich sands and crusts, known as rhizoliths or rhizocretions, and can form around the roots, invertebrates or bones around the margin of a pond, pan or spring (Klappa, 1980; Cramer and Hawkins, 2009; Peters et al., 2022).

The target rock, diatomite (also known as Kieselguhr or diatomaceous earth) has been completely ignored by SAHRA and the authors of the provincial palaeotechnical

reports (Groenewald et al., 2014). Mapping of the outcrops is incomplete (Botha, 2021) but it should be indicated as very highly sensitive.

Also refer to *Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.*

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the IDP 2022-2027 Pixley Ka Seme District Municipality)

PIXLEY KA SEME DISTRICT MUNICIPALITY

Farm No 570 (Zaai Plaats) fall within the Pixley Ka Seme District Municipality (PKSDM) and extends into Ward 1 of the Siyancuma Local Municipality.

Pixley Ka Seme District lies in the south-east of the Northern Cape Province and shares its borders with three other provinces, namely, the Free State province to the east, the Eastern Cape to the south-east and Western Cape to the south-west. It is the second largest district covering a total surface of 96,340 km². It consists of 8 category B municipalities. There are 7 main towns within these municipalities, viz. Douglas, Prieska, Carnarvon, Victoria West, Colesberg, Hopetown and De Aar (with De Aar being the largest of these towns).

Siyancuma Local Municipality (SLM):

The SLM was established in 2000 as a Category B municipality. The seat of the municipality is in Douglas, and includes the former Transitional Local Councils of Douglas, Griekwastad and Campbell. SLM is basically a farming area, however there are diamonds as well as tiger eye deposits in the Douglas and Griekwastad areas respectively. According to Stats SA the unemployment rate of the municipality is 28.2%.

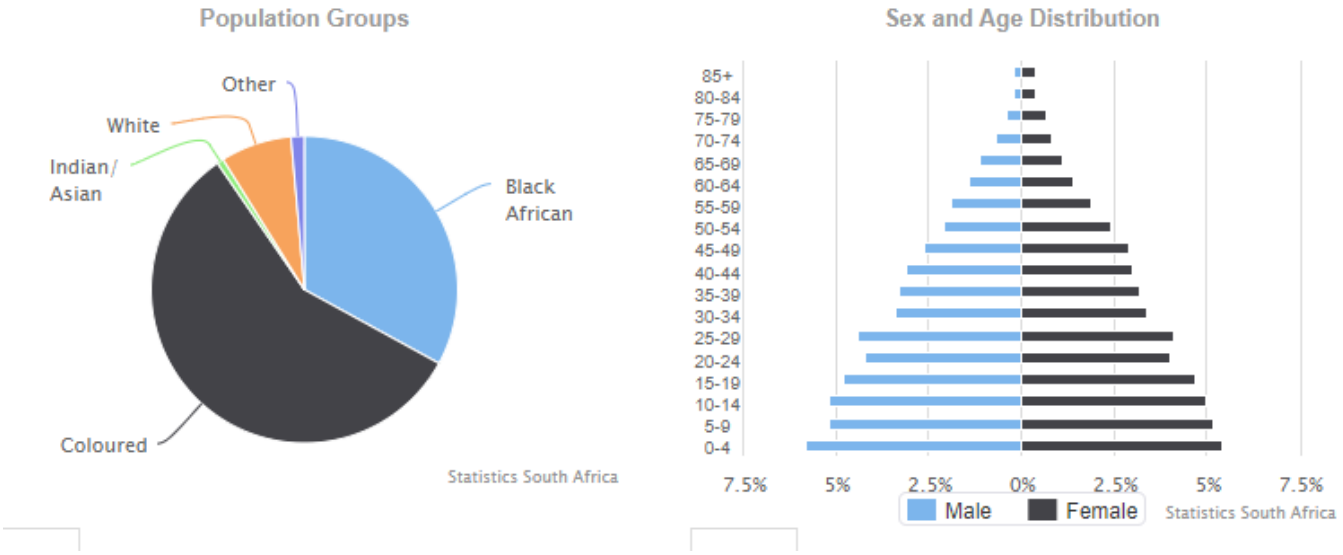


Figure 16: Population groups and gender profile charts of the Siyancuma Local Municipality (image obtained from Statistics South Africa).

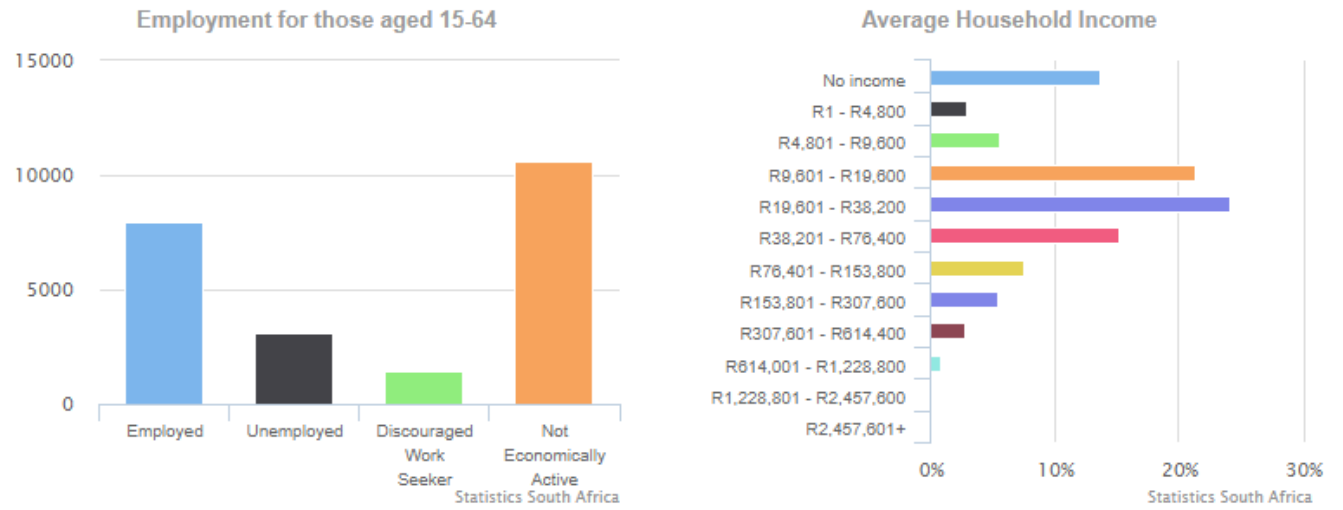


Figure 17: Employment and average household income charts of the Siyancuma Local Municipality (image obtained from Statistics South Africa).

(b) Description of the current land uses

The land use of Farm No 570 (Zaai Plaats) is mainly agriculture. There are no established mines within proximity to the property, and the R383 passes through the centre of Farm No 570 (Zaai Plaats).

Figure 18: Satellite view of the farm boundaries and application area (yellow triangle) (image obtained from Google Earth).

The following image shows the land capability of the earmarked footprint as presented in the DFFE Screening Report.

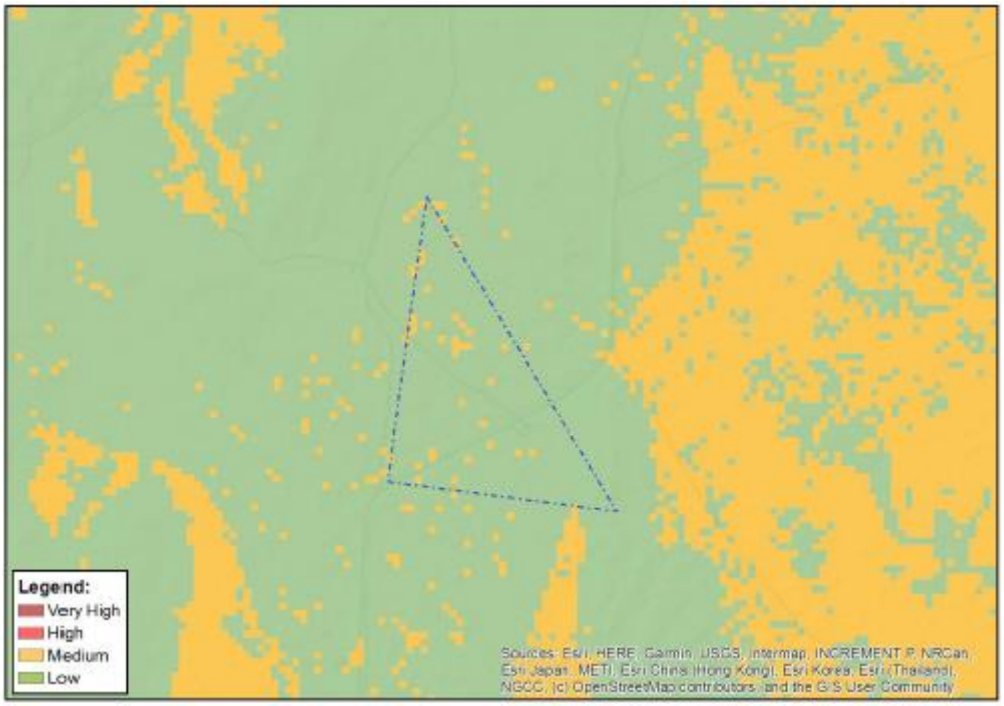


Figure 19: Agricultural Theme Sensitivity of Farm No 570 (Zaai Plaats) according to the DFFE screening report.

The following table provides a list of the land uses and/or prominent features that were identified within a 500 m radius of the application area.

Table 11: Land uses and/or prominent features that occur within/within 500 m radius of the application.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural purposes.
Low density residential	-	**NO**	-
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-
High voltage power line	-	**NO**	-
Office/consulting room	-	**NO**	-
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	-	**NO**	-
Quarry, sand or borrow pit	**YES**	-	Some informal sand- and gravel borrow pits may occur on the farm.
Dam or reservoir	**YES**	-	Various farm dams are within 500 m of the footprint.
Hospital/medical centre	-	**NO**	-
School/ crèche	-	**NO**	-
Tertiary education facility	-	**NO**	-
Church	-	**NO**	-
Old age home	-	**NO**	-
Sewage treatment plant	-	**NO**	-
Train station or shunting yard	-	**NO**	-
Railway line	-	**NO**	-
Major road (4 lanes or more)	-	**NO**	-
Airport	-	**NO**	-
Harbour	-	**NO**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	The study area is surrounded by natural areas used for agricultural purposes.
River, stream, or wetland	-	**NO**	No rivers, streams or wetlands were identified within 500 m of the application area.
Nature conservation area	-	**NO**	-
Mountain, hill, or ridge	**YES**	-	Hills are prevalent on the neighbouring farm Vaalwater No 84.
Museum	-	**NO**	-
Historical building	To be confirmed during the walkthrough of the heritage specialist prior to commencement of invasive		

LAND USE CHARACTER	YES	NO	DESCRIPTION
	prospecting. No prospecting may occur within 30 m of a historical building unless otherwise authorised by the specialist and SAHRA.		
Protected Area	-	**NO**	-
Graveyard	Family graves were noted near the R383 on Farm No 570 (Zaai Plaats). To be confirmed during the walkthrough of the heritage specialist prior to commencement of invasive prospecting. No prospecting may occur within 30 m of a grave/archaeological site unless otherwise authorised by the specialist and SAHRA.		
Archaeological site			
Other land uses (describe)	-	**NO**	-

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The topography of Farm No 570 (Zaai Plaats) rises gradually toward the south-eastern corner where it intersects the nearby hills. The mean elevation of the farm ranges from 1 098 amsl to 1 154 amsl. As shown in the following figure the elevation gain of the farm along this path is 60.9 m over 3.12 km (western boundary to the south-eastern corner), the elevation profile shows a maximum slope of 6.4% with an average slope of 2.4%.

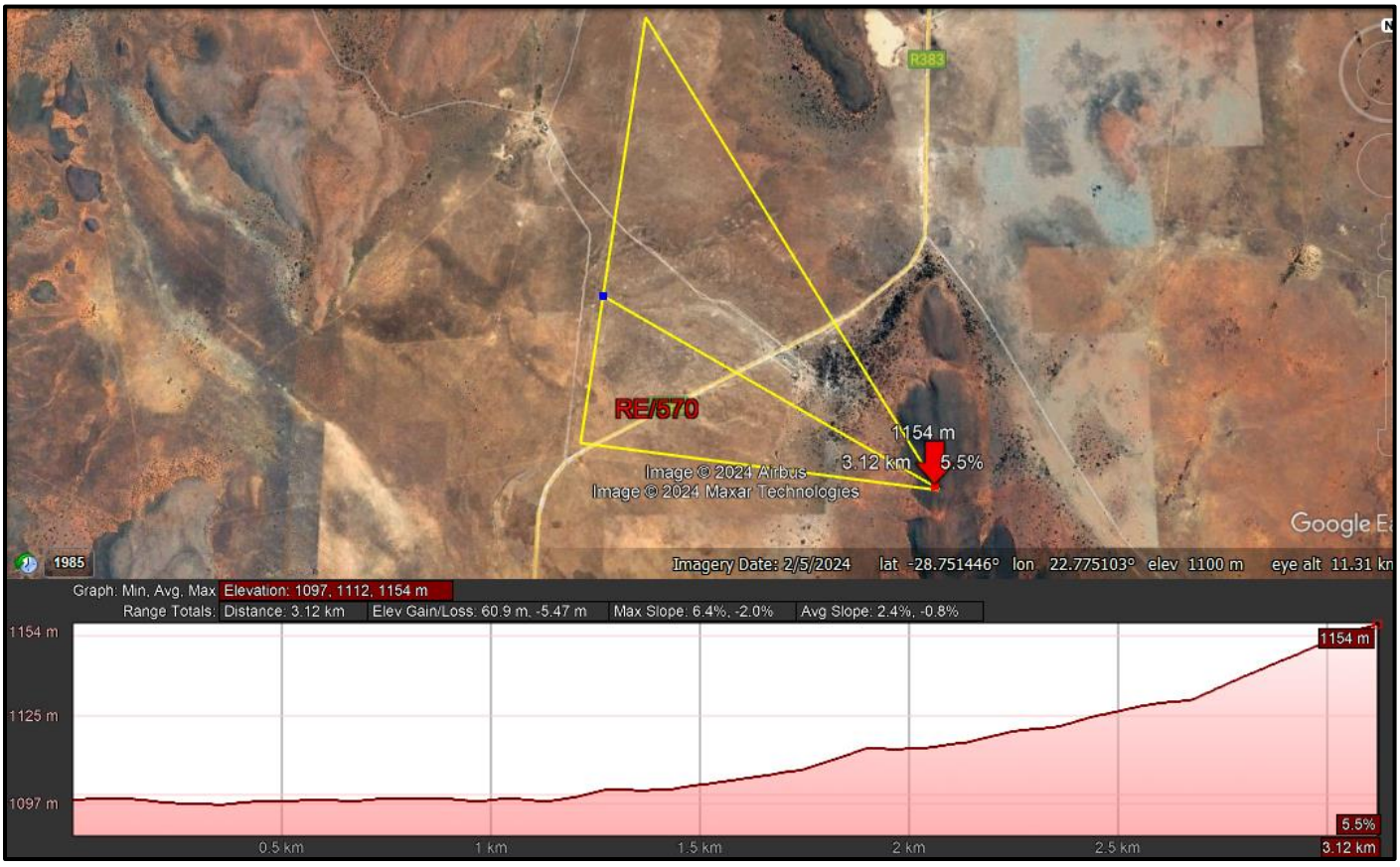


Figure 20: Elevation profile of Farm No 570 (Zaai Plaats) (image obtained from Google Earth).

Conclusion:

The prospecting activities will not impact the topography of the area as all boreholes will be capped and the trenches will be refilled after sampling. The potential for the prospecting activities to negatively impact the topography of the study area is of low significance. Should the mitigation measures proposed in this report be implemented during the decommissioning phase, the activity will have no residual impact on the environment upon closure of the PR.

SITE SPECIFIC VISUAL CHARACTERISTICS

This prospecting right application extends over 560.118 ha of Farm No 570 (Zaai Plaats). As mentioned above, the topography of the area is fairly flat with the exception of a few ridges to the south-east. The study area is scarcely populated, and as mentioned earlier, the area of disturbance is expected to be ±400 m² per drill site that will continuously be rehabilitated as prospecting progresses. The prospecting activities do not require the alteration of vast vegetated areas, and no permanent infrastructure will be erected. Considering this, the potential impact of the prospecting operation on the visual characteristics of the receiving environment is deemed to be of

low-medium significance without mitigation and low significance once the mitigation measures are implemented.

SITE SPECIFIC AIR QUALITY AND NOISE AMBIANCE

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004, and the proposed operation will not trigger an application in terms of the said act. Emissions to be generated at the proposed prospecting areas will mainly consist of dust due to drilling and driving on site. Due to the small scale of the operation (per sample site) the noise levels to be generated will be low and will mainly stem from the operation of the prospecting equipment and vehicles traveling on the roads.

Presently the air quality and noise ambiance of the application area is impacted on by the R383 passing through the farm. Apart from traffic passing through the farm, the area is rural in general and have very little dust/noise generators. The study area is very scarcely populated.

All invasive prospecting will take place during normal work hours, and noise stemming from the operation will be highly localised and comparable to the *status quo* of the area. The dust emissions and/or noise levels that may arise from the proposed prospecting activities, if mitigated by the Applicant, will therefore have a low impact on the receiving environment.

Also refer to *Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Air Quality and Noise Ambiance*.

SITE SPECIFIC GEOLOGY AND SOIL

(Information obtained from the Strata Africa Exploration – Diatomite Literature Review & Target Generation compiled by Minrom Consulting (Pty) Ltd in 2024)

In 2024, Minrom Consulting (Pty) Ltd (“Minrom”) was commissioned to evaluate the mineralisation potential of one of the Applicant’s prospecting right applications (NC 30/5/1/1/2/13826 PR) and identify exploration targets for diatomite within the earmarked prospecting areas. The study of Minrom also considered the mineral potential of Farm No 570 (Zaai Plaats) and found that the site specific geology (inferred from local scale geological mapping) of the nearby Vaalwater No 84 and Farm No 570 (Zaai Plaats) are almost completely covered with sand but is also underlain by the same Koegas Subgroup rocks.

Remote Sensing (RS)

Remote sensing was performed to identify exploration targets within the earmarked PR footprint (including Farm No 570). Various open-source satellite imagery is available to the public, however, after processing the most useful data was derived from the ASTER satellite which records 14 bands that range from the visible spectrum at 0.52 µm to 11.65 µm (Satellite Imaging Corporation, 2023).

Band Ratio Application

A band ratio is created by dividing different bands of satellite images from each other and is a technique used to draw attention to specific desired spectral differences (Cardoso-Fernandes et al. 2019). Spectral characteristics of features in an image get enhanced by band ratioing, regardless of the variation in scene illumination (Shahi et al. 2022). The presence of certain minerals is highlighted using band ratios, and it was applied in the following manner:

Table 12: Band ratios for ASTER.

ASTER Band Ratio	Feature
B14/B12	Quartz-rich rocks
B13/B11	Hydrous silica occurrences
B9/B7	Carbonates (limestones and dolomites)
B3/B2	Vegetation Index

Using the band ratio B14/B12 and B13/B11 (follow figure), the silica-rich areas are highlighted in red hues, while the blue hues highlight areas of low silica. These band ratios highlight the possible areas containing diatomite as diatomite is composed of mainly silica, along with minimal clay minerals and calcium carbonates. The high silica content has been used as an indicator or the presence of diatomite, however, it must be noted high silica does not directly mean there is diatomite mineralisation.

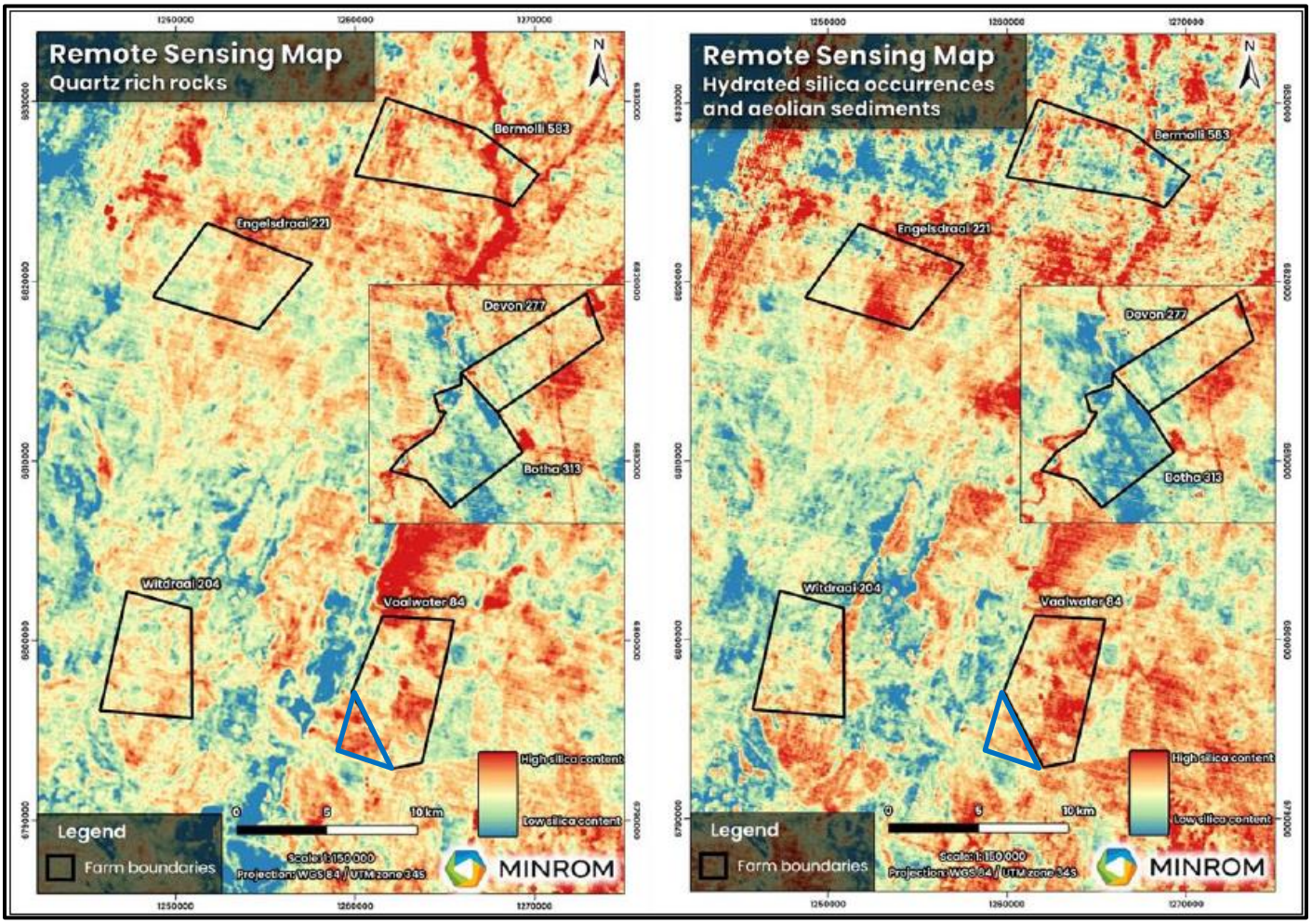


Figure 21: Remote sensing map for quartz rich rocks (left pane) and remote sensing map for hydrated silica occurrences and aeolian sediments. Farm No 570 (Zaai Plaats) is indicated by the blue triangle. (image obtained from the Minrom Report)

Comparing the band ratios with a vegetation index, it eliminates confusion in the remote sensing where possible areas of diatomite are confused with vegetation. A comparison of the band ratio is given for Farm No 570 (Zaai Plaats). Figure 22 was used to identify potential areas of diatomite, by correlating between the quartz-rich rocks, hydrated silica occurrences and the carbonated areas against the vegetation index.

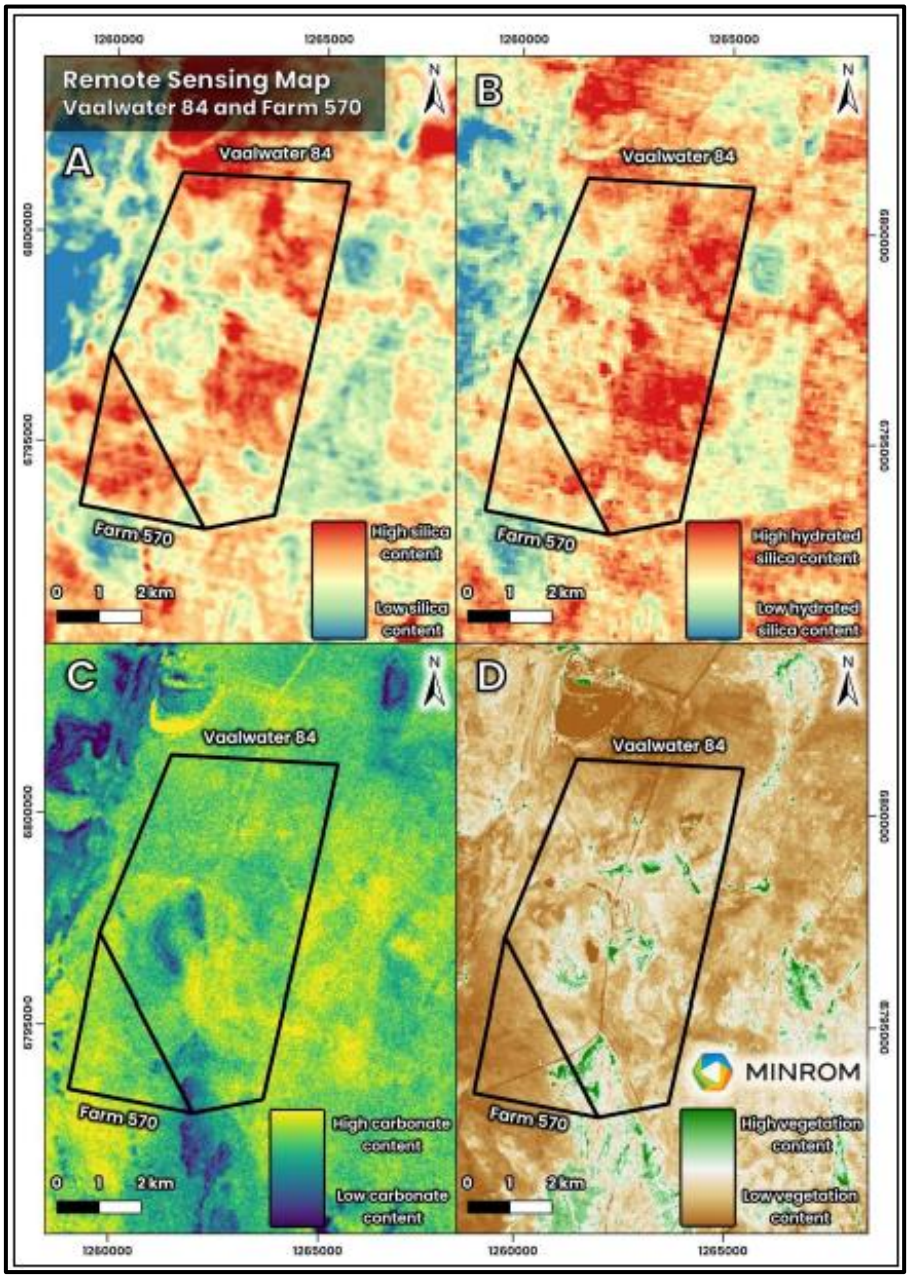


Figure 22: Remote sensing map for Farm No 570 (Zaai Plaats) and Vaalwater No 84 where A shows the ASTER band ration B14/B12 highlighting quartz-rich rocks, B is the ASTER band ratio B13/B11 highlighting hydrated silica occurrences, C is the ASTER band ratio B9/B7 highlighting carbonates, and D shows ASTER band ratio B3/B2 highlighting the vegetation. (image obtained from the Minrom Report)

After comparing the results of the RS analysis, the target area (following figure) was identified containing medium to high-silica content. The potential target area is found near known diatomite occurrences indicating a reasonable, but not perfect, prediction from the regional scale RS data.

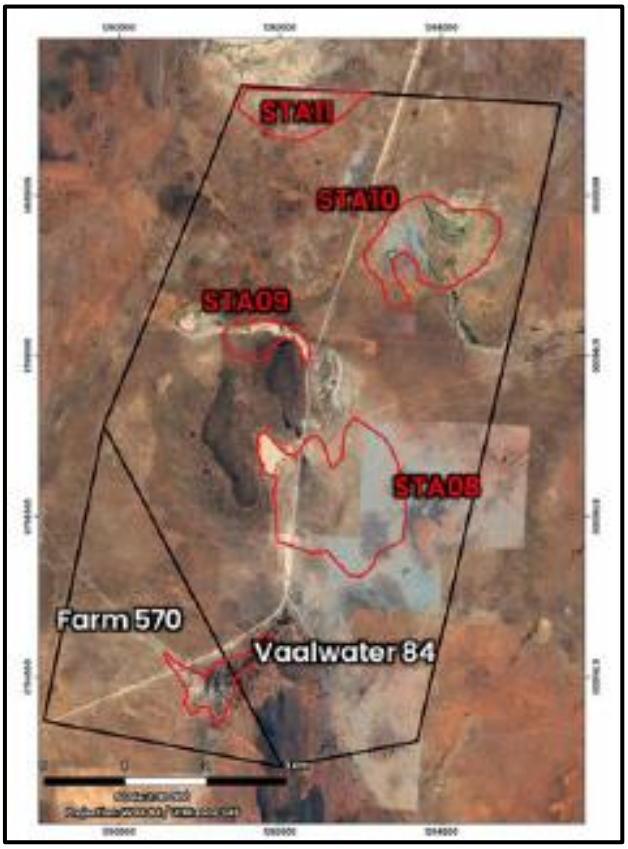


Figure 23: Potential diatomite targets identified on Farm No 570 (Zaai Plaats) and Vaalwater No 84 using remote sensing (image obtained from the Minrom Report)

Conclusion and Recommendations

The Minrom study concluded that a high priority target area (±44 ha) is located in the south-eastern part of Farm No 570 (Zaai Plaats), and various parts of the neighbouring farm Vaalwater No 84. Upon review of the Minrom study the Applicant will most likely focus the invasive prospecting activities on the target area identified over Farm No 570 (Zaai Plaats).

Exploration Strategy

Minrom recommends that the Applicant consider employing the exploration strategy as presented in the following table should the EA and PR application be approved:

Table 13: Proposed exploration strategy proposed by Minrom.

• **Phase 1 - Literature review & Target generation** o Review all available project data o Develop mineralisation model which can be applied to search for the target commodity anywhere the geological setting o Generate exploration targets o Rank exploration targets	**Complete**
• **Phase 2 – Field Verification & Initial Exploration Potential (Range analysis)** o Site investigation to determine if the target areas contain diatomite mineralisation o Surface sampling (representative samples) o Excavate pits to check depth extension of mineralisation ▪ Pit sampling (representative channel sampling) o Selected samples for diatomite quality testing (XRF SiO_2 grade is not sufficient for diatomite quality) o Calculate the potential size and grade of the deposit and determine if the deposits are economically viable (conceptual economic model)	**Proposed Next Phase**
• **Phase 3 – Delineate & Define the Resource** o Drilling / auguring / pitting of the potential economic deposits to get sufficient grade to estimate a mineral resource and mining plan.	**TBC** Likely follow up phases if determined to be economically viable

SITE SPECIFIC HYDROLOGY

(Information obtained from the Wetland/Aquatic and Terrestrial Desktop Sensitivity & Familiarisation, 2024 attached as Appendix F)

The site specific hydrology of the proposed prospecting footprint is representative of the regional hydrology described for the study area earlier in this report (Part A(1)(h)(iv)(1)(a) *Type of environment affected by the proposed activity)*. The DFFE Screening Report indicates that the study area is of low aquatic biodiversity importance as depicted in the following figure.

Figure 24: Aquatic biodiversity theme sensitivity of Farm No 570 (Zaai Plaats).

Freshwater Ecosystem Sensitivity Mapping

As part of the initial planning phase for NC 30/5/1/1/2/13826 PR, the Applicant aimed to gain a deeper understanding of the freshwater (wetlands/rivers) and terrestrial habitats within the earmarked footprint of the prospecting right application to implement best impact avoidance and minimization measures through careful planning. Eco-Pulse was appointed for the initial phase, which included the compilation of a sensitivity map to inform project planning in the interest of impact avoidance and minimization. Farm No 570 (Zaai Plaats) formed part of the study area assessed by Eco-Pulse and their findings are therefore presented below.

During the study, Eco-Pulse applied the following methods to generate the freshwater ecosystem sensitivity map and associated buffers (also refer to the full report attached as Appendix F):

- Desktop Analysis and Field Preparation
  In preparation for field work, available desktop wetland and river inventories were reviewed and clipped to the study area for refinement at a later stage.

- Field Verification and Familiarization Process
  The aim of the field familiarization process was to visit a suite of freshwater ecosystem within and nearby the properties to improve the accuracy of the mapping.

- Mapping of Freshwater Ecosystems and Drainage Features

  Following field familiarization efforts, the desktop river and wetland inventory maps was updated and refined based on field data. The following table shows the variable buffer widths applied to establish river and stream polygon features (for the sensitivity map).

Table 14: Variable buffer widths applied to establish river and stream polygon features (Eco-Pulse, 2024).

River/ stream class	Buffer width[3]	Active channel[4] width
1 – Ephemeral headwater drainage lines and first order streams	2.5m	5m
2 – Ephemeral second order headwater streams	5m	10m
3 – Seasonal and/or third order streams	7.5m	15m
4 – Large perennial rivers	n/a – active channel digitized individually. This only applied to the Orange River in the study area.	

- Aquatic Impact Mitigation Buffers.

  The aim of the buffers (development setbacks) is to protect sensitive ecosystem such as wetlands, rivers, and streams from key risk associated with prospecting. Due to the scale of the project area and the early planning phase of the project, a generic aquatic buffer was applied to all aquatic ecosystems.

The following figure shows the preliminary freshwater ecosystem sensitivity mapping results as compiled by Eco-Pulse, and from the map it is evident that the specialists did not identify any pans or watercourses on Farm No 570 (Zaai Plaats).

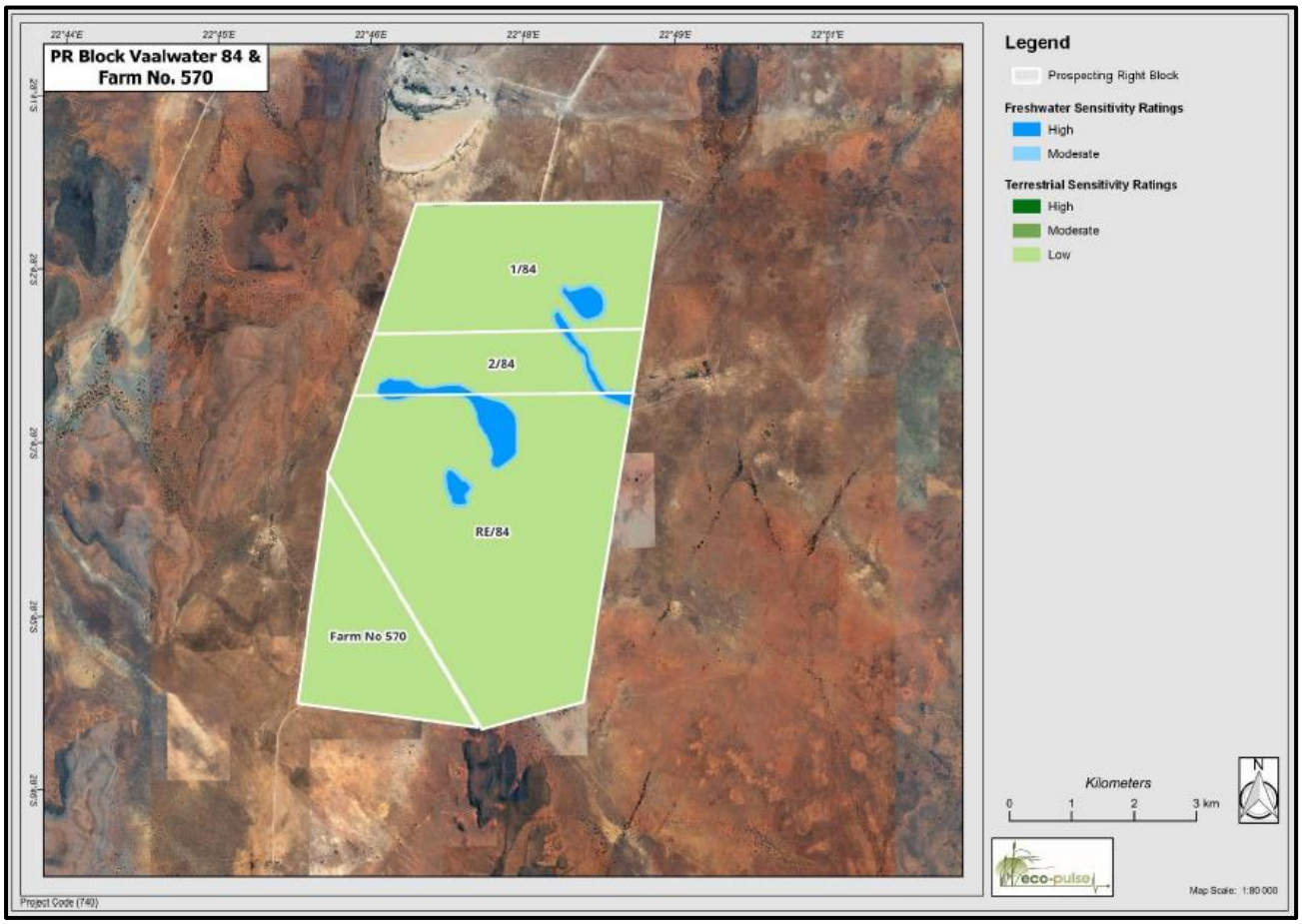


Figure 25: Desktop sensitivity map for Farm No 570 (Zaai Plaats) (Eco-Pulse, 2024).

Planning Recommendations for Freshwater Ecosystems

Refer to Figure 4 for a comparison between the identified target area (for invasive prospecting) and the freshwater sensitivity rating. As evident in this figure, the position of the target area does not appear to correspond with any identified watercourse on the farm.

However, Eco-Pulse recommends that no prospecting occur prior to a second phase investigation that groundtruth the sensitivity of the earmarked area and inform the invasive prospecting programme.

Conclusion

The sensitivity layers created for the identified freshwater ecosystems in the initial phase are crucial for planning purposes. As such the exact location of any freshwater ecosystems (if any) must be groundtruthed through a second phase investigation.

It is anticipated that additional fieldwork will be necessary by a hydrologist once the areas where invasive prospecting will occur are selected. Should the second phase

investigation indicate that the target area occur within any watercourse the applicability of a water use authorisation will be considered in consultation with the hydrologist.

SITE SPECIFIC GROUNDCOVER, FAUNA, AND BIODIVERSITY CONSERVATION

(Information obtained from the Wetland/Aquatic and Terrestrial Desktop Sensitivity & Familiarisation, 2024 attached as Appendix F)

As mentioned earlier, during the planning phase for NC 30/5/1/1/2/13826 PR, the Applicant required a better understanding of the freshwater (wetlands/rivers) and terrestrial habitats within the earmarked footprint of the prospecting right application to implement best impact avoidance and minimization measures through careful planning. The resultant study by Eco-Pulse included Farm No 570 (Zaai Plaats) and culminated in a sensitivity map. The Eco-Pulse findings are presented below.

Terrestrial Vegetation/Habitat Sensitivity Mapping

Eco-Pulse applied the following methods to generate the terrestrial ecosystem sensitivity map (also refer to the full report attached as Appendix F):

- Field preparation

  Available desktop terrestrial databases were reviewed and clipped to the study area for refinement at a later stage.

- Species of Conservation Concern Potential Occurrence (POC) Assessment

  The purpose of conducting the potential occurrence assessment was to identify Species of Conservation Concern (SCC), which are species with significant conservation value in preserving South Africa's biodiversity. This assessment aimed to flag the potential presence of SCC, helping to focus future surveys on these species or determine the need for more detailed studies. The habitat requirements/preferences for each plant/animal SCC was reviewed (based on available literature) and then compared with the habitat occurring on the site to estimate the likelihood of these species occurring on the target property.

- Terrestrial Ecosystem Mapping

  Rapid present ecological state (PES) categories were assigned to the refined remaining extent layer as follows:

  > A/B PES – Natural or largely natural primary terrestrial ecosystem.
  > C/D PES – Terrestrial ecosystem which has experienced a degree of degradation, but which still retains some ecosystem functionality.

> E/F PES – Degraded / transformed terrestrial ecosystem type.

The refined remaining extent layer was unioned with the national vegetation map shapefile layer (SANBI, 2018). The refined wall-to-wall study area terrestrial ecosystem layer was then unioned with the Northern Cape Province Biodiversity Plan GIS layer (Holness and Oosthuysen, 2016.

- Field Verification and Familiarisation Process

  The aim of the field familiarization process was to visit representable examples of the various vegetation types which occur within the targeted blocks and nearby the property to improve the accuracy of the mapping.

- Rating Ecological Sensitivity

  The desktop terrestrial and freshwater ecosystem layers were unioned to create a consolidated sensitivity layer. The following table shows the numerical sensitivity ratings that were assigned to the study area.

Table 15: Numerical sensitivity ratings were assigned final sensitivity classes (Eco-Pulse, 2024).

Ecological Sensitivity Class	Numerical Rating	Interpretation for drill well siting
High	0.68-1.0	Areas to be avoided when siting drilling wells as these are ecologically sensitive.
Moderate	0.33 – 0.67	Potentially suitable areas for siting drilling wells. These areas should however be avoided if possible.
Low	0.0-0.33	Areas which are suitable for the siting of drilling wells from an ecological sensitivity perspective.

According to the Eco-Pulse study, the biodiversity sensitivity of Farm No 570 (Zaai Plaats) is of Low significance (Figure 25) and no CBA/ESA extends over the farm.

The vegetation types applicable to this farm are:

- Kuruman Mountain Bushveld (SVk10) (LT)
- Northern Upper Karoo (NKu3) (LT)

The animal species theme range between High – Medium.

Planning Recommendations for Terrestrial Ecosystems

Terrestrial ecosystems were categorized into sensitivity classes and Eco-Pulse consequently recommended that areas categorized as High and Medium/Moderate sensitivity in terrestrial ecosystems should be avoided, while targeted prospecting activities are recommended within areas classified as Low sensitivity.

Conclusion

Refer to Figure 4 for a comparison between the identified target area (for invasive prospecting) and the terrestrial sensitivity rating. As evident in this figure, the position of the target area on Farm No 570 (Zaai Plaats) is within an area with a Low terrestrial sensitivity.

Eco-Pulse concluded that targeted prospecting activities are recommended within areas classified as Low sensitivity. Furthermore, it is anticipated that additional fieldwork will be necessary by an ecologist once the area/s where invasive prospecting will occur are selected. This fieldwork will help to refine the ecological sensitivity assessments and provide essential data for phase two of the assessment process.

The second phase fieldwork will be commissioned by the Applicant once the areas where invasive prospecting will occur were identified even though the target area appears to be of Low sensitivity.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Prospecting Right with Bulk Sampling over various farms in the Hay and Kuruman Administrative District, Northern Cape, 2024 attached as Appendix G1, and the Heritage Statement attached as Appendix G3)

Beyond Heritage conducted a desk based Heritage Impact Assessment (HIA) for NC 30/5/1/1/2/13826 PR of which Farm No 570 (Zaai Plaats) formed part and therefore the findings of the report is relevant to this application. The aim of the study was to assess the proposed development footprint on a desktop level to understand the cultural layering of the study area. This served to assess the potential impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations about the responsible cultural resources management measures required. It was also conducted to protect such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999) (NHRA).

The specialist notes that as it is at this stage impossible to define the exact locations or number of drill sites, a heritage walk down can only be conducted once this is confirmed (after non-invasive prospecting).

Heritage Resources Findings

The specialist noted that the farm earmarked for prospecting is situated within a larger sphere of significant archaeological sites. Stone Age sites and artefacts can be expected across the entirety of the landscape with more significant sites clustered and expected on rocky outcrops, hills, and watercourses including pans. Low density scatters relating to the ESA, MSA, and MSA can also be expected in flat plains.

The hills present on the neighbouring farm Vaalwater 84 continue into the south-eastern corner of Farm No 570 (Zaai Plaats), and two farmsteads/homesteads are present south of the R383.

These highlighted features, including further features which may be identified during prospecting including rocky outcrops, hills, and water courses should be avoided during non-invasive prospecting as these features are generally concurrent with significant heritage resources within the Karoo landscape. Informal graves may be also present across the landscape.

Cultural Landscape Findings

The greater landscape has been mined since the contact period known as the Ceramic Later Stone Age whereby evidence of specularite mining and workings have been documented. The region is mineralogically rich, and mining is a large driving force in the economic sector. The project area is situated within a landscape which is known for its extensive cultural layering spanning from the Early Stone Age to the Historic Period.

Archaeology Conclusion

Due to the geographical size of the exploration application and the fact that no intrusive activities will occur at this point of the application, it was deemed not feasible to conduct fieldwork at this point. Several large-scale heritage surveys were conducted for mining projects in the area and the archaeological character of the area is now well described (e.g., Beaumont 2007; 2008, Morris 2005; 2008, Huffman 2001, Hutten and Hutten 2013, Fourie and van der Walt 2006, Webley and Halkett 2008). Extensive archaeological research has also been conducted at the Kathu Complex

and Kuruman (Beaumont 2000). This provides the opportunity to establish potential heritage resources that could be affected in the area.

It is clear from the studies conducted that the general area has a wealth of heritage sites and a cultural layering dating back to the Stone Age with scatters and sites dating to the ESA, MSA and LSA. Sites and artefacts dating to these periods are scattered over the landscape with MSA and LSA sites centred on rocky outcrops, pans and watercourses and similar sites are expected to occur in the project areas. Due to the great archaeological significance of the greater landscape, especially relating to the Stone Age, rocky outcrops, hills, and watercourses such as drainage lines and pans should be avoided as significant Middle and Late Stone Age sites are more likely to be found within these topographical features. Kieselguhr appears to be more prevalent along ancient water courses and paleo-marshes within the Griqualand West area where the southern Project area is situated. These ancient watercourses may however be of high heritage sensitivity and Stone Age sites of significance may be present within these ancient watercourses and should be avoided as far as possible in terms of prospecting.

No intrusive activities will occur at this point of the application and the potential impact on heritage resources is expected to be very low. Final sample locations must be subject to a heritage walk-down prior to invasive prospecting.

The impact to heritage resources is expected to be low provided that the recommendations (refer to *Part A(1)(h)(viii) The possible mitigation measures* and *Part A(1)(k) Summary of Specialist Reports*) in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

The overall impact of the Project with the recommended mitigation measures is acceptable and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the Project.

Palaeontology

(Information extracted from the Palaeontological Impact Assessment for the Prospecting Right with bulk sampling over various farms in the Hay and Kuruman Administrative Districts, Northern Cape Province attached as Appendix G2, and the Heritage Statement attached as Appendix G3)

The Palaeontological Impact Assessment (PIA) commissioned for NC 30/5/1/1/2/13826 PR but which also included Farm No 570 (Zaai Plaats) noted that diatomite is the accumulation of millions of diatoms which are microscopic algae of the *Chrysophyta* that have silica exoskeletons. Seasonal or pH changes trigger the mass death of the floating algae, and their exoskeletons are deposited at the bottom of lakes.

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The aeolian sands do not preserve fossils but might cover features such as palaeo-pans or palaeo-springs that trap or form fossils but no such feature is visible in the satellite imagery. Since there is an extremely high chance that diatoms will be found and destroyed, and a small chance that trapped or transported fossils occur in the sands and may be disturbed a Fossil Chance Find Protocol has been proposed by the specialist. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely high.

Palaeontology Conclusion

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 very small chance that fossils may occur in traps such as palaeo-pans or palaeo-springs, but no such feature is visible in the satellite imagery. Nonetheless, a Fossil Chance Find Protocol was added to the EMPr. If fossils are found by the contractor, environmental officer or other responsible person once prospecting has commenced it must be rescued, and a palaeontologist called to assess and collect a representative sample.

It is known that diatomite occurs in the prospecting areas and the age and extent of the fossils is unknown. Therefore, samples must be collected and deposited in a recognised repository, such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action has been taken.

SITE SPECIFIC INFRASTRUCTURE

A farmyard occurs within the proposed prospecting area, and the existing infrastructure component of the project therefore includes, but is not limited to, the following:

- Fencing;

- Housing and supporting structures;
- Power and telephone lines;
- Pipelines;
- Roads (public as well as private);
- Stock pens;
- Water abstraction and storage infrastructure.

The proposed prospecting method is such that it can be moved away from build structures and existing infrastructure. As mentioned earlier, jeep-tracks to the prospecting area/s will (if needed) be developed in agreement with the landowner, and presently it is not expected that the proposed activity will negatively impact or necessitate the removal of any existing infrastructure.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

The environmental and current land use map is attached as Appendix B.

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

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

By nature, the non-invasive prospecting activities are not expected to have an impact on the receiving environment as it will occur off-site at desktop level. However, the following potential impacts were identified regarding the invasive prospecting activities in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

INVASIVE PROSPECTING (PHASE 3 & 5): SITE ESTABLISHMENT

Temporary loss of agricultural land earmarked for site camp establishment.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Partial**	
1	4	1	2	4	5	4.5	**9**

Visual intrusion because of site camp.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Partial**	
1	3	1	1.6	1	4	2.5	**4**

Work opportunity for 8 - 10 community members **(Positive Impact).**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	4	5	3.3	5	5	5	**16.5**

Upgrading of access roads during invasive prospecting **(Positive Impact).**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	4	4	3	4	2	3	**9**

INVASIVE PROSPECTING (PHASE 3 & 5): OPERATIONAL PHASE

Temporary loss of some agricultural land earmarked for invasive prospecting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Partial**	
1	4	1	2	5	5	5	**10**

Visual intrusion because of invasive prospecting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Partial**	
2	4	1	2.3	5	5	5	**11.5**

Potential negative impact on the Upstream River FEPA of the study area.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	5	3.5	**12.6**

Increase in sediment inputs and turbidity due to invasive prospecting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	3	4	3.3	2	5	3.5	**11.5**

Increase in toxic heavy metal contaminants.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	3	4	3.3	3	1	2	**6.6**

Dust nuisance because of invasive prospecting.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	2	3	4	5	4.5	**13.5**

Noise nuisance because of invasive prospecting.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Partial**	
2	4	2	2.6	4	5	4.5	**11.7**

Potential impact on sensitive/protected flora within the footprint area.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	5	4	3	2	2.5	**10**

Potential impact on fauna within the footprint area.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	3	3.3	3	2	2.5	**8.2**

Infestation of the prospecting areas with invader plant species.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**

Potential soil contamination associated with littering and/or hydrocarbon spillages.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
4	4	1	3	4	3	3.5	**10.5**

Potential impact on areas/infrastructure of heritage or cultural concern.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**

Potential impact on palaeontological aspects.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: High			**Final Project Proposal**			**Degree of Mitigation: Partial**	
4	5	5	4.6	5	5	5	**23**

Erosion of denuded areas.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**

Deterioration of access roads due to prospecting activities.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	4	2	2.6	4	3	3.5	**9**

Health and safety risk posed by invasive activities to prospecting employees.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
4	4	1	3	3	5	4	**12**

Presence of prospector negatively affecting safety and security of the property.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Final Project Proposal**			**Degree of Mitigation: Full**	
4	4	4	4	3	5	4	**16**

Increased fire risk during operational phase.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	3	3.3	4	5	4.5	**14.8**

Upgrading of access roads during invasive prospecting **(Positive Impact).**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium (+)			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	4	4	3	4	2	3	**9**

INVASIVE PROSPECTING (PHASE 3 & 5): DECOMMISSIONING (MEDIUM- & LONG TERM)

Safety risk due to uncapped boreholes.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	5	1	3	4	5	4.5	**13.5**

Potential impact associated with litter/hydrocarbon spillages left at the prospected areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	5	1	3	4	5	4.5	**13.5**

Erosion of roads, vehicle tracks and/or denuded areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	2	3	**9.9**

Infestation of the reinstated areas with invader plant species.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	2	3	**9.9**

Return of the site camp and prospected areas to agricultural use. **(Positive Impact)**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**

CUMULATIVE IMPACTS

Fragmentation of ecosystems affecting safe movement of faunal species.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
3	4	4	3.6	2	5	3.5	**12.6**

Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	5	4.5	**14.8**

Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
4	4	2	3.3	4	5	4.5	**14.8**

Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	2	3	4	3	3.5	**10**

Compensation of landowners during operational phase **(Positive Impact)**.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
1	4	4	3	5	5	5	**15**

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

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

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation, and decision-making. The concept remains largely undefined and there is no international consensus on a

single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement.
- The degree of environmental significance depends on the nature of the impact.
- The importance is rated in terms of both biophysical and socio-economic values.
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration, and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in each time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation (ISO 14004, 1996).

Methodology that will be used

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: ***Severity/Intensity, Duration and Extent/Spatial Scale***. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment. The table below will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 16: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible

Type of criteria	Rating				
	1	2	3	4	5
Biophysical (Air quality, water quantity and quality, waste production, fauna, and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 17: Criteria for the rating of duration.

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect, or impact.

Table 18: Criteria for the rating of extent / spatial scale.

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below and then dividing the sum by 3.

Table 19: Example of calculating overall consequence.

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 20: Criteria for the rating of frequency.

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 21: Criteria for the rating of probability.

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below and then dividing the sum by 2.

Table 22: Example of calculating overall likelihood.

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD (Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Table 23: Determination of overall environmental significance.

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect, or impact.

Table 24: Description of environmental significance and related action required.

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Based on the above, the significance rating scale has been determined as follows:

High — Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.

Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT PROPOSAL

- If approved the prospecting activities will identify the kieselguhr source/s within the earmarked area.
- Work opportunities for 8 - 10 community members including associated growth development opportunities.
- Compensation of landowners during operational phase.
- Invasive prospecting does not require bulk sampling.
- Upgrading of access roads during invasive prospecting.
- Return of the site camp and prospected areas to agricultural use.

- Feasible mineral resources could lead to economic development of the earmarked areas.

NEGATIVE IMPACTS ASSOCIATED WITH THE PROJECT PROPOSAL

The following table lists the potential negative impacts associated with the present project proposal:

Table 25: List of potential negative impacts associated with the present project proposal.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
➢ Site establishment. ➢ Operational phase.	➢ Temporary loss of agricultural land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	➢ Low-Medium ➢ Medium	➢ Low-Medium ➢ Low-Medium
➢ Site establishment. ➢ Operational phase.	➢ Visual intrusion because of site camp. ➢ Visual intrusion because of invasive prospecting.	➢ Low ➢ Medium	➢ Low ➢ Low
➢ Operational phase.	➢ Potential impact on sensitive/protected flora within the footprint.	➢ Medium	➢ Low
➢ Operational phase.	➢ Potential negative impact on the Upstream River FEPA of the study area. ➢ Increase in sediment inputs and turbidity due to invasive prospecting. ➢ Increase in toxic heavy metal contaminants.	➢ Medium ➢ Medium ➢ Low-Medium	➢ Low ➢ Low ➢ Low
➢ Operational phase. ➢ Cumulative impacts.	➢ Dust nuisance because of invasive prospecting. ➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)	➢ Medium ➢ Medium	➢ Low ➢ Low-Medium
➢ Operational phase. ➢ Cumulative impacts.	➢ Noise nuisance because of invasive prospecting. ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring	➢ Medium ➢ Medium	➢ Low ➢ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
	farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)		
➢ Operational phase. ➢ Cumulative impacts.	➢ Potential impact on fauna within the footprint. ➢ Fragmentation of ecosystems afecting safe movement of faunal species.	➢ Low-Medium ➢ Medium	➢ Low ➢ Low
➢ Operational phase. ➢ Decommissioning phase.	➢ Infestation of the prospecting areas with invader plant species. ➢ Infestation of the reinsated areas with invader plant species.	➢ Low-Medium ➢ Low-Medium	➢ Low ➢ Low
➢ Operational phase. ➢ Decommissioning phase.	➢ Potential soil contamination associated with littering and/or hydrcarbon spillages. ➢ Potential impact associated with litter/hydrocarbon spillages left at the prospected areas.	➢ Medium ➢ Medium	➢ Low ➢ Low
➢ Operational phase.	➢ Potential impact on areas/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects.	➢ Low ➢ High	➢ Low ➢ High
➢ Operational phase. ➢ Decommissioning phase.	➢ Erosion of denuded areas. ➢ Erosion of roads, veichle tracks and/or denuded areas.	➢ Low-Medium ➢ Low-Medium	➢ Low ➢ Low
➢ Operational phase. ➢ Cumulative impacts.	➢ Deterioration of access roads due to prospecting activities. ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	➢ Low-Medium ➢ Medium	➢ Low ➢ Low-Medium
➢ Operational phase.	➢ Health and safety risk posed by invasive activities to prospecting employees.	➢ Medium	➢ Low
➢ Operational phase.	➢ Presence of prospector negatively affecting safety and security of the property.	➢ Medium-High	➢ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
➢ Operational phase.	➢ Increased fire risk during operational phase.	➢ Medium	➢ Low
➢ Decommissioning phase.	➢ Safety risk due to uncapped boreholes.	➢ Medium	➢ Low

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

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

The following mitigation measures are proposed to address/minimize the impact of the prospecting activity on the receiving/surrounding environment.

VISUAL CHARACTERISTICS

Visual Mitigation

The risk of the prospecting activities having a negative impact on the aesthetic quality of the surrounding environment is deemed to be of low significance should the following mitigation measures be implemented.

- Prospecting must be contained to the approved boundaries.
- The camp site and every sampling site must have a neat appearance and always be kept in good condition.
- The contractor must limit vegetation removal (where possible) and avoid the removal of large trees (>20 cm stem) or vegetation of significance without prior approval of the ECO.
- Prospecting equipment must be stored neatly in a dedicated area when not in use.
- Concurrent rehabilitation must be done as prospecting progress to limit the visual impact on the aesthetic value of the area.
- Stripping of topsoil may only be done immediately prior to the use of a specific area.
- Upon closure all sites must be rehabilitated to keep the visual impact on the aesthetic value of the area to a minimum.

AIR QUALITY AND NOISE AMBIANCE

Fugitive Dust Emission Mitigation

The risk of dust, generated due to the prospecting activities, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the following mitigation measures.

- The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to prospecting.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil to minimize potential dust impacts.

Noise Handling

The risk of noise, generated by the prospecting activity, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below.

- The Applicant must ensure that the employees and visitors to the site conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the site camp and/or prospecting areas.
- All vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- Best practice measures shall be implemented to minimize potential noise impacts.

GEOLOGY AND SOIL

Topsoil Management

- The upper 300 mm of soil must be stripped and stockpiled before site camp establishment and/or prospecting.
- Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The prospecting plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the prospecting footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (grass or indigenous cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- The Applicant must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- A cover crop must be planted, irrigated, and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production, and any soil deficiencies must be corrected, based on a chemical analysis of the re-spread soil (if deemed necessary). It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Mitigating the potential impact on the Upstream River FEPA of the study area

The potential of the prospecting activities having a negative impact on the FEPA will be low should the following mitigation measures be implemented.

- Once the invasive prospecting programme is available additional fieldwork must be done by a qualified hydrologist at the selected prospecting site/s to refine ecological sensitivity and keep prospecting from impacting watercourses/pans/wetlands.
- The findings of the hydrologist, with the drill plan, must be submitted to the DMRE for approval prior to commencement.
- No activities may take place, without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse or estuary or within a 500 m radius from a delineated boundary of any wetland or pan.
- Should a water use authorisation be applicable to the project, the Applicant must always adhere to the conditions thereof.
- Upon closure, the Applicant must remove all prospecting related equipment/machinery from the footprint.

Erosion Mitigation / Storm Water Control

- An aquatic impact buffer of 40 m must be maintained around all watercourses (where applicable).
- Storm water must be diverted around the topsoil heaps, prospecting areas, roads and/or tracks to prevent erosion.
- Drainage must be controlled to ensure that runoff from the prospecting areas do not culminate in off-site pollution, flooding or result in any damage to properties downstream or any storm water discharge points.
- Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system (if applicable).
- Dirty water must be collected and contained in a system separate from the clean water system.
- Dirty water must be prevented from spilling or seeping into clean water systems.

GROUNDCOVER, FAUNA, AND BIODIVERSITY CONSERVATION

Mitigating the impacts on floral species and fragmentation of vegetation communities

The risk of the prospecting activity having a negative impact on the vegetation cover of the footprint will be low should the following mitigation measures be implemented.

- Once the invasive prospecting programme is available additional fieldwork must be done by a qualified ecologist at the selected prospecting site/s to refine ecological sensitivity and keep prospecting from sensitive areas/plants.
- The findings of the ecologist, with the drill plan, must be submitted to the DMRE for approval prior to commencement.
- The prospecting boundaries must be clearly demarcated, and all operations must be contained to the approved areas.
- The area outside the boundaries must be declared a no-go area, and all employees must be educated accordingly.
- An invasive plant species management plan must be implemented on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas.
- Should an application for the removal of protected plant species, and/or indigenous plants (1) on large-scale, (2) or on small scale within 100 meters of a river or a public road, be applicable, the EA Holder must submit a thorough walk-through report to the relevant competent authorities (DAERL) prior to commencing any earthworks. This report must comprehensively assess, and list species based on their protection statuses according to the Northern Cape Nature Conservation Act 9 of 2009 (NCNCA), the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA: ToPS), and the National Forest Act 84 of 1998 (NFA). It must also include the IUCN Red List status, endemism, and estimate the quantities of each impacted protected species. Ideally, the walk-through assessment must be conducted during the appropriate season for the area to ensure accurate observation of species presence and habitat conditions, thereby maximizing the effectiveness of the assessment in capturing the full ecological picture.

Management of Invasive Plant Species

The risk of weeds or invader plants invading the disturbed area can be reduced to being low through the implementation of the mitigation measures listed below.

- An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10

of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the prospecting activities.

- All stockpiles must be kept free of invasive plant species.
- Management must take responsibility to control declared invader or exotic species that germinate on rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled, or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

Protection of Fauna

The risk resulting from the prospecting activity on the fauna of the footprint area as well as the surrounding environment, can be reduced to low through the implementation of the mitigation measures listed below.

- The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.
- No pets allowed on site.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects

The impact on archaeological, heritage and palaeontological aspects, because of the prospecting activities, can be reduced to being low through the implementation of the mitigation measures listed below.

- Once the drill sites have been confirmed these areas have to be subjected to a heritage walk down, this should be conducted prior to the commencement of invasive prospecting activities.
- Drill sites must be kept as close as possible to existing roads to minimise the impact on the landscape.
- Focal points on the landscape like rocky outcrops, caves, or pans must be avoided as far as possible as these areas could be sensitive from a heritage point of view.
- Burial sites, memorials and graves must be avoided with a 30 m buffer zone;

- Further palaeontological studies must be conducted once the impact areas are confirmed.
- Samples of diatomite must be collected and deposited at a recognised repository such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action has been taken.
- Monitoring of the project area by the ECO during the exploration phase for heritage chance finds, and if chance finds are encountered to implement the Chance Find Procedure for the project.
- If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.
- A 50 m buffer must be applied to all identified heritage sites.

LAND USE

Loss of Agricultural Land for Duration of Prospecting

- If needed, areas that has been prospected and rehabilitated can be signed back to the landowner to revert to agricultural use once the cover crop stabilised.

EXISTING INFRASTRUCTURE

Access Road Mitigation

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access roads (where possible) and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the prospecting activities must be repaired by the Applicant.
- Prior to commencement, all contractors must sign an agreement confirming their responsibility towards the movement of their employees.

- Damages to fences (by prospecting employees) must be repaired/reinstated by the responsible contractor. Losses, due to gates left open by prospecting employees, must be compensated by the responsible entity.

GENERAL

Waste Management

The risk of uncontrolled waste generation having a negative impact on the surrounding environment can be reduced to being low through the implementation of the mitigation measures listed below.

- Vehicle maintenance, repairs and services may only take place at the workshop and service area in the site camp. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal.
- Ablution facilities must be provided to all employees. The toilet must be placed outside the 1:100 year floodline of all watercourses.
- The ablution facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage. Any pollution problems arising from the above are to be addressed immediately by the Applicant.
- If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.
- Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed to the hazardous waste storage area of the workshop, either for resale or for appropriate disposal at a recognized facility. Proof must be filed.
- General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a registered general waste landfill site.
- No waste may be buried or burned on the site.

- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the prospecting activities is reported to the Department of Water and Sanitation and other relevant authorities.

Management of Health and Safety Risks

- Adequate ablution facilities and water for human consumption must daily be available on site.
- Worker(s) must have access to the correct personal protection equipment (PPE) as required by law.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- Drill-holes must daily be covered even if prospecting will continue the following day. Upon closure all boreholes must be sealed off and capped as prescribed in the rehabilitation plan.

Management of safety and security risk posed by prospecting activities to residents

- Employees to be appointed must be vetted prior to inception of contract.
- No employees may be allowed to reside within the prospecting area.
- Prospecting employees must be educated to report suspicious looking person/s and/or matters to site management.
- Direct communication between the prospector and the landowner must be maintained for the duration of the site establishment-, operational, and decommissioning phases.
- The prospecting contractor may not enter negotiations with farm employees.
- Prospecting may only take place during normal business hours and unless otherwise authorised by the landowner.
- No alcohol of prohibited drugs may be allowed on site.
- Attendance registers must be maintained, and all prospecting vehicles/machinery must be pre-registered with the landowner/security.
- No firearms will be allowed on site.

Fire Risk Management

- No open fires are permitted on any of the sampling sites. Contained fires for heating and cooking (i.e. in a fire drum) but be restricted to designated areas at the site camp,
- Employees must be prevented from setting fires randomly outside designated areas.
- No fuel or chemicals may be stored under trees.
- Gas may not be stored in the same storage area as liquid fuel.

- Smoking may only occur at designated areas (>3 m from fuel or chemical storage areas) equipped with sand buckets for the disposal of cigarette buds.
- Ensure Work Site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site.
- Specific fire safety precautions must be implemented during welding activities associated with construction work. Ensure a working fire extinguisher is immediately at hand if any "HOT WORK" is undertaken e.g. welding, grinding, gas cutting etc,
- Any fires noted on site must be reported to the responsible SHE rep and/or fire officer.
- The site must implement fire emergency procedures for the duration of the site establishment-, operational-, and decommissioning phases.
- In the event of large fires all personnel must assemble at a safe assembly point to be transported from site. The fire department or local fire watch must be informed of the fire to ensure that the fire is brought under control as soon as possible.

ix) Motivation where no alternative sites were considered.

Not applicable.

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

Refer to Part A(1)(h) *Full description of the process followed to reach the proposed preferred site* above, and Part A(1)(l)(i) *Summary of the key findings of the environmental impact assessment*.

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

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

During the impact assessment process the following potential impacts were identified of each main activity in each phase. An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process then continued in identifying mitigation measures to address the impact that the prospecting activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings

listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

INVASIVE PROSPECTING (PHASE 3 & 5): SITE ESTABLISHMENT

Temporary loss of agricultural land earmarked for site camp establishment.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	4	5	4.5	**7.2**

Visual intrusion because of site camp

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	1	4	2.5	**4**

Work opportunity for 8 - 10 community members **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
1	4	5	3.3	5	5	5	**16.5**

Upgrading of access roads during invasive prospecting **(Positive Impact).**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
1	4	4	3	4	2	3	**9**

INVASIVE PROSPECTING (PHASE 3 & 5): OPERATIONAL PHASE

Temporary loss of some agricultural land earmarked for invasive prospecting.

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	3	1	1.6	4	5	4.5	**7.2**

Visual intrusion because of invasive prospecting

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	2	1	1.3	2	5	3.5	**4.5**

Potential negative impact on the Upstream River FEPA of the study area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	3	1	2	2	1	1.5	**3**

Increase in sediment inputs and turbidity due to invasive prospecting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	1	2	1.6	3	1	2	**3.2**

Increase in toxic heavy metals contaminants.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	1	2	1.6	3	1	2	**3.2**

Dust nuisance because of invasive prospecting.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Noise nuisance because of invasive prospecting

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Partial**	
2	2	1	1.6	2	2	2	**3.2**

Potential impact on sensitive/protected flora within the footprint area.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	3	5	3.3	2	1	1.5	**4.9**

Potential impact on fauna within the footprint area.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Infestation of the prospecting areas with invader plant species.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	1	1	1.3	2	2	2	**2.6**

Potential soil contamination associated with littering and/or hydrocarbon spillages.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Potential impact on areas/infrastructure of heritage or cultural concern.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**

Potential impact on palaeontological aspects.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Final Project Proposal**			**Degree of Mitigation: Partial**	
3	5	5	4.3	5	5	5	**21.5**

Erosion of denuded areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Deterioration of access roads due to prospecting activities.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Health and safety risk posed by invasive activities to prospecting employees.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Presence of prospector negatively affecting safety and security of the property.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
1	4	2	2.3	2	2	2	**4.6**

Increased fire risk during operational phase.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
1	3	1	1.6	2	2	2	**3.2**

Upgrading of access roads during invasive prospecting **(Positive Impact).**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
1	4	4	3	4	2	3	**9**

INVASIVE PROSPECTING (PHASE 3 & 5): DECOMMISSIONING (MEDIUM- & LONG TERM)

Safety risk due to uncapped boreholes.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Potential impact associated with litter/hydrocarbon spillages left at the prospected areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
1	2	1	1.3	2	2	2	**2.6**

Erosion of roads, vehicle tracks and/or denuded areas.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Infestation of the reinstated areas with invader plant species.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	2	2	**3.2**

Return of the site camp and prospected areas to agricultural use **(Positive Impact)**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**

CUMULATIVE IMPACTS

Fragmentation of ecosystems affecting safe movement of faunal species.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	4	1	2.6	2	1	1.5	**3.9**

Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).

The probability of prospecting activities occurring simultaneously on Farm No 570 (Zaai Plaats) and the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR) is highly unlikely as the two PR applications are at different stages of decision making at the DMRE. It is anticipated that prospecting will most likely commence at NC 30/5/1/1/2/13826 PR (if approved) before this application (over Farm No 570) is finalised. Therefore the potential cumulative dust related impact is of low-medium significance.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	4	1	2.6	2	2	2	**5.2**

Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).

Considering the abovementioned regarding the probability of both prospecting rights operating simultaneously, the potential cumulative noise related impact is of low-medium significance.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Parial**	
2	4	1	2.6	2	2	2	**5.2**

Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR)

Considering the abovementioned regarding the probability of both prospecting rights operating simultaneously, the potential cumulative road related impact is of low-medium significance.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**			**Degree of Mitigation: Full**	
2	4	1	2.6	2	2	2	**5.2**

Compensation of landowners during operational phase **(Positive Impact)**.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**			**Degree of Mitigation: N/A**	
1	4	4	3	5	5	5	**15**

j) Assessment of each identified potentially significant impact and risk.

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

Table 26: Assessment of each identified potentially significant impact and risk.

ACTIVITY 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…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (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 etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	➢ Temporary loss of agricutlral land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	The impact may affect the agricultural operations of the property.	Site Establishment- & Operational Phase	➢ Low-Medium ➢ Medium	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon rehabilitation of the site camp and/or prospected areas. The impact can be controlled through progressive rehabilitation.	➢ Low-Medium ➢ Low-Medium
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment	➢ Visual intrusion because of site camp.	The visual impact may affect the	Site Establishment- & Operational Phase	➢ Low ➢ Medium	<u>Control:</u> Implementing proper housekeeping.	➢ Low ➢ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
➢ Operational Phase	➢ Visual intrusion because of invasive prospecting.	aesthetics of the landscape.				
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on sensitive/protected flora within the footprint area.	Impact may affect the biodiversity richness of the area.	Operational Phase	➢ Medium	Control: Implementing the proposed mitigation measures and preventing blanket clearing of vegetation.	➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential negative impact on the Upstream River FEPA of the study area. ➢ Increase in sediment inputs and turbidity due to invasive prospecting. ➢ Increase in toxic heavy metal contaminants.	Impact may affect water resources in a water scarce area.	Operational Phase	➢ Medium ➢ Medium ➢ Low-Medium	Control & Stop: Implementing the proposed mitigation measures.	➢ Low ➢ Low ➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Dust nuisance because of invasive prospecting. ➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai	Increased dust generation will impact on the air quality of the receiving environment.	Operational Phase	➢ Medium ➢ Medium	Control: Dust suppression methods and proper housekeeping.	➢ Low ➢ Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).					
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Noise nuisance because of invasive prospecting. ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Operational Phase	➢ Medium ➢ Medium	<u>Control:</u> Noise suppression methods and proper housekeeping.	➢ Low ➢ Low-Medium
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impact	➢ Potential impact on fauna within the footprint area. ➢ Fragmentation of ecosystems affecting safe movement of faunal species.	This will impact on the biodiversity of the receiving environment.	Operational Phase	➢ Low-Medium ➢ Medium	<u>Control & Stop:</u> Implementing good management practices.	➢ Low ➢ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Infestation of the prospecting ara with invader plant species. ➢ Infestation of the reinstated areas with invader plant species.	This will impact on the biodiversity of the receiving environment.	Operational Phase	➢ Low-Medium ➢ Low-Medium	Control: Implementing invader plant control measures.	➢ Low ➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Potential soil contamination associated with littering and/or hydrocarbon spillages. ➢ Potential impact assocaited with litter/hydrocarbon spills left in the prospected areas.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the Applicant.	Operational- and Decommissioning Phase	➢ Medium ➢ Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan.	➢ Low ➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on area/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	➢ Low ➢ High	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	➢ Low ➢ High

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Erosion of denuded areas. ➢ Erosion of roads, vehicle tracks and/or denuded areas.	Erosion of prospected areas will affect the rehabilitation requirements and incur additional cost to the Applicant.	Operational- & Decommissioning Phase	➢ Low-Medium ➢ Low-Medium	Control & Remedy: Proper housekeeping and storm water management.	➢ Low ➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Deterioration of the access roads due to prospecting activities. ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	Collapse of the road infrastructure will affect the landowners.	Operational Phase	➢ Low-Medium ➢ Medium	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to prospecting.	➢ Low ➢ Low-Medium
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Health and safety risk posed by invasive activities to prospecting employees.	The safety of the employees will be affected.	Operational Phase	➢ Medium	Control, Stop & Remedy: Prospecting according to the health and safety regulations of the country and rectifying any shortcomings.	➢ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Presence of prospector negatively affecting safety and security of the property. ➢ Safety risk due to uncapped boreholes.	The impact may affect the security of the area. Uncapped boreholes will pose a safety risk to the animals and humans of the area	Operational Phase	➢ Medium-High ➢ Medium	Control, Stop & Remedy: Implementing proper human resources practices, and progressive rehabilition. Closing boreholes at the end of each day.	➢ Low ➢ Low
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Increased fire risk during operational phase.	Uncontrolled fires may affect the biodiversity and agricultural practices of the area.	Operational Phase	➢ Medium	Control: Implementing good housekeeping and emergency risk procedures.	➢ Low

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked Appendix H.

k) Summary of specialist reports.

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

As mentioned earlier, the Applicant has a pending prospecting right application (NC 30/5/1/1/2/13826 PR) for kieselguhr over various properties in the Hay and Kuruman Administrative Districts. Although the said application, did not include Farm No 570 (Zaai Plaats), the specialists considered the farm as part of their studies and therefore the findings of the specialist reports are relevant to this application (NC 30/5/1/1/2/14264 PR) and were subsequently incorporated into this report. Refer to Appendices E, F and G for confirmation from the specialists that their studies apply to this application (NC 30/5/1/1/2/14264 PR) as well.

Table 27: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Heritage Impact Assessment *See Appendix G1 for a full copy of the document as well as the Heritage Statement attached as Appendix G3.*	**Recommendations** ➢ Once the sampling trenches/pit sites have been confirmed these areas have to be subjected to a heritage walk down, this should be conducted prior to the commencement of prospecting activities; ➢ Drill sites must be kept as close as possible to existing roads in order to minimise the impact on the landscape; ➢ Focal points on the landscape like rocky outcrops, hills, pans, and watercourses must be avoided as far as possible as these areas could be sensitive from a heritage point of view; ➢ Monitoring of the Project area by the ECO during the exploration phase for heritage and palaeontology chance	This report supports all the recommendations proposed by the specialist.	Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Archaeological, Heritage and Palaeontological Aspects.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9. <u>Chance Find Procedure:</u> The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during invasive activities any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 9.5. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	➢ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ➢ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. ➢ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.		
Palaeontological Impact Assessment *See Appendix G2 for a full copy of the document as well as the Heritage Statement attached as Appendix G3.*	<u>Recommendations:</u> 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 very small chance that fossils may occur in traps such as palaeo-pans or palaeo-springs but no such feature is visible in the satellite imagery. Nonetheless, a Fossil Chance Find Protocol	This report supports all the recommendations proposed by the specialist.	Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Archaeological, Heritage and Palaeontological Aspects.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	should be added to the EMPr. If fossils are found by the contractor, environmental officer or other responsible person once prospecting has commenced then they should be rescued, and a palaeontologist called to assess and collect a representative sample. It is known that diatomite occurs in the prospecting areas and the age and extent of the fossils is unknown. Samples must be collected and deposited in a recognised repository, such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action has been taken. <u>Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.</u> ➢ The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence. ➢ When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the Project activities will not be interrupted. Samples of diatomite from each farm must be deposited at a recognised repository.		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	➢ Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures. ➢ Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. ➢ If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this Project, should visit the site to inspect the selected material and check the dumps where feasible. ➢ Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. ➢ If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the Project has been completed and only if there are fossils. If no fossils are found and the excavations have finished, then no further monitoring is required.		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Wetland/Aquatic and Terrestrial Desktop Sensitivity & Familiarisation *See Appendix F for a full copy of the document.*	**<u>Planning Recommendations for Terrestrial Ecosystems:</u>** Terrestrial ecosystems were categorized into sensitivity classes following the guidelines in section 3.1.5, guiding the placement of prospecting pits. Consequently, areas categorized as 'High' and 'Moderate' sensitivity in terrestrial ecosystems should once groundtruthed be avoided, while targeted prospecting activities are recommended within areas classified as 'Low' sensitivity. **<u>Planning Recommendations for Freshwater Ecosystems:</u>** Unlike the terrestrial ecosystem sensitivity map, which has several sensitivity classes to inform the sitting of prospecting pits, freshwater ecosystems should preferable be avoided irrespective of their sensitivity and ecosystem threat status. As such, no prospecting may occur in any freshwater ecosystems considered high-moderate sensitivity prior to a second phase investigation and receipt of a water use authorization *(if applicable)*. Watercourses such as rivers, wetland and drainage lines collect, retain, and convey surface water in the landscape and are sensitive to erosion and water quality impacts due to their location in the landscape. According to the buffer model, the key risk associated with prospecting are sediment and turbidity impacts and water quality impacts from heavy metals. Importantly, buffers are only suited to	The study proposes initial recommendations of the specialist based on desktop findings. The recommendation that a second phase investigation be conducted (by ecologist & hydrologist) once the invasive prospecting programme (sampling pattern) is available to refine the identified sensitivities is supported and incorporated in the EIAR & EMPR. The findings of the second phase investigation/s must be approved, with the sampling plan, by the DMRE prior to commencement.	Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Groundcover, Fauna, Biodiversity Conservation. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk – Groundcover, Fauna, Biodiversity Conservation.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	mitigate against certain impacts. These have been displayed in bold text in Table 2. Buffers are capable of mitigating two of the key impacts identified by the model. Based on the tool outputs for the range of ecosystems and site variables tested, an aquatic impact buffer of 40m is recommended. In addition, to the freshwater ecosystem themselves, aquatic buffers should be considered 'Moderate' sensitivity and ideally avoided too. The buffers will aid in the protection of sensitive freshwater ecosystems and mitigate against key risk identify by the buffer model.		

l) Environmental impact statement

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

The key findings of the environmental impact assessment entail the following:

Project Proposal Summary

The Applicant applied for a PR (without bulk sampling) for diatomite (SiO_2_nH_2O) / diatomaceous earth / kieselguhr over ±560.118 ha of Farm No 570 (Zaai Plaats) in the Hay Administrative District. Should the PR be issued, the proposed project will comprise of six phases that can be divided into non-invasive- and invasive prospecting (Table 4). The targeting of all drilling activities will be dependent on the results obtained during the preceding (non-invasive) phases of prospecting. Refer to Table 7 for a summary of the Final Project Proposal (regarding alternatives that where considered).

The prospecting activities do not require the use of permanent equipment/infrastructure. A central site camp will be established at an area agreed to by the landowner where mobile containers will be used as office space and for storage. Chemical ablutions will be established, and the site camp will be fenced to control access. All chemicals/hydrocarbons will be kept in the storage containers or bunded areas with impermeable surfaces. Rehabilitation will include continuous reinstatement of prospected areas, and the management of invasive plant species and/or erosion.

Although the Applicant has two pending prospecting right applications for kieselguhr in the Hay (and Kuruman) district (NC 30/5/1/1/2/13826 PR and NC 30/5/1/1/2/14264 PR), the probability of prospecting occurring simultaneously on both application areas is highly unlikely as the two PR applications are at different stages of decision making with the DMRE. It is anticipated that prospecting will most likely commence at NC 30/5/1/1/2/13826 PR (if approved) before the PR application over Farm No 570 (Zaai Plaats) is finalised. Therefore all potential cumulative impacts are of low-medium significance.

Land Use

The land capability of the earmarked area is mainly of Low concern, and the farm is used for grazing. The Applicant will engage the landowner of the

earmarked property regarding a co-existence agreement prior to commencement of invasive prospecting, and no site camp and/or drill site will be sited on sensitive areas. Once rehabilitated, all drill sites will again be available for agricultural use.

Topography

The prospecting activities will not impact the topography of the area as the project does not require bulk sampling. All boreholes will be capped, and the trenches will be refilled after sampling. Should the mitigation measures be implemented, the activity will have no residual impact on the environment.

Visual Characteristics

The area of disturbance is expected to be ±400 m² per drill site that will continuously be rehabilitated as prospecting progresses. The prospecting activities do not require the alteration of vast vegetated areas, and no permanent infrastructure will be erected. Considering this, the potential impact of the prospecting operation on the visual characteristics of the receiving environment is deemed to be of low significance once the mitigation measures are implemented.

Air and Noise Quality

The prospecting activity does not trigger an application in terms of the NEM:AQA, 2004. Emissions to be generated will mainly consist of dust due to drilling and driving on site. Due to the small scale of the operation (per sample site) the noise levels to be generated will be low and will mainly stem from the operation of the prospecting equipment and vehicles traveling on the roads. The dust emissions and/or noise levels that may arise from the proposed prospecting activities, if mitigated by the Applicant, will therefore have a low impact on the receiving environment.

Geology and Soil

The remote sensing study showed that the earmarked farm holds a great kieselguhr potential and invasive prospecting will be confined to the target area/s to be identified during the non-invasive prospecting phase.

Hydrology

According to the Minrom study, the position of the target area on Farm No 570 (Zaai Plaats) does not appear to correspond with any identified watercourse. However, Eco-Pulse recommends that no prospecting occur prior to a second phase investigation that groundtruth the sensitivity of the earmarked area and inform the invasive prospecting programme. The findings of the second phase investigation must be approved, with the sampling plan, by the DMRE prior to commencement.

Groundcover, Fauna, and Biodiversity Conservation

The position of the target area on Farm No 570 (Zaai Plaats) is within an area classified as Low terrestrial sensitivity, and Eco-Pulse supports targeted prospecting activities within such areas. However, it is anticipated that additional fieldwork to refine the ecological sensitivity assessment will be necessary once the area/s where invasive prospecting will occur were selected. The second phase fieldwork will be commissioned by the Applicant once the said areas were identified even though the target area has a Low terrestrial sensitivity.

Cultural and Heritage Environment

The desktop study provided an overview of potential heritage resources that could be affected by the proposed activity. The impact to heritage resources is expected to be low provided that the recommendations of the specialists are adhered to, and SAHRA approval is obtained. Once the sampling sites have been confirmed these areas must be subjected to a heritage walk down, prior to the commencement of invasive prospecting activities. Burial sites, memorials and graves must be avoided with a 30 m buffer zone.

Palaeontology

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The aeolian sands do not preserve fossils but might cover features such as palaeo-pans or palaeo-springs that trap or form fossils but no such feature is visible in the satellite imagery. Since there is an extremely high chance that diatoms will be found and destroyed, and a small chance that trapped or transported fossils occur in

the sands and may be disturbed a Fossil Chance Find Protocol has been proposed by the specialist. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely high. Therefore, samples must be collected and deposited in a recognised repository, such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action was taken.

Site Specific Infrastructure

The prospecting method is such that it can be moved away from build structures and existing infrastructure. Jeep-tracks to some of the areas will be developed in agreement with the landowner, and it is not expected that the proposed activity will impact on or necessitate the removal of existing infrastructure.

ii) Final Site Map

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

As mentioned earlier, the invasive prospecting plan (showing drilling and trenching locations) will be determined based on the outcome of Phases 1, 2, and 4. Presently it is expected that invasive prospecting will be conducted on the target area of the earmarked farm as identified by Minrom.

See Appendix D for a preliminary map showing the area where invasive prospecting is expected. The map will be updated once the drill plan is available and will be submitted to the DMRE for approval when available.

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

POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT PROPOSAL

- If approved the prospecting activities will identify the kieselguhr source/s within the earmarked area.
- Work opportunities for 8 - 10 community members including associated growth development opportunities.
- Compensation of landowners during operational phase.
- Invasive prospecting does not require bulk sampling.
- Upgrading of access roads during invasive prospecting.
- Return of the site camp and prospected areas to agricultural use.

- Feasible mineral resources could lead to economic development of the earmarked areas.

The following table shows the potential negative impacts associated with the proposed activity that were deemed to have a Low-Medium or higher significance/risk:

Table 28: List of potential impacts deemed to have a low-medium or higher significance/risk.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION	SIGNIFICANCE (AFTER MITIGATION)
➢ Site establishment ➢ Operational phase	➢ Temporary loss of agricultural land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	➢ Low-Medium ➢ Medium	➢ Low-Medium ➢ Low-Medium
➢ Operational phase.	➢ Potential impact on palaeontological aspects.	➢ High	➢ High
➢ Cumulative impacts.	➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR). ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR). ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	➢ Medium ➢ Medium ➢ Medium	➢ Low-Medium ➢ Low-Medium ➢ Low-Medium

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

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

Table 29: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
TOPOGRAPHY Landscaping of Prospecting Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Implement progressive rehabilitation as prescribed in this report throughout the operational- and decommissioning phases of the project.	➢ Effectively restoring the prospected areas to prevent residual impacts and allow for the proposed agricultural end-use.
VISUAL CHARACTERISTICS Mitigating the visual impact.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Contain prospecting to the approved boundaries. ➢ Ensure the camp site and every borehole site has a neat appearance and is always kept in good condition. ➢ Limit vegetation removal and avoid the removal of large trees (>20 cm stem) or vegetation of significance (identified by ECO). ➢ Store prospecting equipment neatly in a dedicated area when not in use. ➢ Implement concurrent rehabilitation as prospecting progress to limit the visual impact on the aesthetic value of the area. ➢ Only strip topsoil immediately prior to the use of a specific area.	➢ Minimise the impact of the proposed project on the visual characteristics of the receiving environment during the operational phase, and ensure no residual impact remains after closure.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Rehabilitate all sites to keep the visual impact on the aesthetic value of the area to a minimum.	
AIR QUALITY AND NOISE AMBIANCE Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ➢ Ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression. ➢ Limit speed on the access roads to 40 km/h to prevent the generation of excess dust. ➢ Minimise areas devoid of vegetation. ➢ Consider weather conditions upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ➢ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ➢ Implement best practice measures during the stripping of topsoil to minimize potential dust impacts.	➢ Dust prevention measures are applied to minimise the generation of dust.
AIR QUALITY AND NOISE AMBIANCE Noise mitigation.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	➢ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ➢ No loud music may be permitted at the site camp and/or prospecting areas. ➢ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy	➢ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	condition in terms of the National Road Traffic Act, 1996. ➢ Implement best practice measures to minimise potential noise impacts.	
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Strip and stockpile the upper 300 mm of the soil before site camp establishment and/or prospecting. ➢ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ➢ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ➢ Place the topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. ➢ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establish plants (weeds or a cover crop) on the stockpiles to prevent erosion. ➢ Ensure that topsoil heaps do not exceed 2 m. ➢ Keep temporary topsoil stockpiles free of invasive plant species. ➢ Divert storm- and runoff water around the stockpile area to prevent erosion. ➢ Spread the topsoil evenly, to a depth of 300 m, over the rehabilitated area upon closure of the site. ➢ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as	➢ Adequate fertile topsoil is available to rehabilitate the prospected areas.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ➢ Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ➢ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY Mitigating the potential impact on the Upstream River FEPA.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Arrange additional fieldwork by a qualified hydrologist at the selected prospecting sites to refine ecological sensitivity and keep prospecting from impacting watercourses/pans/wetlands. ➢ Submit the findings of the hydrologist, with the drill plan, to the DMRE for approval prior to commencement. ➢ Do not allow any activities without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse or estuary or within a 500 m radius from a delineated boundary of any wetland or pan. ➢ Should a water use authorisation be applicable, always adhere to the conditions thereof. ➢ Upon closure, remove all prospecting related equipment/machinery from the footprint.	➢ Prospecting activities have no impact on the watercourses/wetlands and/or FEPA's of the area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
HYDROLOGY Erosion Mitigation / Storm Water Control.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Maintain an aquatic impact buffer of 40 m around all watercourses (where applicable). ➢ Divert storm water around the topsoil heaps, prospecting areas, roads and/or tracks to prevent erosion. ➢ Control drainage to ensure that runoff from the prospecting area does not culminate in off-site pollution, flooding or result in damage to storm water discharge points. ➢ Keep clean water clean, and route it to a natural watercourse by a system separate from the dirty water system (if applicable). ➢ Collect dirty water and contain it in a system separate from the clean water system. ➢ Prevent dirty water from spilling or seeping into clean water systems.	➢ Impact to the environment caused by storm water discharge is avoided and erosion is managed.
GROUNDCOVER, FAUNA, AND BIODIVERSITY Impacts on floral species, and fragmentation of vegetation communities.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Arrange additional fieldwork by a qualified ecologist at the selected prospecting site/s to refine ecological sensitivity and keep prospecting from sensitive areas/plants. ➢ Submit the findings of the ecologist, with the drill plan, to the DMRE for approval prior to commencement. ➢ Clearly demarcate the prospecting boundaries and contain all operations to the approved area. ➢ Declare the area outside the boundaries a no-go area and educate all employees accordingly.	➢ Vegetation clearing is restricted to the authorised development footprint.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Implement an invasive plant species management plan to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas. ➢ Should an application for the removal of protected plant species, and/or indigenous plants (1) on large-scale, (2) or on small scale within 100 meters of a river or a public road, be applicable: submit a thorough walk-through report to the relevant competent authorities (DAERL) prior to commencing any earthworks. Ensure that this report comprehensively assess, and list species based on their protection statuses according to the NCNCA, NEMBA: ToPS, and the NFA. It must also include the IUCN Red List status, endemism, and estimate the quantities of each impacted protected species. If possible, conduct the walk-through assessment be during the appropriate season for the area to ensure accurate observation of species presence and habitat conditions, thereby maximizing the effectiveness of the assessment in capturing the full ecological picture.	
GROUNDCOVER, FAUNA, AND BIODIVERSITY Management of Invasive Plant Species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Implement an invasive plant species management plan at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA, 2004. Do weed/alien removal on an ongoing basis throughout the life of the prospecting activities. ➢ Keep all stockpiles free of invasive plant species.	➢ Prospecting areas are kept free of invasive plant species.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Control declared invader or exotic species on the rehabilitated areas.	
GROUNDCOVER, FAUNA, AND BIODIVERSITY Impact on faunal species, and fragmentation of ecosystems affecting safe movement of species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Ensure no fauna is caught, killed, harmed, sold, or played with. ➢ Instruct workers to report any animals that may be trapped in the working area. ➢ Ensure no snares are set or nests raided for eggs or young. ➢ Do not allow pets on site.	➢ Disturbance to fauna is minimised.
CULTURE AND HERITAGE ENVIRONMENT Archaeological, Heritage and Palaeontological Aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Arrange a heritage walk down once the drill sites have been confirmed prior to the commencement of invasive prospecting activities. ➢ Keep drill sites as close as possible to existing roads to minimise the impact on the landscape. ➢ Avoid focal points on the landscape like rocky outcrops, caves, or pans as far as possible as these areas could be sensitive from a heritage point of view. ➢ Avoid burial sites, memorials, and graves with a 30 m buffer zone. ➢ Conduct further palaeontological studies once the impact areas are confirmed. ➢ Collect and deposit samples of diatomite from each farm at a recognised repository such as the McGregor Museum in Kimberley, or a palaeontological research institute, and notify SAHRA of what action was taken.	➢ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Arrange monitoring of the project area by the ECO during the exploration phase for heritage chance finds, and if chance finds are encountered to implement the Chance Find Procedure for the project. ➢ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ➢ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ➢ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA. ➢ Work may only continue once the go-ahead was issued by SAHRA. ➢ Maintain a 50 m buffer around identified heritage sites.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
SOCIO-ECONOMIC ENVIRONMENT / LAND USE Loss of agricultural land for duration of invasive prospecting.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ If needed, sign prospected/rehabilitated areas back to agricultural use once the cover crop stabilised.	➢ Prospecting has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Access Road Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Divert storm water around the access road to prevent erosion. ➢ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ➢ Repair rutting and erosion of the access road caused as a direct result of the prospecting activities. ➢ Prior to commencement, sign an agreement confirming responsibility towards the movement of employees. ➢ Repair/reinstate damages to fences (by prospecting employees). Compensate losses, due to gates left open by prospecting employees.	➢ The access road remains accessible to the landowner during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the right holder.
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Ensure vehicle maintenance, repairs and services only take place at the workshop and service area in the site camp. If emergency repairs are needed on equipment not able to move to the workshop, use drip trays. Dispose all waste products removed from the emergency service area (same day) in a closed	➢ Wastes are appropriately handled and safely disposed of at a recognised waste facility.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		container/bin at the workshop to ensure proper disposal. ➢ Provide ablution facilities to all employees. Place the toilet outside the 1:100 year floodline of all watercourses. ➢ Ensure that the ablution facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage. Address any pollution problems arising from the above immediately. ➢ Equip the diesel bowser (if used on site) with a drip tray. Use the drip trays during every refuelling event. Ensure that the nozzle of the bowser rest in a sleeve to prevent dripping after refuelling. ➢ Clean drip trays after each use. Do not use dirty drip trays on site. ➢ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. ➢ Should spillages occur, such as oil or diesel leaking from a burst pipe, collect the contaminated soil within the first hour of occurrence in a suitable receptacle and removed it to the hazardous waste storage area of the workshop, either for resale or for appropriate disposal at a recognized facility. File proof. ➢ Contain general waste in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a registered general waste landfill site.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Do not bury or burn waste on the site. ➢ Report any significant spillage of chemicals, fuels etc. during the lifespan of the prospecting activities to the Department of Water and Sanitation and other relevant authorities.	
GENERAL Management of Health and Safety Risks.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Ensure there is adequate ablution facilities and water for human consumption available on site. ➢ Provide workers with the correct personal protection equipment (PPE) as required by law. ➢ Ensure all operations comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ➢ Daily cover drill-holes even if prospecting will continue the following day. Upon closure, seal and cap all boreholes as prescribed in the rehabilitation plan.	➢ The prospecting activities do not pose a health and safety risk to employees, land users and/or animals.
GENERAL Management of Safety Risks to Landowners.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Screen employees to be appointed prior to inception of contract. ➢ Do not allow employees to reside within the prospecting area. ➢ Educate prospecting employees to report suspicious looking person/s and/or matters to site management. ➢ Maintain direct communication between the prospector and the landowner for the duration of the site establishment-, operational, and decommissioning phases. ➢ Do not enter negotiations with farm employees. ➢ Restrict prospecting to normal business hours unless otherwise authorised by the landowner.	➢ The prospecting activities do not cause a safety risk to landowners.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Ban alcohol and/or prohibited drugs from site. ➢ Maintain attendance registers, and pre-register all prospecting vehicles/machinery with the landowner/security. ➢ Do not allow firearms on site.	
GENERAL Fire Risk Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	➢ Do not permit open fires on any of the sampling sites. Restrict contained fires for heating and cooking (i.e. in a fire drum) to designated areas at the site camp, ➢ Prevent employees from setting fires randomly outside designated areas. ➢ Do not store fuel or chemicals under trees. ➢ Do not store gas in the same storage area as liquid fuel. ➢ Designate smoking to specific areas (>3 m from fuel or chemical storage areas) equipped with sand buckets for the disposal of cigarette buds. ➢ Ensure Work Site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site. ➢ Implement specific fire safety precautions during welding activities associated with construction work. Ensure a working fire extinguisher is immediately at hand if any "HOT WORK" is undertaken e.g. welding, grinding, gas cutting etc, ➢ Report any fires noted on site to the responsible SHE rep and/or fire officer.	➢ Prospecting activities do not result in uncontrolled fires.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		➢ Implement fire emergency procedures for the duration of the site establishment-, operational-, and decommissioning phases. ➢ In the event of large fires ensure that all personnel assemble at a safe assembly point to be transported from site. Inform the fire department or local fire watch of the fire to ensure that the fire is brought under control as soon as possible.	

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* above should be considered for inclusion in the environmental authorisation.

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

(Which relate to the assessment and mitigation measures proposed)

The author acknowledges that the review is not exhaustive as the entire study area wasn't accessible and could not be subjected to a field survey at this stage in the environmental process. It is recommended that this will be done when the actual exploration localities are fixed. It is assumed that information obtained for the wider area is applicable to the study area. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

The maps developed and presented are preliminary in nature and of moderate confidence overall. It is based on rapid field verification efforts and will need to be refined and updated when prospecting sites are selected. The maps should be used for planning purposes. Higher resolution and more focused delineation will need to be undertaken at selected pits sites.

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

i) Reasons why the activity should be authorised or not.

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorisation.

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* should be considered for inclusion in the environmental authorisation.

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for the duration of the prospecting right.

r) Undertaking

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

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.

s) Financial Provision

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

i) Explain how the aforesaid amount was derived.

The average annual amount required to manage and rehabilitate the environment was estimated to be ±R 141 048. The table below shows the proposed cost regarding site rehabilitation of the applicable phases of invasive prospecting.

Table 30: Proposed annual rehabilitation cost.

PHASE	YEAR	COST
Phase 3 (12-36 months)	2	R 36 000
Phase 3 (12-36 months)	3	R 36 000
Phase 5 (36-54 months)	5	R 69 048
Average annual rehabilitation cost		R 141 048

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

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

The funding for the proposed prospecting operation will be furnished by K2022641005 (South Africa) (Pty) Ltd underwritten by Scipion Capital. The Applicant secured sufficient funds that can be leveraged to fund the prospecting operation (as presented in the PWP).

t) Specific Information required by the competent Authority.

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

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

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix)

Socio-Economic Implications of the Project

As mentioned earlier, the project proposes the employment of 8 to 10 people from the nearby communities. The intended positions will mostly have lenient prerequisites that will be accessible to unskilled/semi-skilled candidates. Apart from renumeration, workplace training will better the employee's skillset. If the multiplier effect of one employee supporting an average of four (4) people is applied, this project (when fully operational) could improve the livelihood of ±40 community members.

The Applicant will not enter negotiations with the employees of the earmarked farm and therefore the commencement of the project will generate additional positions in areas where the unemployment rate is 28.2% (SLM). A PR could be valid for a maximum period of five years. Considering this, although the employment opportunities will be temporarily in nature, the takeaway skillset to be obtained during the service period will equip employees permanently.

This project entails the prospecting of specific target area/s on the earmarked farm. Considering this, the project do not oppose the current land uses of the property but rather supplement it by diversifying the land use that directly impacts the revenue yield as the landowner will be compensated for the use of the land.

Further thereto, should prospecting yield feasible results it may grow the kieselguhr market that should then be capable of generating long term employment and local economic development opportunities.

In summary, the following potential impacts were identified that may have an impact on the socio-economic conditions of the directly affected persons.

- **Temporary loss of agricultural land earmarked for invasive prospecting** *(Low-Medium Significance after Mitigation)*

  According to the DFFE screening report the land capability of Farm No 570 (Zaai Plaats) is mainly of Low concern. The farm is mainly used for grazing. As mentioned earlier, the Applicant will engage the landowner of the earmarked property regarding a co-existence agreement during the planning stage prior to the commencement of invasive prospecting. No site camp and/or invasive prospecting will be sited on sensitive areas.

- **Visual intrusion associated with the prospecting activities** *(Low Significance after Mitigation)*

  The study area is scarcely populated, and as mentioned earlier, the area of disturbance is expected to be ±400 m² per drill site that will continuously be rehabilitated as prospecting progresses. The prospecting activities do not require the alteration of vast vegetated areas, and no permanent infrastructure will be erected. Considering this, the potential impact of the prospecting operation on the visual characteristics of the receiving environment is deemed to be of low-medium significance without mitigation and low significance once the mitigation measures are implemented.

- **Dust nuisance caused because of the prospecting activities** *(Low Significance after Mitigation)*

  The prospecting activity will contribute the emissions of the prospecting equipment and vehicles for the duration of the invasive operational phase. Dust generated as result of the prospecting will also stem from the movement of these vehicles. Should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

- **Noise nuisance because of prospecting activities** *(Low Significance after Mitigation)*

  The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the vehicles/machinery already operating in the area. The distance of the

prospecting area from residential infrastructure further lessens the potential noise impact.

- **Prospecting affecting watercourses or aggravating the scarcity of water** *(Low Significance after Mitigation)*

  The prospecting activity requires ±1 000 l of water/day for dust suppression purposes that will be bought in a controlled manner from legal sources. No prospecting will take place in drainage lines or other water resources without the necessary authorisation from the DWS (if applicable). Considering this, the potential of prospecting impact the water resources of the footprint area is deemed very low.

- **Access control and management of existing infrastructure** *(Low Significance after Mitigation)*

  The drilling campaign will be headed by a drill contractor. Site management will always be responsible for the movement of their employees. No prospecting personnel will be allowed to wander outside the approved footprint. The contractor will sign an agreement to this affect upon appointment and will be held responsible for damages to fences or gates left ajar by prospecting personnel.

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

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

The specialists did not identify the presence of national estate as referred to in Section 3(2) of the NHRA, 1999 within the earmarked footprint of the study area. However, samples of the diatoms (diatomaceous earth) must be collected and deposited in a recognised repository, such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action has been taken.

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

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

The alternatives associated with the proposed activity, investigated during the impact assessment process, were done at the hand of information obtained during the site investigation, public participation process, specialist studies as well as desktop studies conducted of the study area. Refer to Part A(1)(h)(x) *Statement motivating the alternative development location within the overall site*.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Ms C Fouché of Greenmined Environmental (Pty) Ltd that acts as EAP on this project has been included in *Part A(1)(a) Details of Greenmined Environmental* as well as Appendix J as required.

b) Description of the Aspects of the Activity

(Confirm that the requirements 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 aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h) *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*.

c) Composite Map

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

As mentioned under Part A(1)(l)(ii) *Final Site Map* the map showing the area/s where invasive prospecting is expected is attached as Appendix D. This maps will be updated once the drill plan is available and will be submitted to the DMRE for approval when available.

d) Description of impact management objectives including management statements

i) Determination of closure objectives.

(Ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

The primary objective, once invasive prospecting concludes, is to obtain a closure certificate in as short a time as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all infrastructure and waste from the site camp as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources and Energy.
- Make all boreholes safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

As mentioned earlier, rehabilitation will include activities that can be divided into medium- and long term categories. In the medium term, rehabilitation will entail the continuous reinstatement of prospected areas, and the management of invasive plant species and/or erosion. In the long term, rehabilitation will involve the reinstatement of the remaining disturbed areas (not yet reinstated), prior to the submission of a closure application to the DMRE. The Applicant will further be responsible for the seeding of all rehabilitated areas should vegetation not establish through succession within the first six months.

The decommissioning activities will consist of the following:

- Removal of all prospecting equipment from the borehole sites;
- Sealing and capping of all the boreholes;
- Removal of all prospecting related infrastructure/containers from the site camp; and
- Landscaping of any/all compacted areas.

The following procedure is proposed regarding the rehabilitation of the boreholes and trenches:

BOREHOLE REHABILITATION PROCEDURE

Borehole Inspection

- Visual Inspection: Check the borehole for signs of contamination, instability, or other issues.
- Log Data: Document the condition and depth of the borehole.

Decommissioning the Borehole

- Seal the Borehole: Depending on regulations, use a suitable sealing method. This may include:

- Cement Grouting: Filling the borehole with cement or a similar material.
- Clay Sealing: Using clay to prevent water migration.
- Remove Equipment: Safely remove any casing, tubing, or other equipment from the borehole area.

Site Restoration

- Backfill and Grading: Fill the area around the borehole and grade it to blend with the surrounding landscape.
- Revegetation: If necessary, plant indigenous vegetation to restore the ecosystem.

Monitoring

- Post-Rehabilitation Monitoring: Conduct follow-up assessments to ensure that the rehabilitation measures are effective.

Documentation

- Record Keeping: Maintain detailed records of the rehabilitation process, including methods used, materials, and any follow-up monitoring results.

Reporting

- Submit Reports: Provide necessary documentation and reports to relevant authorities as required by regulations.

EXPLORATION TRENCHING REHABILITATION PROCEDURE

Safety Measures

- Hazard Identification: Identify any potential hazards (e.g., unstable ground, equipment).
- Personal Protective Equipment (PPE): Ensure that all personnel wear appropriate PPE.
- Secure: Trenching Area will be demarcated and secured by protective barricades to ensure no unauthorized personnel or animals can enter the excavation area.

Trench Inspection

- Visual Assessment: Inspect trenches for erosion, contamination, or instability.
- Document Conditions: Record findings, including depth, width, and any observed issues.

Filling the Trenches

- Backfill Material: Use suitable backfill material, such as topsoil and native soil, to refill the trenches.
- Compaction: Compact the backfill to minimize settling and prevent future erosion.

Surface Restoration

- Grading: Grade the area to ensure proper drainage and to blend with the surrounding landscape.
- Erosion Control: Implement erosion control measures (e.g., silt fences, sediment traps) if needed.

Revegetation

- Seed Selection: Use indigenous vegetation or appropriate seed mixes to promote natural regeneration.
- Planting: Consider planting seedlings or vegetation in areas where erosion risk is higher.

Monitoring and Maintenance

- Post-Rehabilitation Monitoring: Regularly check the site for signs of erosion or vegetation failure.
- Maintenance: Conduct necessary maintenance, such as reseeding or reinforcing erosion controls.

Documentation and Reporting

- Record Keeping: Document all rehabilitation activities, including methods, materials used, and monitoring results.
- Final Report: Prepare a report summarizing the rehabilitation process for submission to regulatory bodies if required.

The Applicant will comply with the minimum closure objectives as prescribed DMRE and detailed below.

Rehabilitation of Site Camp Area:

- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

- Photographs, before and during the operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.
- On completion of operations, the surface of these areas, if compacted, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final Rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the invasive prospecting period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the prospecting area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the prospecting activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).

Once the prospecting area was rehabilitated the Applicant is required to submit a closure application to the Department of Mineral Resources and Energy in accordance

with section 43(4) of the MPRDA, 2002 that states: "*An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report*". The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

ii) Volume and rate of water use required for the operation.

The drilling operation does not require water; however it is proposed that ±1 000 l of water will be needed per day for dust suppression purposes. Potable water will daily be brought to site by the employees.

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

The Applicant proposes that sampling will remain >100 m from all active water sources. This will be groundtruthed and confirmed by a hydrologist prior to commencement.

However, once the invasive prospecting plan was finalised and should an application in terms of Section 39 of the NWA, 1998 for water uses as defined in section 21 of the Act be needed, the Applicant will enter discussions with the DWS to determine the relevant requirements.

iv) Impacts to be mitigated in their respective phases.

Table 31: Impact to be mitigated in their respective phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations 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 period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	Site Establishment- & Operational Phase	Site Camp: ±0.5 ha Drilling: 400 m^2 per borehole site	**Loss of Agricultural Land for Duration of Prospecting:** ➢ If needed, areas that has been prospected and rehabilitated can be signed back to the landowner to revert to agricultural use once the cover crop stabilised.	Use of agricultural land must be managed in accordance with the: ➢ CARA, 1983	Throughout the site establishment-, and operational phase.
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment	Site Establishment- & Operational Phase	Site Camp: ±0.5 ha Drilling: 400 m^2 per borehole site	**Visual Mitigation** ➢ Prospecting must be contained to the approved boundaries. ➢ The camp site and every sampling site must have a neat appearance and always be kept in good condition.	Management of the prospecting area must be in accordance with the: ➢ MPRDA, 2008 ➢ NEMA, 1998	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
➢ Operational Phase			➢ The contractor must limit vegetation removal (where possible) and avoid the removal of large trees (>20 cm stem) or vegetation of significance without prior approval of the ECO. ➢ Prospecting equipment must be stored neatly in a dedicated area when not in use. ➢ Concurrent rehabilitation must be done as prospecting progress to limit the visual impact on the aesthetic value of the area. ➢ Stripping of topsoil may only be done immediately prior to the use of a specific area. ➢ Upon closure all sites must be rehabilitated to keep the visual impact on the aesthetic value of the area to a minimum.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	Operational Phase	Drilling: 400 m² per borehole site	**Management of the impact on floral species, and fragmentation of vegetation communities:** ➢ Once the invasive prospecting programme is available additional fieldwork must be done by a qualified ecologist at the selected prospecting site/s to refine ecological sensitivity and keep prospecting from sensitive areas/plants.	Natural vegetated areas must be managed in accordance with the: ➢ NEM:BA 2004	Throughout the operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ The findings of the ecologist, with the drill plan, must be submitted to the DMRE for approval prior to commencement. ➢ The prospecting boundaries must be clearly demarcated, and all operations must be contained to the approved areas. ➢ The area outside the boundaries must be declared a no-go area, and all employees must be educated accordingly. ➢ An invasive plant species management plan must be implemented on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas. ➢ Should an application for the removal of protected plant species, and/or indigenous plants (1) on large-scale, (2) or on small scale within 100 meters of a river or a public road, be applicable, the EA Holder must submit a thorough walk-through report to the relevant competent authorities (DAERL) prior to commencing any earthworks. This report must comprehensively assess, and list species based on their protection statuses according to the Northern Cape Nature Conservation		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			Act 9 of 2009 (NCNCA), the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA: ToPS), and the National Forest Act 84 of 1998 (NFA). It must also include the IUCN Red List status, endemism, and estimate the quantities of each impacted protected species. Ideally, the walk-through assessment must be conducted during the appropriate season for the area to ensure accurate observation of species presence and habitat conditions, thereby maximizing the effectiveness of the assessment in capturing the full ecological picture.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	Drilling: 400 m² per borehole site	**Management of the impact on the Upstream River FEPA:** ➢ Once the invasive prospecting programme is available additional fieldwork must be done by a qualified hydrologist at the selected prospecting sites to refine ecological sensitivity and keep prospecting from impacting watercourses/pans/wetlands. ➢ The findings of the hydrologist, with the drill plan, must be submitted to the DMRE for approval prior to commencement.	All watercourses/wetlands and FEPA's must be managed in accordance with the: ➢ NWA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ No activities may take place, without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse or estuary or within a 500 m radius from a delineated boundary of any wetland or pan. ➢ Should a water use authorisation be applicable to the project, the Applicant must always adhere to the conditions thereof. ➢ Upon closure, the Applicant must remove all prospecting related equipment/machinery from the footprint.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	<u>Drilling</u>: 400 m² per borehole site	**<u>Fugitive Dust Emission Mitigation:</u>** ➢ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ➢ The site manager must ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression.	Dust generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ National Dust Control Regulations, GN No R827 ➢ ASTM D1739 (SANS 1137:2012)	Throughout the operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust. ➢ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to prospecting. ➢ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ➢ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). ➢ Best practice measures shall be implemented during the stripping of topsoil to minimize potential dust impacts.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	Drilling: 400 m² per borehole site	**Noise Handling:** ➢ The Applicant must ensure that the employees and visitors to the site conduct themselves in an acceptable manner while on site. ➢ No loud music may be permitted at the site camp and/or prospecting areas.	Noise generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ NRTA, 1996	Throughout the operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ All vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). ➢ Best practice measures shall be implemented to minimize potential noise impacts.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impact	Operational Phase	Drilling: 400 m² per borehole site	**Protection of Fauna:** ➢ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with. ➢ Workers must be instructed to report any animals that may be trapped in the working area. ➢ No snares may be set, or nests raided for eggs or young. ➢ No pets allowed on site.	Fauna must be managed in accordance with the: ➢ NEM:BA 2004	Throughout the and operational phase.
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	Operational and Decommissioning Phase	Drilling: 400 m² per borehole site	**Management of Invader Plant Species:** ➢ An invasive plant species management plan must be implemented on site to control weeds and invasive plants on denuded- and reinstated areas in terms of the NEM:BA, 2004 and CARA, 1983. ➢ Management must take responsibility to control declared invader or exotic species that germinate on rehabilitated	Invader plants must be managed in accordance with the: ➢ CARA, 1983 ➢ NEM:BA 2004	Throughout the operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			areas. The following control methods can be used: > The plants can be uprooted, felled, or cut off and can be destroyed completely. > The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	Operational and Decommissioning Phase	Drilling: 400 m² per borehole site	**Waste Management:** ➢ Vehicle maintenance, repairs and services may only take place at the workshop and service area in the site camp. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. ➢ Ablution facilities must be provided to all employees. The toilet must be placed outside the 1:100 year floodline of all watercourses.	Prospecting related waste must be managed in accordance with the: ➢ NWA, 1998 ➢ NEM:WA, 2008 ➢ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ➢ NEMA, 1998 (Section 30)	Throughout the site establishment-, operational- and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ The ablution facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage. Any pollution problems arising from the above are to be addressed immediately by the Applicant. ➢ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ➢ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. ➢ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. ➢ Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed to the hazardous waste storage area of the workshop, either for resale or for		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			appropriate disposal at a recognized facility. Proof must be filed. ➢ General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a registered general waste landfill site. ➢ No waste may be buried or burned on the site. ➢ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the prospecting activities is reported to the Department of Water and Sanitation and other relevant authorities.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	Drilling: 400 m² per borehole site	**Archaeological, Heritage and Palaeontological Aspects:** ➢ Once the drill sites have been confirmed these areas have to be subjected to a heritage walk down, this should be conducted prior to the commencement of invasive prospecting activities. ➢ Drill sites must be kept as close as possible to existing roads to minimise the impact on the landscape. ➢ Focal points on the landscape like rocky outcrops, caves, or pans must be avoided as far as possible as these	Cultural/heritage aspects must be managed in accordance with the: ➢ NHRA, 1999	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			areas could be sensitive from a heritage point of view. ➢ Burial sites, memorials and graves must be avoided with a 30 m buffer zone; ➢ Further palaeontological studies should be conducted once the impact areas are confirmed. ➢ Samples of diatomite must be collected and deposited at a recognised repository such as the McGregor Museum in Kimberley, or a palaeontological research institute, and SAHRA must be notified of what action has been taken. ➢ Monitoring of the project area by the ECO during the exploration phase for heritage chance finds, and if chance finds are encountered to implement the Chance Find Procedure for the project. ➢ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			supervisor to the senior on-site manager. ➢ It is the responsibility of the senior on-site manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ➢ The senior on-site manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA. ➢ Work may only continue once the go-ahead was issued by SAHRA. ➢ A 50 m buffer must be applied to all identified heritage sites.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	Operational Phase	Drilling: 400 m² per borehole site	**Erosion Control and Storm Water Management:** ➢ An aquatic impact buffer of 40 m must be maintained around all watercourses (where applicable). ➢ Storm water must be diverted around the topsoil heaps, prospecting areas, roads and/or tracks to prevent erosion. ➢ Drainage must be controlled to ensure that runoff from the prospecting areas do not culminate in off-site pollution,	Storm water must be managed in accordance with the: ➢ CARA, 1983 ➢ NEMA, 1998 ➢ NWA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			flooding or result in any damage to properties downstream or any storm water discharge points. ➢ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system (if applicable). ➢ Dirty water must be collected and contained in a system separate from the clean water system. ➢ Dirty water must be prevented from spilling or seeping into clean water systems.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	Drilling: 400 m² per borehole site	**Access Road and Infrastructure Mitigation:** ➢ Storm water must be diverted around the access road to prevent erosion. ➢ Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited. ➢ Rutting and erosion of the access road caused as a direct result of the prospecting activities must be repaired by the Applicant. ➢ Prior to commencement, all contractors must sign an agreement confirming their responsibility towards the movement of their employees.	The site infrastructure must be managed in accordance with the: ➢ NRTA, 1996 ➢ MPRDA, 2002	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Damages to fences (by prospecting employees) must be repaired/reinstated by the responsible contractor. Losses, due to gates left open by prospecting employees, must be compensated by the responsible entity.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational and Decommissioning Phase	N/A	**Management of Health and Safety Risks:** ➢ Adequate ablution facilities and water for human consumption must daily be available on site. ➢ Worker(s) must have access to the correct personal protection equipment (PPE) as required by law. ➢ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ➢ Drill-holes must daily be covered even if prospecting will continue the following day. Upon closure all boreholes must be sealed off and capped as prescribed in the rehabilitation plan.	Health and safety aspects must be managed in accordance with the: ➢ MHSA, 1996 ➢ OHSA, 1993 ➢ OHSAS, 18001	Throughout the operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	N/A	**Management of safety and security risk posed by prospecting activities to residents:** ➢ Employees to be appointed must be vetted prior to inception of contract. ➢ No employees may be allowed to reside within the prospecting area. ➢ Prospecting employees must be educated to report suspicious looking person/s and/or matters to site management. ➢ Direct communication between the prospector and the landowner must be maintained for the duration of the site establishment-, operational, and decommissioning phases. ➢ The prospecting contractor may not enter negotiations with farm employees. ➢ Prospecting may only take place during normal business hours and unless otherwise authorised by the landowner. ➢ No alcohol of prohibited drugs may be allowed on site. ➢ Attendance registers must be maintained, and all prospecting vehicles/machinery must be pre-registered with the landowner/security.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ No firearms will be allowed on site.		
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	Operational Phase	Drilling: 400 m² per borehole site	**Fire Risk Management:** ➢ No open fires are permitted on any of the sampling sites. Contained fires for heating and cooking (i.e. in a fire drum) but be restricted to designated areas at the site camp, ➢ Employees must be prevented from setting fires randomly outside designated areas. ➢ No fuel or chemicals may be stored under trees. ➢ Gas may not be stored in the same storage area as liquid fuel. ➢ Smoking may only occur at designated areas (>3 m from fuel or chemical storage areas) equipped with sand buckets for the disposal of cigarette buds. ➢ Ensure Work Site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Specific fire safety precautions must be implemented during welding activities associated with construction work. Ensure a working fire extinguisher is immediately at hand if any "HOT WORK" is undertaken e.g. welding, grinding, gas cutting etc, ➢ Any fires noted on site must be reported to the responsible SHE rep and/or fire officer. ➢ The site must implement fire emergency procedures for the duration of the site establishment-, operational-, and decommissioning phases. ➢ In the event of large fires all personnel must assemble at a safe assembly point to be transported from site. The fire department or local fire watch must be informed of the fire to ensure that the fire is brought under control as soon as possible.		

e) Impact Management Outcomes

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

Table 32: Impact Management Outcomes

ACTIVITY 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...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (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...etc..) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	➢ Temporary loss of agricutlral land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	The impact may affect the agricultural operations of the property.	Site Establishment- & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon rehabilitation of the site camp and/or prospected areas. The impact can be controlled through progressive rehabilitation.	Use of agricultural land must be managed in accordance with the: ➢ CARA, 1983
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	➢ Visual intrusion because of site camp.	The visual impact may affect the aesthetics of the landscape.	Site Establishment- & Operational Phase	<u>Control:</u> Implementing proper housekeeping.	Management of the prospecting area must be in accordance with the: ➢ MPRDA, 2008 ➢ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	➢ Visual intrusion because of invasive prospecting.				
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on sensitive/protected flora within the footprint area.	Impact may affect the biodiversity richness of the area.	Operational Phase	Control: Implementing the proposed mitigation measures and preventing blanket clearing of vegetation.	Natural vegetated areas must be managed in accordance with the: ➢ NEM:BA 2004
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential negative impact on the Upstream River FEPA of the study area. ➢ Increase in sediment inputs and turbidity due to invasive prospecting. ➢ Increase in toxic heavy metal contaminants.	Impact may affect water resources in a water scarce area.	Operational Phase	Control & Stop: Implementing the proposed mitigation measures.	All watercourses/wetlands and FEPA's must be managed in accordance with the: ➢ NWA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Dust nuisance because of invasive prospecting. ➢ Potential cumulative dust nuisance should invasive prospecting activities	Increased dust generation will impact on the air quality of the receiving environment.	Operational Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ National Dust Control Regulations, GN No R827 ➢ ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).				
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Noise nuisance because of invasive prospecting. ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Operational Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ NRTA, 1996
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impact	➢ Potential impact on fauna within the footprint area. ➢ Fragmentation of ecosystems affecting	This will impact on the biodiversity of the receiving environment.	Operational Phase	<u>Control & Stop:</u> Implementing good management practices.	Fauna must be managed in accordance with the: ➢ NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	safe movement of faunal species.				
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Infestation of the prospecting ara with invader plant species. ➢ Infestation of the reinstated areas with invader plant species.	This will impact on the biodiversity of the receiving environment.	Operational Phase	Control: Implementing invader plant control measures.	Invader plants must be managed in accordance with the: ➢ CARA, 1983 ➢ NEM:BA 2004
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Potential soil contamination associated with littering and/or hydrocarbon spillages. ➢ Potential impact assocaited with litter/hydrocarbon spills left in the prospected areas.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the Applicant.	Operational- and Decommissioning Phase	Control & Remedy: Proper housekeeping and implementation of an emergency response plan.	Prospecting related waste must be managed in accordance with the: ➢ NWA, 1998 ➢ NEM:WA, 2008 ➢ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ➢ NEMA, 1998 (Section 30)
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on area/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must be managed in accordance with the: ➢ NHRA, 1999

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Erosion of denuded areas. ➢ Erosion of roads, vehicle tracks and/or denuded areas.	Erosion of prospected areas will affect the rehabilitation requirements and incur additional cost to the Applicant.	Operational- & Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Storm water must be managed in accordance with the: ➢ CARA, 1983 ➢ NEMA, 1998 ➢ NWA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Deterioration of the access roads due to prospecting activities. ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	Collapse of the road infrastructure will affect the landowners.	Operational Phase	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to prospecting.	The site infrastructure must be managed in accordance with the: ➢ NRTA, 1996 ➢ MPRDA, 2002
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Health and safety risk posed by invasive activities to prospecting employees.	The safety of the employees will be affected.	Operational Phase	Control, Stop & Remedy: Prospecting according to the health and safety regulations of the country and rectifying any shortcomings.	Health and safety aspects must be managed in accordance with the: ➢ MHSA, 1996 ➢ OHSA, 1993

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
					➢ OHSAS, 18001
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Presence of prospector negatively affecting safety and security of the property. ➢ Safety risk due to uncapped boreholes.	The impact may affect the security of the area. Uncapped boreholes will pose a safety risk to the animals and humans of the area	Operational Phase	Control, Stop & Remedy: Implementing proper human resources practices, and progressive rehabilitation. Closing boreholes at the end of each day.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998
Invasive Prospecting (Phase 3 & 5): Operational Phase	➢ Increased fire risk during operational phase.	Uncontrolled fires may affect the biodiversity and agricultural practices of the area.	Operational Phase	Control: Implementing good housekeeping and emergency risk procedures.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998

f) Impact Management Actions

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

Table 33: Impact Management Actions

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...etc..etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...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... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting 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)
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment Operational Phase	➢ Temporary loss of agricutlral land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon rehabilitation of the site camp and/or prospected areas. The impact can be controlled through progressive rehabilitation.	Throughout the site establishment- and operational phase.	Use of agricultural land must be managed in accordance with the: ➢ CARA, 1983

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	➢ Visual intrusion because of site camp. ➢ Visual intrusion because of invasive prospecting.	Control: Implementing proper housekeeping.	Throughout the site establishment- and operational phase.	Management of the prospecting area must be in accordance with the: ➢ MPRDA, 2008 ➢ NEMA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on sensitive/protected flora within the footprint area.	Control: Implementing the proposed mitigation measures and preventing blanket clearing of vegetation.	Throughout the operational phase.	Natural vegetated areas must be managed in accordance with the: ➢ NEM:BA 2004
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential negative impact on the Upstream River FEPA of the study area. ➢ Increase in sediment inputs and turbidity due to invasive prospecting. ➢ Increase in toxic heavy metal contaminants.	Control & Stop: Implementing the proposed mitigation measures.	Throughout the operational, phase.	All watercourses/wetlands and FEPA's must be managed in accordance with the: ➢ NWA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Dust nuisance because of invasive prospecting. ➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm	Control: Dust suppression methods and proper housekeeping.	Throughout the operational phase.	Dust generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ National Dust Control Regulations, GN No R827

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).			➢ ASTM D1739 (SANS 1137:2012)
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Noise nuisance because of invasive prospecting. ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	Control: Noise suppression methods and proper housekeeping.	Throughout the operational phase.	Noise generation must be managed in accordance with the: ➢ NEM:AQA. 2004 Regulation 6(1) ➢ NRTA, 1996
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impact	➢ Potential impact on fauna within the footprint area. ➢ Fragmentation of ecosystems affecting safe movement of faunal species.	Control & Stop: Implementing good management practices.	Throughout the operational phase.	Fauna must be managed in accordance with the: ➢ NEM:BA 2004
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Infestation of the prospecting ara with invader plant species. ➢ Infestation of the reinstated areas with invader plant species.	Control: Implementing invader plant control measures.	Throughout the operational and decommissioning phase.	Invader plants must be managed in accordance with the: ➢ CARA, 1983 ➢ NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Potential soil contamination associated with littering and/or hydrocarbon spillages. ➢ Potential impact assocaited with litter/hydrocarbon spills left in the prospected areas.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan.	Throughout the operational and decommissioning phase.	Prospecting related waste must be managed in accordance with the: ➢ NWA, 1998 ➢ NEM:WA, 2008 ➢ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) ➢ NEMA, 1998 (Section 30)
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on area/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects.	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Throughout the operational phase.	Cultural/heritage aspects must be managed in accordance with the: ➢ NHRA, 1999
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	➢ Erosion of denuded areas. ➢ Erosion of roads, vehicle tracks and/or denuded areas.	Control & Remedy: Proper housekeeping and storm water management.	Throughout the operational- and decommissioning phase.	Storm water must be managed in accordance with the: ➢ CARA, 1983 ➢ NEMA, 1998 ➢ NWA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	➢ Deterioration of the access roads due to prospecting activities.	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to prospecting.	Throughout the operational phase.	The site infrastructure must be managed in accordance with the: ➢ NRTA, 1996 ➢ MPRDA, 2002

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).			
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Health and safety risk posed by invasive activities to prospecting employees.	Control, Stop & Remedy: Prospecting according to the health and safety regulations of the country and rectifying any shortcomings.	Throughout the operational phase.	Health and safety aspects must be managed in accordance with the: ➢ MHSA, 1996 ➢ OHSA, 1993 ➢ OHSAS, 18001
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Presence of prospector negatively affecting safety and security of the property. ➢ Safety risk due to uncapped boreholes.	Control, Stop & Remedy: Implementing proper human resources practices, and progressive rehabilition. Closing boreholes at the end of each day.	Throughout the operational phase.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Increased fire risk during operational phase.	Control: Implementing good housekeeping and emergency risk procedures.	Throughout the operational phase.	All prospecting activities must be in accordance with the: ➢ MPRDA, 2002; ➢ NEMA, 1998

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The closure objectives entail removing the drill rig and any foreign material from the site; sealing and capping of the drill holes, refilling the trenches and landscaping any compacted areas such as the site camp. Invasive plant species will be controlled on the reinstated areas during a 12 months' aftercare period to address germination of problem plants. The Applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

This report, the Draft Basic Assessment Report, includes all the environmental objectives related to closure and will be made available for perusal by the landowners, registered I&AP's and stakeholders over a 30-days commenting period.

(c) 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.

The requested rehabilitation plan is attached as Appendix C.

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

The decommissioning phase will entail the final rehabilitation of the prospecting footprint. Final landscaping, levelling and top dressing will be done. The rehabilitation of the prospecting area as indicated on the rehabilitation plan attached as Appendix C will comply with the minimum closure objectives as prescribed by DMRE and detailed below and therefore is deemed compatible.

Rehabilitation of Site Camp Area

- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs, before and during the operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.
- On completion of operations, the surface of these areas, if compacted, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final Rehabilitation

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the invasive prospecting period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the prospecting area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

- The management of invasive plant species must be done in a sporadic manner during the life of the prospecting activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).

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

The calculation of the quantum for financial provision was according to Section B of the working manual.

Prospecting type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mineral type	➢ Diatomite, ➢ Diatomaceous Earth, ➢ Kieselguhr
Saleable mineral by-product	None

Risk Ranking.

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the prospecting area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components.

According to Table B.5 and site-specific conditions

COMPONENT NO.	MAIN DESCRIPTION	APPLICABILITY OF CLOSURE COMPONENTS (CIRCLE YES OR NO)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	NO
2(A)	Demolition of steel buildings and structures	-	NO
2(B)	Demolition of reinforced concrete buildings and structures	-	NO
3	Rehabilitation of access roads	-	NO
4(A)	Demolition and rehabilitation of electrified railway lines	-	NO
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	NO
5	Demolition of housing and facilities	-	NO
6	Opencast rehabilitation including final voids and ramps	-	NO
7	Sealing of shafts, adits and inclines	-	NO
8(A)	Rehabilitation of overburden and spoils	-	NO
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	NO
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water, and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	YES	-

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from the DMRE Master Rates table for financial provision of 2025 was used.

COMPONENT NO.	MAIN DESCRIPTION	MASTER RATE	MULTIPLICATION FACTOR
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	-	-
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	178 817	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	23 797	1.00

Determine weighting factors.

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 34: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Site Name:	K2022641005 (South Africa) (Pty) Ltd			**Location:**	Postmasburg – Hay District		
Evaluators:	C Fouché			**Date:**	29 January 2025		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^2	0	23	1.00	1.00	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	323	1.00	1.00	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	476	1.00	1.00	R 0.00
3	Rehabilitation of access roads	m^2	0	58	1.00	1.00	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	561	1.00	1.00	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	306	1.00	1.00	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	646	1.00	1.00	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	0	338 597	0.04	1.00	R 0.00
7	Sealing of shaft, audits and inclines	m^3	0	174	1.00	1.00	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	225 731	1.00	1.00	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	281 144	1.00	1.00	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	816 575	0.51	1.00	R 0.00

9	Rehabilitation of subsided areas	ha	0	189 016	1.00	1.00	R 0.00
10	General surface rehabilitation	ha	0.5	178 817	1.00	1.00	R 89 408.50
11	River diversions	ha	0	178 817	1.00	1.00	R 0.00
12	Fencing	m	0	204	1.00	1.00	R 0.00
13	Water Management	ha	0	67 992	0.17	1.00	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	2	23 797	1.00	1.00	R 47 594.00
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 137 002.50
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 137 002.50		**Sub Total 1**	R 143 852.63

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 8 631.16
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 14 385.26
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 166 869.05
		Vat (15%)	R 25 030.36
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 191 899.40**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of **R 191 899.40**.

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

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

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

Table 35: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

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
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	**Socio-Economic Environment / Land Use:** ➢ Temporary loss of agricultural land earmarked for site camp establishment. ➢ Temporary loss of some agricultural land earmarked for invasive prospecting.	➢ Invasive prospecting plan and schedule approved by the DMRE. ➢ Discuss property access with the landowners.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ If needed, sign prospected/rehabilitated areas back to agricultural use once the cover crop stabilised.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment ➢ Operational Phase	**Visual Characteristics:** ➢ Visual intrusion because of site camp. ➢ Visual intrusion because of invasive prospecting.	➢ Parking areas for equipment. ➢ Good housekeeping practices.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Contain prospecting to the approved boundaries. ➢ Ensure the camp site and every borehole site has a neat appearance and is always kept in good condition. ➢ Limit vegetation removal and avoid the removal of large trees (>20 cm stem) or vegetation of significance (identified by ECO). ➢ Store prospecting equipment neatly in a dedicated area when not in use. ➢ Implement concurrent rehabilitation as prospecting progress to limit the visual impact on the aesthetic value of the area. ➢ Only strip topsoil immediately prior to the use of a specific area.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Rehabilitate all sites to keep the visual impact on the aesthetic value of the area to a minimum.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**<u>Groundcover, Fauna, and Biodiversity Conservation:</u>** ➢ Potential negative impact on sensitive/protected flora within the footprint area.	➢ Phase two assessment by qualified ecologist and approval of the drilling plan by the DMRE. ➢ Pre-clearance go-ahead from ECO. ➢ Employee induction meetings.	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Arrange additional fieldwork by a qualified ecologist at the selected prospecting site/s to refine ecological sensitivity and keep prospecting from sensitive areas/plants. ➢ Submit the findings of the ecologist, with the drill plan, to the DMRE for approval prior to commencement. ➢ Clearly demarcate the prospecting boundaries and contain all operations to the approved area. ➢ Declare the area outside the boundaries a no-go area and educate all employees accordingly.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Implement an invasive plant species management plan to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas. ➢ Should an application for the removal of protected plant species, and/or indigenous plants (1) on large-scale, (2) or on small scale within 100 meters of a river or a public road, be applicable: submit a thorough walk-through report to the relevant competent authorities (DAERL) prior to commencing any earthworks. Ensure that this report comprehensively assess, and list species based on their protection statuses according to the NCNCA, NEMBA: ToPS, and the NFA. It must also include the IUCN Red List status, endemism, and estimate the quantities of each impacted protected species. If possible, conduct the walk-through assessment be during the appropriate season for the area to ensure accurate observation of species presence and habitat conditions, thereby maximizing the effectiveness of the assessment in capturing the full ecological picture.	

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
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**Hydrology:** ➢ Potential negative impact on the Upstream River FEPA of the study area. ➢ Increase in sediment inputs and turbidity due to invasive prospecting. ➢ Increase in toxic heavy metal contaminants.	➢ Phase two assessment by qualified hydrologist and approval of the drilling plan by the DMRE. ➢ Visible beacons indicating the boundary of the 40 m buffer areas.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Arrange additional fieldwork by a qualified hydrologist at the selected prospecting sites to refine ecological sensitivity and keep prospecting from impacting watercourses/pans/wetlands. ➢ Submit the findings of the hydrologist, with the drill plan, to the DMRE for approval prior to commencement. ➢ Do not allow any activities without the necessary authorisation from the DWS, within a horizontal distance of 100 m from any watercourse or estuary or within a 500 m radius from a delineated boundary of any wetland or pan. ➢ Should a water use authorisation be applicable, always adhere to the conditions thereof.	Applicable throughout site establishment-, and operational phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Upon closure, remove all prospecting related equipment/machinery from the footprint.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	**<u>Air Quality and Noise Ambiance:</u>** ➢ Dust nuisance because of invasive prospecting. ➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	➢ Dust suppression equipment such as a water car (when needed). ➢ Signage that clearly reduce the speed on the access roads.	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ➢ Ensure continuous assessment of the dust suppression equipment to confirm its effectiveness in addressing dust suppression. ➢ Limit speed on the access roads to 40 km/h to prevent the generation of excess dust. ➢ Minimise areas devoid of vegetation.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Consider weather conditions upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ➢ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ➢ Implement best practice measures during the stripping of topsoil to minimize potential dust impacts.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	**<u>Noise Ambiance:</u>** ➢ Noise nuisance because of invasive prospecting. ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).	➢ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ➢ No loud music may be permitted at the site camp and/or prospecting areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. ➢ Implement best practice measures to minimise potential noise impacts.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impact	**Fauna:** ➢ Potential impact on fauna within the footprint area. ➢ Fragmentation of ecosystems affecting safe movement of faunal species.	➢ Toolbox talks to educate employees how to handle fauna that enter the work areas.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Ensure no fauna is caught, killed, harmed, sold, or played with. ➢ Instruct workers to report any animals that may be trapped in the working area. ➢ Ensure no snares are set or nests raided for eggs or young. ➢ Do not allow pets on site.	Applicable throughout site establishment-, and operational phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	**Groundcover, Fauna, and Biodiversity Conservation:** ➢ Infestation of the prospecting areas with invader plant species. ➢ Infestation of the reinstated areas with invader plant species.	➢ Designated team to cut or pull out invasive plant species that germinated on site. ➢ Herbicide application equipment.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Implement an invasive plant species management plan at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA, 2004. Do weed/alien removal on an ongoing basis throughout the life of the prospecting activities. ➢ Keep all stockpiles free of invasive plant species. ➢ Control declared invader or exotic species on the rehabilitated areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**Waste Management:** ➢ Potential soil contamination associated	➢ Oil spill kit. ➢ Sealed drip trays.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management.

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
➢ Decommissioning Phase	with littering and/or hydrocarbon spillages. ➢ Potential impact associated with litter/hdyrocabon spills left at the prospecting area.	➢ Formal waste disposal system with waste registers.	➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Ensure vehicle maintenance, repairs and services only take place at the workshop and service area in the site camp. If emergency repairs are needed on equipment not able to move to the workshop, use drip trays. Dispose all waste products removed from the emergency service area (same day) in a closed container/bin at the workshop to ensure proper disposal. ➢ Provide ablution facilities to all employees. Place the toilet outside the 1:100 year floodline of all watercourses. ➢ Ensure that the ablution facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage. Address any pollution problems arising from the above immediately. ➢ Equip the diesel bowser (if used on site) with a drip tray. Use the drip trays during	➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			every refuelling event. Ensure that the nozzle of the bowser rest in a sleeve to prevent dripping after refuelling. ➢ Clean drip trays after each use. Do not use dirty drip trays on site. ➢ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. ➢ Should spillages occur, such as oil or diesel leaking from a burst pipe, collect the contaminated soil within the first hour of occurrence in a suitable receptacle and removed it to the hazardous waste storage area of the workshop, either for resale or for appropriate disposal at a recognized facility. File proof. ➢ Contain general waste in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a registered general waste landfill site. ➢ Do not bury or burn waste on the site. ➢ Report any significant spillage of chemicals, fuels etc. during the lifespan of the prospecting activities to the	

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
			Department of Water and Sanitation and other relevant authorities.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	➢ Potential impact on areas/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects.	➢ Results of the heritage walk down prior to commencement. ➢ Visible beacons indicating the boundary of the 30 m buffer areas. ➢ Contact number of an archaeologist and palaeontologist that can be contacted when a discovery is made on site.	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Arrange a heritage walk down once the drill sites have been confirmed prior to the commencement of invasive prospecting activities. ➢ Keep drill sites as close as possible to existing roads to minimise the impact on the landscape. ➢ Avoid focal points on the landscape like rocky outcrops, caves, or pans as far as possible as these areas could be sensitive from a heritage point of view. ➢ Avoid burial sites, memorials, and graves with a 30 m buffer zone.	Applicable throughout site establishment-, operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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			➢ Conduct further palaeontological studies once the impact areas are confirmed. ➢ Collect and deposit samples of diatomite from each farm at a recognised repository such as the McGregor Museum in Kimberley, or a palaeontological research institute, and notify SAHRA of what action was taken. ➢ Arrange monitoring of the project area by the ECO during the exploration phase for heritage chance finds, and if chance finds are encountered to implement the Chance Find Procedure for the project. ➢ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ➢ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find	

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			and confirm the extent of the work stoppage in that area. ➢ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA. ➢ Work may only continue once the go-ahead was issued by SAHRA. ➢ A 50 m buffer must be applied to all identified heritage sites.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Decommissioning Phase	**<u>Hydrology</u>** ➢ Erosion of denuded areas. ➢ Erosion of roads, vehicle tracks and/or denuded areas.	➢ Storm water management structures such as berms to direct storm- and runoff water around the work area (when needed).	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Maintain an aquatic impact buffer of 40 m around all watercourses (where applicable). ➢ Divert storm water around the topsoil heaps, prospecting areas, roads and/or tracks to prevent erosion.	Applicable throughout site establishment-, operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Control drainage to ensure that runoff from the prospecting area does not culminate in off-site pollution, flooding or result in damage to storm water discharge points. ➢ Keep clean water clean, and route it to a natural watercourse by a system separate from the dirty water system (if applicable). ➢ Collect dirty water and contain it in a system separate from the clean water system. ➢ Prevent dirty water from spilling or seeping into clean water systems.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase ➢ Cumulative Impacts	**<u>Existing Infrastructure:</u>** ➢ Deterioration of the access road due to prospecting activities. ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm	➢ Grader to restore the road surface when needed.	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Divert storm water around the access road to prevent erosion. ➢ Restrict vehicular movement to the existing access road to prevent	Applicable throughout operational phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
	Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR).		crisscrossing of tracks through undisturbed areas. ➢ Repair rutting and erosion of the access road caused as a direct result of the prospecting activities. ➢ Prior to commencement, sign an agreement confirming responsibility towards the movement of employees. ➢ Repair/reinstate damages to fences (by prospecting employees). Compensate losses, due to gates left open by prospecting employees.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**General:** ➢ Health and safety risk posed by invasive activities to prospecting employees. ➢ Safety risk due to uncapped boreholes.	➢ Stocked first aid box. ➢ Level 1 certified first aider. ➢ All appointments in terms of the Mine Health and Safety Act, 1996.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Ensure there is adequate ablution facilities and water for human consumption available on site. ➢ Provide workers with the correct personal protection equipment (PPE) as required by law.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			➢ Ensure all operations comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ➢ Daily cover drill-holes even if prospecting will continue the following day. Upon closure, seal and cap all boreholes as prescribed in the rehabilitation plan.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**General:** ➢ Presence of prospector negatively affecting safety and security of the property.	➢ Signage restricting entry to the prospecting area. ➢ Toolbox talks regarding safety and security. ➢ Community based discussion forums such as Whatsapp groups.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Screen employees to be appointed prior to inception of contract. ➢ Do not allow employees to reside within the prospecting area. ➢ Educate prospecting employees to report suspicious looking person/s and/or matters to site management. ➢ Maintain direct communication between the prospector and the landowner for the duration of the site establishment-,	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			operational, and decommissioning phases. ➢ Do not enter negotiations with farm employees. ➢ Restrict prospecting to normal business hours unless otherwise authorised by the landowner. ➢ Ban alcohol and/or prohibited drugs from site. ➢ Maintain attendance registers, and pre-register all prospecting vehicles/machinery with the landowner/security. ➢ Do not allow firearms on site.	
Invasive Prospecting (Phase 3 & 5): ➢ Operational Phase	**General:** ➢ Increased fire risk during operational phase.	➢ Fire beaters and -extinguishers. ➢ Toolbox talks and emergency preparedness plan. ➢ Contact number of the fire association/-brigade.	Role: ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ➢ Do not permit open fires on any of the sampling sites. Restrict contained fires for heating and cooking (i.e. in a fire	Applicable throughout site establishment-, and operational phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
			drum) to designated areas at the site camp, ➢ Prevent employees from setting fires randomly outside designated areas. ➢ Do not store fuel or chemicals under trees. ➢ Do not store gas in the same storage area as liquid fuel. ➢ Designate smoking to specific areas (>3 m from fuel or chemical storage areas) equipped with sand buckets for the disposal of cigarette buds. ➢ Ensure Work Site and the contractor's camp is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site. ➢ Implement specific fire safety precautions during welding activities associated with construction work. Ensure a working fire extinguisher is immediately at hand if any "HOT WORK" is undertaken e.g. welding, grinding, gas cutting etc, ➢ Report any fires noted on site to the responsible SHE rep and/or fire officer.	

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
			➢ Implement fire emergency procedures for the duration of the site establishment-, operational-, and decommissioning phases. ➢ In the event of large fires ensure that all personnel assemble at a safe assembly point to be transported from site. Inform the fire department or local fire watch of the fire to ensure that the fire is brought under control as soon as possible.	
Invasive Prospecting (Phase 3 & 5): ➢ Site Establishment Phase ➢ Operational Phase	**<u>Geology</u>** ➢ Topsoil Management.	➢ Earthmoving equipment to strip, stockpile and spread the topsoil. ➢ Stormwater control infrastructure. ➢ Designated team to control weeds/invader plant species that may germinate on the topsoil heaps. ➢ Cover crop to vegetate topsoil heaps (when	<u>Role:</u> ➢ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ➢ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> ➢ Strip and stockpile the upper 300 mm of the soil before site camp establishment and/or prospecting. ➢ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ➢ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic	Applicable throughout site establishment-, and operational phases. ➢ Daily compliance monitoring by site management. ➢ Annual compliance monitoring of site by an Environmental Control Officer.

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
		needed) and reinstated soil.	way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ➢ Place the topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. ➢ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establish plants (weeds or a cover crop) on the stockpiles to prevent erosion. ➢ Ensure that topsoil heaps do not exceed 2 m. ➢ Keep temporary topsoil stockpiles free of invasive plant species. ➢ Divert storm- and runoff water around the stockpile area to prevent erosion. ➢ Spread the topsoil evenly, to a depth of 300 m, over the rehabilitated area upon closure of the site. ➢ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season.	

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
			➢ Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ➢ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	

l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

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

Once the prospecting right application was approved a copy of the FBAR & EMPR will be handed to the site manager for his perusal. An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct regarding the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirements and commitments before any prospecting commences. An Environmental Control Officer needs to check compliance of the prospecting activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management:**

  > Stay within boundaries of site – do not enter adjacent properties.
  > Keep tools and material properly stored.
  > Smoke only in designated areas.
  > Use toilets provided – report full or leaking toilets.

- **Water Management and Erosion:**

  > Check that rainwater flows around work areas and are not contaminated.
  > Report any erosion.
  > Check that dirty water is kept from clean water.

- **Waste Management:**

  > Take care of your own waste.
  > Don't burn waste.
  > Pick-up any litter laying around.

- **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

  > Never mix general waste with hazardous waste.
  > Use only sealed, non-leaking containers.
  > Keep all containers closed and store only in approved areas.
  > Always put drip trays under vehicles and machinery.
  > Empty drip trays after rain.
  > Stop leaks and spills, if safe:
    - ✓ Keep spilled liquids moving away.
    - ✓ Immediately report the spill to the site manager/supervision.
    - ✓ Locate spill kit/supplies and use to clean-up, if safe.
    - ✓ Place spill clean-up wastes in proper containers.
    - ✓ Label containers and move to approved storage area.

- **Discoveries:**

  > Stop work immediately.
  > Notify site manager/supervisor.
  > Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

- **Air Quality:**

  > Wear protection when working in very dusty areas.
  > Implement dust control measures:
    - ✓ Water all roads and work areas.
    - ✓ Minimize handling of material.
    - ✓ Obey speed limit and cover trucks.

- **Driving and Noise:**

  > Use only approved access roads.
  > Respect speed limits.
  > Only use turn-around areas – no crisscrossing through undisturbed areas.

> Avoid unnecessary loud noises.
> Report or repair noisy vehicles.

- **Vegetation and Animal life:**

> Do not remove any plants or trees without approval of the site manager.
> Do not collect firewood.
> Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
> Report any animal trapped in the work area.
> Do not set snares or raid nests for eggs or young.

- **Fire Management:**

> Do not light any fires on site, unless contained in a drum at demarcated area.
> Put cigarette butts in a rubbish bin.
> Do not smoke near gas, paints, or petrol.
> Know the position of firefighting equipment.
> Report all fires.
> Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

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

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the prospected areas at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports [X]
b) the inclusion of comments and inputs from stakeholders and I&AP's [X]
c) the inclusion of inputs and recommendations from the specialist reports where relevant, and [X]
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein [X]

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

07 February 2025

Date:

3. UNDERTAKING

I,…..*Lionel Koster*……the undersigned and duly authorised thereto by……*K2022641005 (South Africa) (Pty) Ltd*…….

Company / ~~Closed Corporation / Municipality or Council~~
(Delete whichever is not applicable)

hereby undertake to implement all the aspects contained in the BAR and EMPR / ~~EIA and EMPR~~ and accept full responsibility therefore.
(Delete whichever is not applicable)

SIGNED at …… this …… day …… 2025.

FINAL DOCUMENT TO BE SIGNED BY APPLICANT

_____

SIGNATURE

WITNESSES:

1…….

2…….

Official use

4. APPROVAL

Approved in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended.

SIGNED at …… this …… day …… 2025.

_____

REGIONAL MANAGER
NORTHERN CAPE

-END-

APPENDIX A

REGULATION 2(2) PROJECT MAP

APPENDIX B

LOCALITY AND LAND USE MAP

APPENDIX C

REHABILITATION PLAN

APPENDIX D

PRELIMINARY SITE PLAN

APPENDIX E

DIATOMITE LITERATURE REVIEW & TARGET GENERATION

APPENDIX F

WETLAND / AQUATIC AND TERRESTRIAL DESKTOP SENSITIVITY & FAMILIARISATION

APPENDIX G1

HERITAGE DESKTOP ASSESSMENT

APPENDIX G2
PALAEONTOLOGICAL IMPACT ASSESSMENT

APPENDIX G3
HERITAGE STATEMENT –
NC 30/5/1/1/2/14264 PR

APPENDIX H
SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the prospecting activity may have on the environment after the management and mitigation of impacts have been considered, with specific reference to types of impact, duration of impacts, likelihood of potential impacts occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT			
FINAL PROJECT PROPOSAL			
TYPE OF IMPACT	**DURATION**	**LIKELIHOOD**	**SIGNIFICANCE**
Site Establishment Phase: ➢ Temporary loss of agricultural land earmarked for site camp establishment. ➢ Visual intrusion because of site camp. ➢ Work opportunities for 8 – 10 community members **(Positive Impact).** ➢ Upgrading of access roads during invasive prospecting **(Positive Impact).**	Duration of site establishment phase (±2-3 months)	**Definite** **Possible** **Low Possibility** **Definite** **Definite**	**Low-Medium Concern** **Low Concern** **Medium-High Concern** **Medium-High (+)** **Low-Medium (+)**
Operational Phase:	Duration of operational phase (Phase 3 & 5)	**LIKELIHOOD**	**SIGNIFICANCE**
➢ Temporary loss of some agricultural land earmarked for invasive prospecting.		**Definite**	**Low-Medium Concern**
➢ Visual intrusion because of invasive prospecting.		**Low Possibility**	**Low Concern**
➢ Potential negative impact on the Upstream River FEPA of the study area.		**Low Possibility**	**Low Concern**
➢ Increase in sediment inputs and turbidity due to invasive prospecting.		**Low Possibility**	**Low Concern**
➢ Increase in toxic heavy metal contaminants.		**Low Possibility**	**Low Concern**
➢ Dust nuisance because of invasive prospecting.		**Low Possibility**	**Low Concern**
➢ Noise nuisance because of invasive prospecting.		**Low Possibility**	**Low Concern**
➢ Potential impact on sensitive/protected flora within the footprint area.		**Low Possibility**	**Low Concern**
➢ Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern**
➢ Infestation of the prospecting areas with invader plant species.		**Low Possibility**	**Low Concern**
➢ Potential soil contamination associated with littering and/or hydrocarbon spillages.		**Low Possibility**	**Low Concern**

ENVIRONMENTAL IMPACT STATEMENT			
FINAL PROJECT PROPOSAL			
➢ Potential impact on areas/infrastructure of heritage or cultural concern. ➢ Potential impact on palaeontological aspects. ➢ Erosion of denuded areas. ➢ Deterioration of access roads due to prospecting activities. ➢ Health and safety risk posed by invasive activities to prospecting employees. ➢ Presence of prospector negatively affecting safety and security of the property. ➢ Increased fire risk during operational phase. ➢ Upgrading of access roads during invasive prospecting **(Positive Impact).**		**Low Possibility** **High Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite**	**Low Concern** **High Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low-Medium (+)**
<u>Decommissioning Phase:</u> ➢ Safety risk due to uncapped boreholes. ➢ Potential impact associated with litter/hydrocarbon spillages left at the prospected areas. ➢ Erosion of roads, vehicle tracks and/or denuded areas. ➢ Infestation of the reinstated areas with invader plant species. ➢ Return of the site camp and prospected areas to agricultural use **(Positive Impact).**	Duration of decommissioning phase (±2 months)	**<u>LIKELIHOOD</u>** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite**	**<u>SIGNIFICANCE</u>** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Medium-High (+)**
<u>Cumulative Impacts:</u> ➢ Fragmentation of ecosystems affecting safe movement of faunal species. ➢ Potential cumulative dust nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR). ➢ Potential cumulative noise nuisance should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring	Duration of operational phase (Phase 3 & 5)	**<u>LIKELIHOOD</u>** **Low Possibility** **Low Possibility** **Low Possibility**	**<u>SIGNIFICANCE</u>** **Low Concern** **Low-Medium Concern** **Low-Medium Concern**

ENVIRONMENTAL IMPACT STATEMENT			
FINAL PROJECT PROPOSAL			
farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR). ➢ Potential cumulative impact on the access road should invasive prospecting activities simultaneously occur on Farm No 570 (Zaai Plaats) as well as the neighbouring farm Vaalwater No 84 (under NC 30/5/1/1/2/13826 PR). ➢ Compensation of landowners during operational phase. **(Positive Impact)**		**Low Possibility** **Definite**	**Low-Medium Concern** **Medium-High (+)**

APPENDIX I

PHOTOGRAPHS OF THE SITE

PHOTOGRAPHS OF THE AREAS IN AND AROUND FARM NO 570 (ZAAI PLAATS)






PICTURES OF THE APPLICATION AREA

APPENDIX J

CV AND PROOF OF EXPERIENCE OF THE EAP