DRAFT BASIC ASSESSMENT

DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED PROSPECTING ON PORTIONS 32, 34 AND 35 AND PORTIONS OF PORTION 33 AND THE REMAINDER OF THE FARM BOEKENHOUTKLOOF 315 JR IN THE GAUTENG PROVINCE.

DMRE REF. NO: GP 30/5/1/1/2 (10777) PR
ENVASS REF. NO: 021-21_22

Submitted to:
Department of Mineral Resources and Energy
Gauteng Region
Johannesburg

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT FOR PUBLIC PARTICIPATION

FOR LISTED ACTIVITIES ASSOCIATED WITH THE PROPOSED PROSPECTING RIGHT ON PORTIONS 32, 34 AND 35 AND PORTIONS OF PORTION 33 AND THE REMAINDER OF THE FARM BOEKENHOUTKLOOF 315 JR IN THE GAUTENG PROVINCE.

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

NAME OF APPLICANT: Klei Minerale (Pty) Ltd
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FILE REFERENCE NUMBER: GP 30/5/1/1/2 (10777) PR

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DOCUMENT CONTROL			
Document Title	DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED PROSPECTING ON PORTIONS 32, 34 AND 35 AND PORTIONS OF PORTION 33 AND THE REMAINDER OF THE FARM BOEKENHOUTKLOOF 315 JR IN THE GAUTENG PROVINCE		
Report Number	NEMA BA-REP-021-21_22		
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Date	September 2022		
Submitted to	Contact Person: Dr. Wika Esterhuizen Position: Safety, Health & Environmental Advisor Email: wika@sabrix.co.za		
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Designation	Environmental Consultant (2020/988)	Environmental Consultant	Director
Signature			
Date	2021/08/04	2022/01/07	
DISCLAIMER			

EXECUTIVE SUMMARY

Environmental Assurance (Pty) Ltd (ENVASS) as independent environmental consultant was appointed by Klei Minerale (Pty) Ltd (Klei Minerale) to undertake the Environmental Authorisation Application process for the proposed prospecting within the Gauteng Province, constituting a total area of approximately 63.5277. hectares (ha), on the following properties:

Table 1: The Registered Description of The Land to Which the Application Relates

Farm	Reg Div	Portion	Extent Ha	District	Province	Title Deed
Boekenhoutkloof 315	JR	Portion of RE	29.3993	Tshwane North	Gauteng	T144063/2002
Boekenhoutkloof 315	JR	32	9.1013	Tshwane North	Gauteng	T7698/1975
Boekenhoutkloof 315	JR	Portion of Ptn. 33	7.8965	Tshwane North	Gauteng	T7698/1975
Boekenhoutkloof 315	JR	34	8.5653	Tshwane North	Gauteng	T98207/2015
Boekenhoutkloof 315	JR	35	8.5653	Tshwane North	Gauteng	T7698/1975

The study area is located in the City of Tshwane Metropolitan Municipality, approximately 16 km northwest of Pretoria. Klei Minerale has a site in close proximity to the proposed application site, which already has authorisations for mining activities.

Legislative Requirements

The most important legislation applicable to the proposed project are listed below:

National Environmental Management Act (No. 107 of 1998) [as amended]

Section 28: Duty of Care and responsibilities to minimise and remediate environmental degradation.

EIA Regulations, 2014 (GNR 982) [as amended as amended in 2016, 2017, 2018 and 2021]

The EIA regulations prescribes the manner and content of the Basic Assessment and Public Participation Processes to be followed as well as content of the Environmental Management Programme.

Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) [as amended]

In order to apply for a prospecting right, an application was submitted on the Department of Mineral Resources and Energy's SAMRAD online application system.

Need and Desirability

The project has some alignment with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP), however, it will not compromise the integrity of these respective forward planning documents, due to the small extent and fairly short term period of the prospecting activities. Unemployment within the City of Tshwane Metropolitan Municipality is high, according to the IDP of the City of Tshwane Metropolitan Municipality. The Klei Minerale operations will have a positive impact on the socio-economic conditions of the local communities involved, should the results

of the prospecting show that feasible reserves are present to mine and a mining right is approved. The mining and resulting brick-making will sustain several employment opportunities after the closure of the existing clay mines in the area.

The approval of this prospecting application will not compromise the integrity of the existing environmental management priorities of the area as defined in the GPEMF, provided that sensitive areas and vegetation as indicated by the specialists are avoided and the mitigation measures as recommended in this report and in the EMPR (refer to Part B of this report), are implemented. However, should a mining right be applied for and be approved in future, the integrity of the existing environmental management priorities of the area may be compromised, and a full Environmental Impact Assessment must then be conducted to determine the sustainability of the mining activities.

The study area where prospecting is proposed is located adjacent to the existing Klei Minerale current mining activities. The existing infrastructure is sufficient, and no new infrastructure is required for the proposed activities.

Prevention and mitigation measures as recommended by the specialists, were included in this Basic Assessment Report (BAR) and the Environmental Management Programme (EMPR) (please refer to **Table 19** Mitigation Measures (the EMPR section). The implementation of the EMPR will ensure that the environment is affected to the minimum. The potential cumulative impacts were also assessed and found not to be of high significance after mitigation for the prospecting period.

Alternatives

Prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. On successful completion of this desktop study, further possible trenching and resource estimations will be performed if the results warrant it. No Geophysical or Geochemical Surveys are planned.

Description of planned non-invasive activities:

Desktop studies to be undertaken over the area would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information about this area.

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

Description of planned invasive activities

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed.

(These activities result in land disturbances- without bulk sampling)

Description of Pre-Feasibility Studies

Geological modelling of gathered existing geological data and prospecting data will be performed, if the results warrant it.

The overall prospecting area is indicated in **Figure 1** of this Draft Basic Assessment. Areas to be avoided in terms of sensitivities are also indicated on the sensitivity maps in this report.

The following alternatives were investigated as feasible alternatives:

a) The property on which or location where it is proposed to undertake the activity:
Klei Minerale (Pty) Ltd is an operating mining company which conducts mining immediately West and North-east of the study area and a related company has brick making operations to the West and the North-east of the study area. Therefore, infrastructure and resources are available in close proximity to the study area. In addition, geological information indicated that the area potentially contains shale that weathers to clay on surface. The clay present in the area can be used in various applications with numerous quarries and brickworks located in the region. The site is therefore, the preferred site and alternative sites are not considered.
(The property on which or location of the proposed prospecting rights/ activities are to be undertake was the only property alternative considered)

b) The type of activity to be undertaken:
Prospecting activities will not compromise any future land uses on the study area. Should results of the prospecting indicate a viable reserve is present, then a comprehensive social and environmental impact assessment will be conducted to obtain environmental authorisation mining right from the competent authority/ies, in accordance with legislation. Alternative land uses to mining would be investigated as part of the social and environmental impact assessments.

c) The design or layout of the activity:
Since prospecting is temporary in nature no permanent structures will be constructed, negotiations and agreements may be made with the farm owners to use any existing infrastructure like access roads and other things like workshops. No accommodation is permitted on site. The specific locations for trenching will be determined on the recommendations from specialists (i.e. best areas / areas to

rather avoid) and the geologist (as per the Prospecting Work Programme (PWP)). All infrastructure to be developed will be mobile and temporary. The prospecting activities will be located outside of the sensitive areas and buffer zones as identified by the specialist. No camp site or additional infrastructure will be required as the existing access roads, J Robbertse Vervoer offices, toilets and storage facilities for fuel and machinery will be utilised.

d) The technology to be used in the activity

In terms of technologies proposed, prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. Desktop studies to be undertaken would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information regarding the specific area.

On successful completion of this desktop study, further possible trenching and resource estimations will be performed if the results warrant it. The type of invasive prospecting activities have been determined based on the historic success of the methods to be utilised. The prospecting activities are, however, dependent on the preceding phase (non-invasive) as indicated above and therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed.

No permanent services including water supply, electricity, or sewerage facilities are required. All existing infrastructure will be used.

e) The operational aspects activity:

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage facilities are required. The prospecting will commence with non-invasive prospecting for 6 – 8 months which will entail Multi-Spectral and Aerial Surveys providing digital raster data of the area of interest delineating the Paleo channel on a map. Thereafter a further literature survey will be conducted for 2 - 4 months, combining the results from phase 1 with interpreted geological report. This will again be followed with further non-Invasive prospecting through GIS & analytical desktop studies for 6 – 12 months, producing Pre-Feasibility reports, resource statements and 3D mapping.

The applicant shall ensure that this Environmental Management Plan is provided to the Project Manager and any other person or organisation who may work on the site.

f) The option of not implementing the activity

The option of not approving the activities will result in a significant loss to valuable information regarding the mineral status present on these properties. The proposed activities have very low significance since these are short term activities. The probability of occurrence of an impact was determined and most of these activities can be controlled and impacts can be reduced or avoided. The probability was also used basing on looking at other prospecting activities of similar nature. Generally prospecting activities have low impact on the environment. The planned activities negative impacts can be controlled and avoided or minimised therefore the layout does not require revision. In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize the said reserves for future phases will be lost. Loss of potential employment opportunities for Gauteng as a province.

Public Participation

A Public Participation Process is undertaken for the Environmental Authorisation for prospecting. The process is undertaken to ensure compliance with regard to the requirements in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [as amended] (MPRDA) and the Environmental Impact Assessment Regulations (2014) [as amended].

Tasks undertaken for the Public Participation Process (PPP):

- Identification of key interested and affected parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);

Interested and Affected parties (I&APs) representing the following sectors of society have been identified:

- National, provincial and local government;
- Local landowners (affected and adjacent);
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Industry;
- Commerce;
- Heritage Resource Authority;
- City of Tshwane Metropolitan Municipality;
- Other stakeholders.

- Formal notification of the application to interested and affected parties (including all affected and adjacent landowners) and other stakeholders
  - Publication of media advertisement (English) in **The Citizen** newspaper on 27 October 2022;
  - Four site notices were erected on site and at visible locations close to the site on 27 October 2022;
  - I&AP's and other key stakeholders, who included the above-mentioned sectors, were directly informed of the proposed development by e-mail on 27 October 2022.

I&APs were given 30 days to comment and / or raise issues of concern regarding the proposed development. The commenting period expired on the 28 November 2022.

- Consultation and correspondence with I&APs and stakeholders.

All I&AP registrations and comments that are received from stakeholders will formally be recorded in the Comments and Responses Report. The Draft BAR and EMPR are herewith released for a period of 30 days from 27 October 2020 to 28 November 2022. Hard copies of the Draft BAR and EMPR are also submitted to all relevant organs of state and authorities. In addition, copies are placed Hercules Police Station at 518 Gustav Adolf St, Hercules, Pretoria, 0001, and on the ENVASS website (www.envass.co.za) .

Next phases of the public participation process

All comments received from I&APs and organs of state and responses sent will be included in the final BAR and EMPR to be submitted to the Competent Authority (CA).

Specialist studies

The following specialist studies have been conducted:

- Desktop Agricultural Assessment;
- Terrestrial Biodiversity Impact Assessment;
- Heritage Impact Assessment;
- Desktop Palaeontological assessment;
- Noise, Visual and Air Quality Baseline Assessment; and
- Baseline Socio-Economic Desktop Assessment.

The main objective of the specialist studies is to provide independent scientifically sound information on issues of concern relating to the project proposal and propose management and/or mitigation measures for issues identified.

The findings and recommendations identified by the various specialist studies undertaken, were incorporated into the Basic Assessment.

Reasoned Opinion of the EAP

Based on the findings of the Basic Impact Assessment, the EAP is of the opinion that the proposed prospecting be approved, due to the potential positive social and economic impacts it will have on the local and regional communities. The potential negative impacts can be mitigated to levels of **low significance** as also motivated by the Terrestrial Specialist (**Appendix 7.3**), provided that the mitigation measures and recommendations are strictly implemented and monitored. It is, however, recommended, that the sensitive areas as identified by the specialist studies and as indicted in the sensitivity map must be excluded from the prospecting activities, due to the sensitive nature of the habitat and the potential impact on biodiversity. The remaining portions may be utilised for prospecting purposes provided, that all the recommendations of the specialists and mitigation measures provided in the Environmental Management Programme (**PART B of this report**) are adhered to.

Recommendations

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through physical measures, the recommendations from the BAR are included within the Environmental Management Programme (EMPR). The EMPR is based on all the information contained within this report as well as all the specialists' reports.

A variety of mitigation measures have been identified that will serve to mitigate the scale, intensity, duration or significance of the potential negative impacts identified. These include guidelines to be applied during all phases of the proposed prospecting. The EMPR contains detailed mitigation measures for all impacts identified. The proposed mitigation measures, if implemented, will reduce the significance of the majority of the identified impacts. Refer to **Part B** of this Report.

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ABBREVIATIONS

CA	Competent Authority
CBA	Critical Biodiversity Area
CSA	Constitution of South Africa (Act No. 108 of 1996)
DAFF	Department of Agriculture, Forestry and Fisheries
DFFE	Department of Forestry, Fisheries and the Environment (formerly DEFF)
DMRE	Department of Mineral Resources and Energy
DTM	Dimensional Terrain Modelling
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPR	Environmental Management Programme
ENVASS	Environmental Assurance (Pty) Ltd
ESA	Ecological Support Area
ESM	Environmental Site Manager
GDARD	Gauteng Department of Agriculture and Rural Development
GDP	Gross Domestic Product
GEMF	Gauteng Environmental Management Framework
GN	Government Notice
GIS	Geographic Information System
GPS	Global Positioning System
GVA	Gross Value Added
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
Mamsl	Metres above mean sea level
MHSA	Mine Health and Safety Act (Act No. 29 of 1996) [as amended]
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended)
NEMA	National Environmental Management Act, 1998 (Act no 107 of 1998) (as amended)
NEMAQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004) (as amended)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act No. 59 of 2008) (as amended)
NHRA	National Heritage Resource Act, 1999 (Act No. 25 of 1999)
NVFFA	National Veld and Forest Fire Act (Act No. 101 of 1998)

NWA	National Water Act, 1998 (Act No. 36 of 1998) (as amended)
PM	Public Meeting
PPE	Personal Protective Equipment
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards
SAWS	South African Weather Service
SDF	Spatial Development Framework
SLP	Social and Labour Plan
SM	Site Manager
VAC	Visual Absorption Capacity

IMPORTANT NOTICE

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

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

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application conforms to the requirements of the EIA Regulations, any protocol or minimum information requirements relevant to the application as identified and gazetted by the Minister in a government notice or instruction 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, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

(i) identify and motivate a preferred site, activity and technology alternative;

(ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

(iii) identify residual risks that need to be managed and monitored.

PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

Details of:

i) The EAP who prepared the report

Table 2: Details of the EAP who prepared the report and the EAP who approved the report

Originator & Report Preparer (EAP)	Report Submission and Approval (EAP)
Name of the (EAP) Practitioner: Naadira Nadasen Tel No.: 012 460 9768 Fax No.: 012 460 3071 e-mail address: naadira@envass.co.za	Name of the (EAP) Practitioner: Louisa Thuynsma Tel No.: 012 460 9768 Fax No.: 012 460 3071 e-mail address: louise@envass.co.za

ii) Expertise of the EAP

(1) The qualifications of the Consultant who prepared the report and the EAP who approved the report

*(With evidence attached as **Appendix 1**)*

Table 3: Qualifications of the Consultant who prepared the report and the EAP who approved the report

Originator & Report Preparer (EAP)- Naadira Nadasen	Report Approval (EAP)- Louisa Thuynsma
• SocSc, Geography and Environmental Science, University of KwaZulu-Natal, South Africa- 2005. • SocSc (Honours), Geography and Environmental Science, University of KwaZulu-Natal, South Africa- 2006. • MSocSci, Geography and Environmental Science, University of KwaZulu-Natal, South Africa- 2011. • EAPASA Registered 2020- (2020-988)	• University of Stellenbosch, BSc – 2008 • University of South Africa, BSc Honours Environmental Management – 2020 • Registered with SACNASP as Pri.Sci.Nat – Under Evaluation • Registered with EAPASA – 2021 (Reg No: 272/2019) • EMS lead auditor

(2) Summary of the EAP's past experience.

*(Attach the EAP's curriculum vitae as **Appendix 2**)*

Table 4: Experience of the Consultant who prepared the report and the EAP who approved the report

Originator & Report Preparer (EAP)- Naadira Nadasen	Report Approval (EAP)- Louisa Thuynsma
Naadira Nadasen obtained a Masters degree in Geography and Environmental Management from the University of KwaZulu-Natal. She has experience in conducting Environmental Impact Assessments (EIA's), Basic Assessments (BA's), Strategic Environmental Assessments (SEAs), Public Participation Processes (PPP's) and Water and Waste Licence Applications. Naadira is a qualified EAP with Environmental Assurance (PTY) LTD. Mrs. Nadasen has approximately over 7 years of experience in the Environmental Sector, previously working as a lecturer at the University of KwaZulu-Natal and as a Project Manager and a Senior Environmental Consultant at other competing environmental consultancies. She has co-ordinated and managed a number of diverse projects and programs related to the Environment Management within both the public and private sectors for national, multi-national and international companies. Her interpersonal and organisational skills have enabled him to efficiently direct these projects from initiation to implementation. A significant element of public participation is required throughout the life cycle of an EIA process. Naadira has successfully liaised with interested and affected parties, ensuring that all communication procedures and dialogues are open and transparent, and that capacity building is conducted where necessary. Her proficient report-writing skills have been utilised for the compilation of a wide variety of reports, which include but is not limited to Basic Assessment Reports, Scoping and Environmental Impact Assessment Reports, Environmental Management Plans (Planning, Construction, Operation and Closure), Environmental Audit Reports, Strategic Environmental Assessments, Feasibility studies, Waste License Applications, Water-Use Application Reports, Prospecting Right and Mining Right Applications. Furthermore, Mrs. Nadasen has extensively	Louise obtained a BSc degree from the University of Stellenbosch, an Environmental Management Honours degree from the University of South Africa (UNISA) and is currently completing a Chemical Environmental Engineering degree at UNISA. She has experience in conducting Environmental Impact Assessments (EIA's), Basic Assessments (BA's), Public Participation Processes (PPP's), and Water, Waste and Air Emission Licence Applications. She has been an environmental and quality management system (EMS & QMS) professional since February 2014. During this time, she has provided quality, environmental, and health and safety consulting and auditing services. In addition to providing consulting, training, and assessment experience, Louise has performed ISO 14001 Quality and Environmental Management System audits, Water-Use Application Reports, and Mining Right Applications. The EAP has experience in the following disciplines: • Environmental risk assessments; • Environmental site screening, investigation, and evaluations; • Environmental legal screenings; • Environmental feasibility studies; • Environmental impact assessments; • Basic assessments; • Environmental compliance auditing; • Compilation, implementation, and monitoring of environmental management plans; • Waste Management; • Waste Disposal site selection screenings; • Waste license applications; • Water-Use License Applications; • Mining Right applications; and

worked with industry for over two years and has extensive knowledge with enhancing the competitiveness between firms and facilitating programmes within the automotive, clothing and chemical industries as an industrial development consultant. The EAP has experience in the following disciplines: • Environmental site screening, investigation and evaluations; • Environmental feasibility studies; • Environmental impact assessments; • Basic assessments; • Strategic Environmental Assessments, • Environmental compliance auditing; • Compilation, implementation and monitoring of environmental management plans; • Waste Management; • Waste Disposal site selection screenings; • Waste license applications; • Water-Use License Applications; • Mining Right applications; • Managing and facilitating public participation; and Prospecting Right Applications.	• Managing and facilitating public participation. .

2. LOCATION OF THE OVERALL ACTIVITY

Table 5: Location of the Overall Activity

Farm Name:	Portions 32, 34 and 35 and a Portion of Portion.33 and the Remaining Extent of the farm Boekenhoutkloof 315 JR in the Gauteng Province
Application area (Ha)	Approximately 63.5277 ha
Magisterial district:	City of Tshwane Metropolitan Municipality
Distance and direction from nearest town	Approximately 16km northwest of Pretoria Central
21 digit Surveyor General Code for each farm portion	T0JR00000000031500000 T0JR00000000031500032 T0JR00000000031500033 T0JR00000000031500034 T0JR00000000031500035

3. LOCALITY MAP

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

The study area is focussed on the prospecting activities which includes Portion 32, 34, 35, Portions of Portion 33 and the Remainder of the Farm Boekenhoutkloof 315 JR located in the City of Tshwane Metropolitan Municipality, approximately 16 km northwest of Pretoria (**Figure 1**). The surrounding land use is characterised by rural, agricultural and mining activities, while the area is described as having a hot semi-arid climate. A portion of the site is currently utilised by J Robbertse Vervoer (Pty) Ltd t/a SABRIX for their workshop and offices. **Figure 2** provides a generalised locality of the proposed prospecting mining in relation to the overall geographic setting.

*Refer to **Appendix 3** for the locality map, generalised map and boundary map for the proposed prospecting mining.*

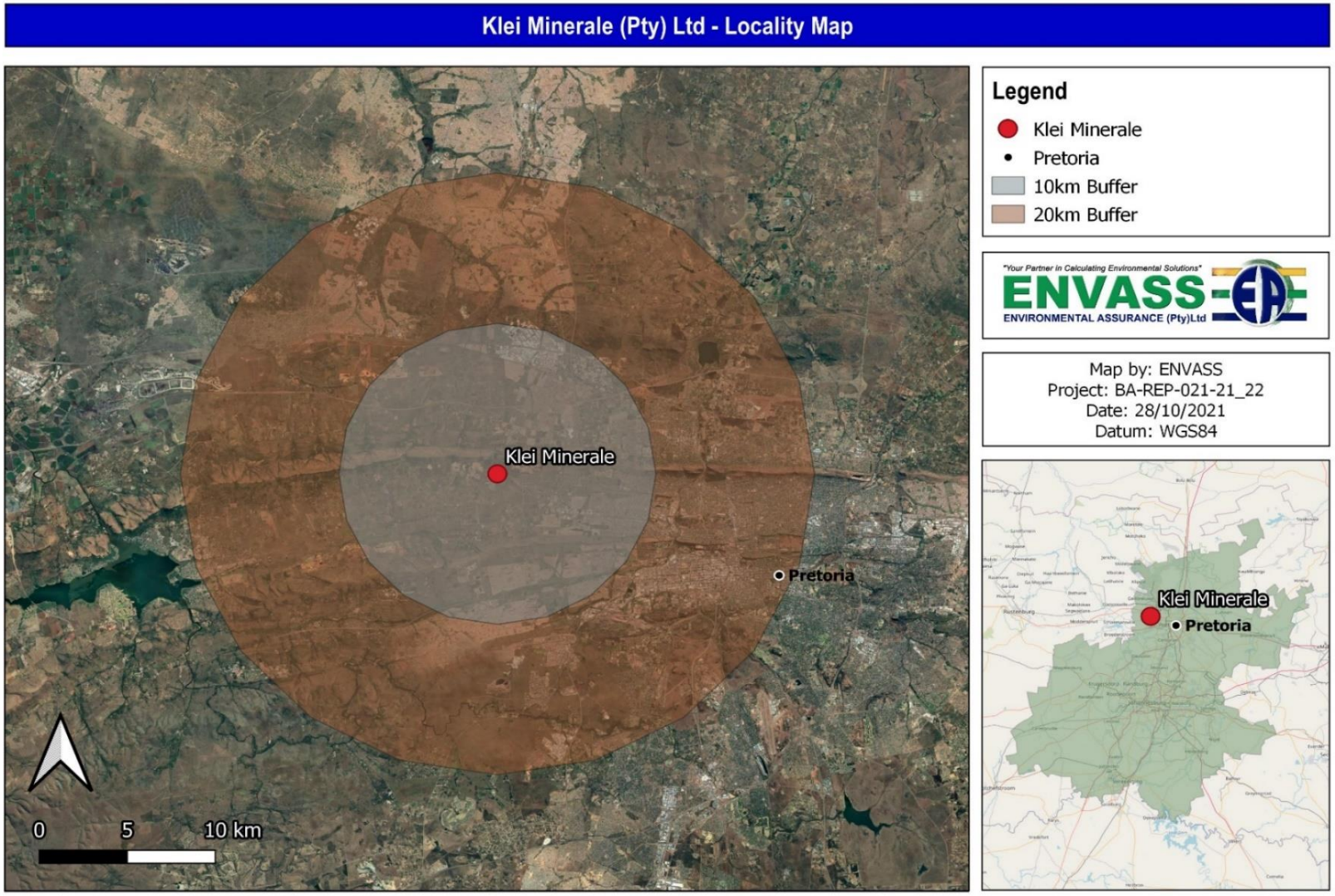

Figure 1: Regional Setting of the proposed prospecting activity in relation to Pretoria CBD

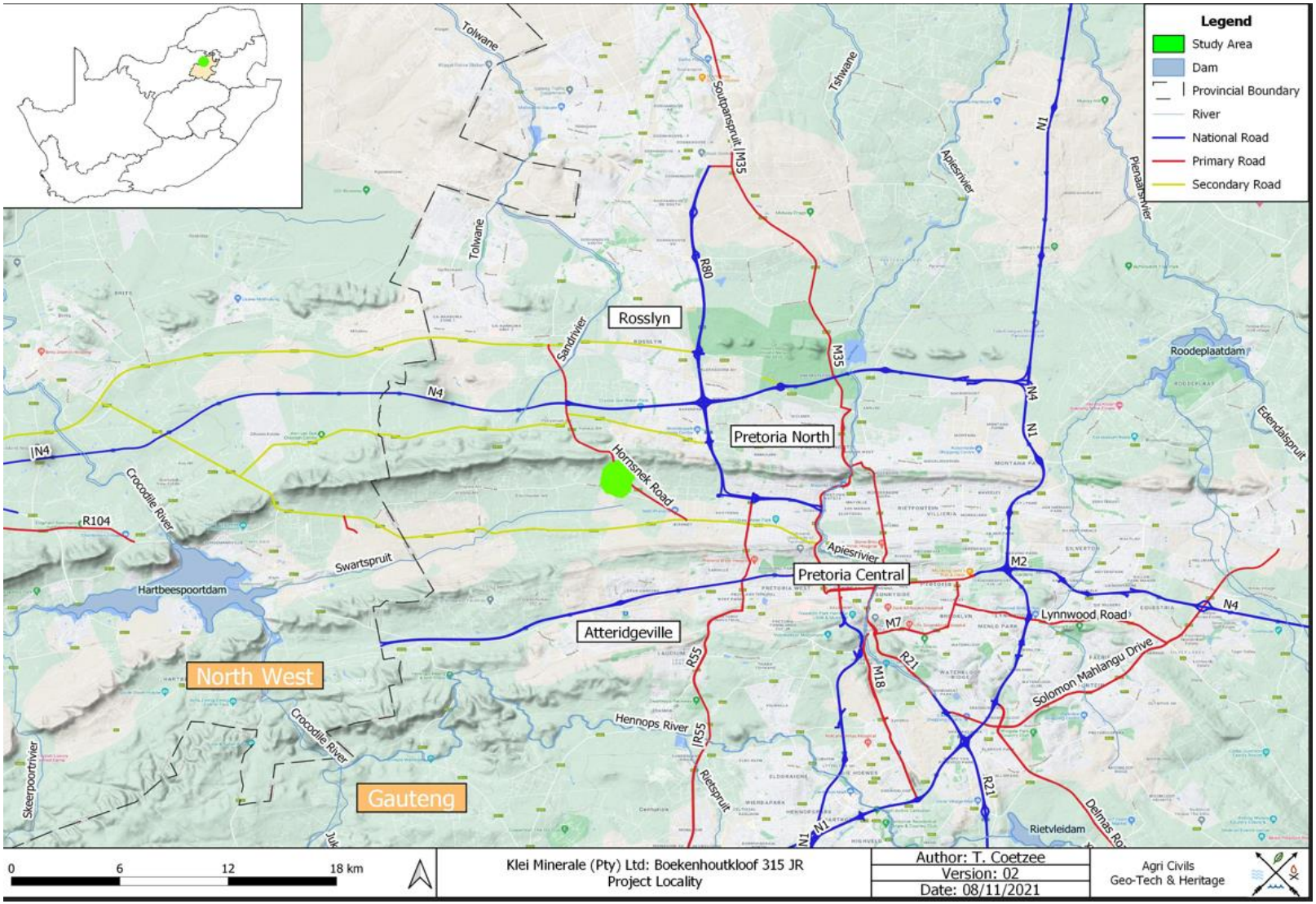

Figure 2: Generalised Locality Map of the Area

4. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

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

Prospecting at the Klei Minerale site will include:

- Phase 1: Non-Invasive Prospecting: - Desktop Study - Analysis of Existing Data GIS & analytical desktop studies Surveys.
- Phase 2: Non-Invasive Prospecting: Multi-Spectral and Aerial Surveys.
- Phase 3: Invasive Prospecting: Reconnaissance trenching, Sampling and Analysis.
- Phase 4: Invasive Prospecting: Resource trenching, Sampling and Analysis, Resource Estimation and Pre-Feasibility Study.
- Phase 5- Feasibility Studies and Mining Right Application: Since prospecting is temporary in nature no permanent structures will be constructed, negotiations and agreements may be made with the farm owners to use any existing infrastructure like access roads and other things like workshops. No accommodation is permitted on site.

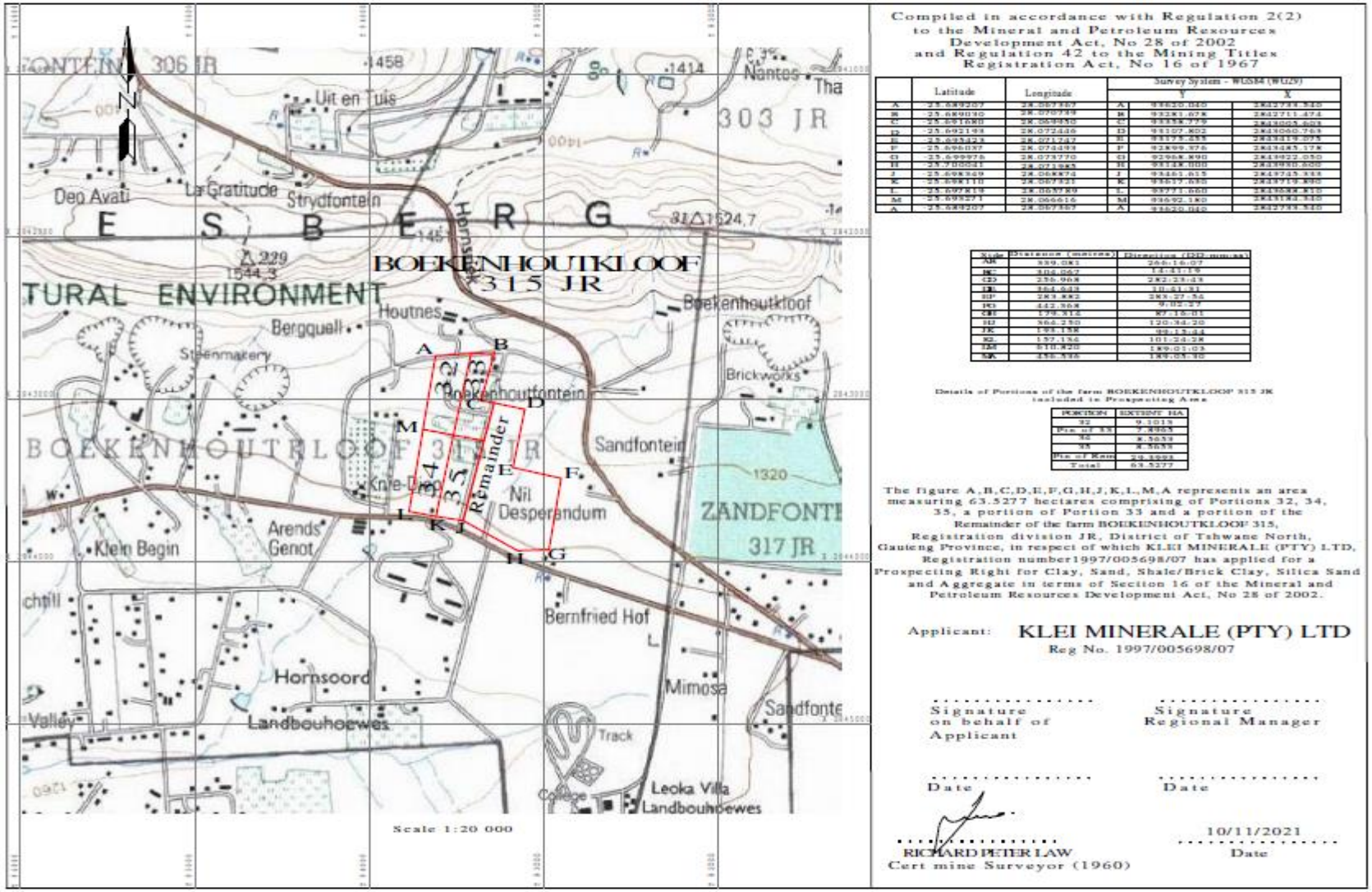

Figure 3: Site Layout Plan of the Proposed Prospecting Area

(i) Listed and specified activities

Table 6: Listed and specified 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 m²**	**LISTED ACTIVITY Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE (*GNR 983, GNR 984 or GNR 985 /NOT LISTED***	**WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act)**
CONSTRUCTION AND OPERATIONAL PHASE				
• Clearing of vegetation and topsoil.	Less than 1 hectare in total	-	NOT LISTED	NOT LISTED
• Stockpiling of overburden positioned for later rehabilitation.	Less than 1 hectare in total	-	NOT LISTED	NOT LISTED
• Prospecting.	Less than 1 hectare in total	X	Listing Notice 1 Activity 20	NOT LISTED
• Dust Suppression.	Extent of dirt roads open, non-paved areas.	-	NOT LISTED	NOT LISTED
DECOMMISSIONING AND CLOSURE				
• Backfilling and landscaping.	Less than 1 hectare in total	-	NOT LISTED	NOT LISTED
• Topsoil placement and reseeding concurrent rehabilitation.	Less than 1 hectare in total	-	NOT LISTED	NOT LISTED
• Monitoring of rehabilitated areas.	Less than 1 hectare in total	-	NOT LISTED	NOT LISTED

(ii) Description of the activities to be undertaken

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

Background

Klei Minerale(Pty) Ltd is applying for a Prospecting Right without bulk sampling, to prospect the following types of minerals:

- (Cy) Clay (General);
- (Q) Silica Sand (General); and
- (Qy) Sand (General).

The area demarcated for the prospecting covers an area of approximately 63.5277 ha. Refer to **Table 7** and **Figure 1** for the Portion descriptions and Map of the location respectively.

Table 7: Property name & coordinates

Farm	Reg Div	Portion	Extent Ha	District	Province	Coordinates (centre)
Boekenhoutkloof 315	JR	Portion of RE	29.3993	Tshwane North	Gauteng	25°41'47.52"S 28° 4'16.09"E
Boekenhoutkloof 315	JR	32	9.1013	Tshwane North	Gauteng	25°41'27.81"S 28° 4'3.97"E
Boekenhoutkloof 315	JR	Portion of Prt. 33	7.8965	Tshwane North	Gauteng	25°41'29.07"S 28° 4'10.65"E
Boekenhoutkloof 315	JR	34	8.5653	Tshwane North	Gauteng	25°41'44.65"S 28° 4'0.69"E
Boekenhoutkloof 315	JR	35	8.5653	Tshwane North	Gauteng	25°41'45.63"S 28° 4'6.18"E

Prospecting Method:

Prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. On successful completion of this desktop study, further possible, trenching and resource estimations will be performed if the results warrant it.

Prospecting at the Klei Minerale site will include:

- Phase 1: Non-Invasive Prospecting:- Desktop Study - Analysis of Existing Data GIS & analytical desktop studies Surveys.
- Phase 2: Non-Invasive Prospecting: Multi-Spectral and Aerial Surveys.
- Phase 3: Invasive Prospecting: Reconnaissance trenching, Sampling and Analysis.
- Phase 4: Invasive Prospecting: Resource trenching, Sampling and Analysis, Resource Estimation and Pre-Feasibility Study.
- Phase 5- Feasibility Studies and Mining Right Application: Since prospecting is temporary in nature no permanent structures will be constructed, negotiations and agreements may be made with the farm owners to use any existing infrastructure like access roads and other things like workshops. No accommodation is permitted on site.

Description of planned non-invasive activities:

Desktop studies to be undertaken over the area would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information about this area.

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

Description of planned invasive activities

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed.

(These activities result in land disturbances- without bulk sampling)

*Refer to **Appendix 4**- PWP for details.*

5. POLICY AND LEGISLATIVE CONTEXT

Table 8: 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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
Constitution of South Africa, 1996 (Act No. 108 of 1996) [as amended] • *Section 24* *Environment. -Everyone has the right-* *(a) to an environment that is not harmful to their health or well-being; and* *(b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that-* *i) prevent pollution and ecological degradation;* *ii) promote conservation; and* *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*	One of the key legislative measures that has been established is the promulgation of the National Environmental Management Act 107 of 1998 (NEMA). NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. NEMA prohibits a person from commencing a listed activity without environmental authorisation. The Project triggers activities listed in the EIA Regulations Listing Notices 1 of 2014 (as amended). The procedural	ENVASS is undertaking a Basic Assessment process to identify and determine the potential impacts associated with this proposed project. The Constitution, 1996 is the supreme law of the Republic. Any law or conduct inconsistent with it is invalid and the obligations imposed by it must be fulfilled. One of the key legislative measures that has been established is the promulgation of the National Environmental Management Act 107 of 1998 (NEMA). NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
	requirements for such an application and associated BA that needs to be undertaken, are prescribed by the EIA Regulations, 2014 (as amended) (the EIA Regulations, 2014) and informed by guidelines published in terms of Section 24J of NEMA as well as applicable protocols and minimum information requirements. In addition, the proposed prospecting activities has the potential to harm the environment and poses a risk to the health and wellbeing of people. The Applicant has the overall responsibility to ensure that the rights of people in terms of Section 24 of the Constitution is protected in terms of the proposed activity.	state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. NEMA prohibits a person from commencing a listed activity without environmental authorisation. The Project triggers activities listed in the EIA Regulations Listing Notices 1 of 2014 (as amended). The procedural requirements for such an application and associated Basic Assessment that needs to be undertaken, are prescribed by the EIA Regulations, 2014 (as amended) (the EIA Regulations, 2014) and informed by guidelines published in terms of Section 24J of NEMA as well as applicable protocols and minimum information requirements. Mitigation measures recommended will aim to ensure that the potential impacts are managed to acceptable levels to support the rights as presented in the Constitution.

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
		As part of the EIA process, the EIA Regulations require that a description of the policy and legislative context within which the development is proposed is reported on in the EIA Report. This includes an identification of all applicable legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments. This section has been prepared to satisfy this requirement. The potential environmental impacts associated with this project is required to be considered in compliance with the 2014 EIA Regulations (as amended).
National Environmental Management Act (No. 107 of 1998) [as amended] • Section 28 (1) Duty of Care and responsibilities to minimise and remediate environmental degradation.	The Applicant is the developer and overall responsibility of the prospecting activities rests with him, in terms of liabilities associated with the construction, operational, decommissioning, closure and post-closure phase.	The proposed prospecting project triggers Listed Activities in accordance with the EIA regulations, 2014 (as amended) and therefore requires environmental authorisation prior to any activity being undertaken. Because the Project triggers activities in Listing Notice 1, the application for environmental authorisation is subject to

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
	Overall responsibility of the prospecting rests with the Applicant, especially in terms of liabilities associated with the operational phase.	the Basic Assessment process for all activities, including those listed under Listing Notice 1. The Listed Activities have been included in Table 2. The EA application was submitted on 11 October 2022. This EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
EIA Regulations, 2014 (as amended) The proposed prospecting activities triggers listed activities in terms of Listing Notice 1 (GNR 326) [as amended] for which a Scoping and Environmental Impact Assessment (EIA) process have to be conducted:	The clearance of vegetation for the prospecting process would require the application for environmental authorisation.	The proposed prospecting project triggers Listed Activities in accordance with the EIA regulations, 2014 (as amended) and therefore requires environmental authorisation prior to any activity being undertaken. Because the Project triggers activities in Listing Notice 1, the application for environmental authorisation is subject to the Basic Assessment process for all activities, including those listed under Listing Notice 1. The Listed Activities have been included in Table 2.

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
		The EA application was submitted on 11 October 2022. This EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
EIA Regulations, 2014 (Government Notices 982) [as amended 2017] Chapter 6: Regulation 39 to 44: Public Participation; Chapter 4: Application for Environmental Authorisation: *Part 2 Basic Assessment Report* *Appendix 4: Environmental Management Programme* *Appendix 7: Specialist Reports*	The EIA Regulations, 2014 (as amended) prescribes inter alia: The manner in which public participation needs to be conducted as well as the requirements of a scoping and environmental impact assessment process and the content of a scoping report, environmental impact assessment report and environmental management programme. The content of specialist reports are also provided.	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
Screening Tool On 5 July 2019, the Minister of Environmental Forestry and Fisheries published a notice requiring that when submitting an application for environmental authorisation in terms of regulation 19 and 21 of the Environmental impact Assessment Regulations, 2014 (as amended) (the	In accordance with the Screening tool the following sensitivities were identified: • Agriculture Theme –High Sensitive • Animal Species Theme – Medium Sensitive • Aquatic Biodiversity Theme - Low Sensitive	This Basic Assessment (Part A of this submission) is informed by the requirements of the NEMA and Regulations thereunder as well as the Screening Report, attached as **Appendix 8.**

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
EIA regulations), the applicant must submit the report generated by the National Web Base Screening Tool ("The Screening Tool") with the application.	• Archaeological and Cultural Heritage Theme – Very High Sensitive • Civil Aviation Theme - High Sensitive • Paleontological Theme - Very High Sensitive • Plant Species Theme – Medium Sensitivity • Terrestrial Biodiversity Theme - Very High Sensitive The Screening Report is attached as **Appendix 8** As the application is only for prospecting, the following specialist studies were undertaken. - Desktop Agricultural Impact Assessment - Phase 1 Heritage Impact Assessment - Terrestrial Biodiversity Impact Assessment - Desktop Palaeontology Impact Assessment - Baseline Noise Assessment, - Baseline Visual Assessment, -Baseline Air quality Assessment, and -Baseline Socio-economic Assessment	

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
Mineral and Petroleum Resources Development Act, 2002 (Act. 28 of 2002) [as amended]: *Chapter 2 (5): Legal nature of a prospecting right;* *Chapter 4: Mineral and Environmental Regulation* *(9) Order of processing of applications* *(10) Consultation with Interested and Affected Parties;* *(16 – 19) Prospecting right application.* *(37) Environmental Management Principles*	The application is for a prospecting right and therefore all regulations pertaining to the application process of a prospecting right and environmental management is applicable to this application.	The Basic Assessment process is undertaken to meet the requirements of the MPRDA read with the EIA Regulations, 2014 (as amended).
Mineral and Petroleum Resources Development Regulations (GNR 420).		
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] • *Section 16* *General duty in respect of waste management;* • *Section 17;* *Reduction, re-use, recycling and recovery of waste;* • *Section 18;* *Extended producer responsibility; and*	The proposed activities will produce general and hazardous waste which need to be managed and disposed of according to best practices such as recycling, safe storage, etc.	The proposed Project does not warrant the need to apply for a Waste Management Licence (WML), however; the norms and standards for waste management under the Act will be duly taken into consideration. Requirements of NEMWA and related regulations were included in the Basic Assessment/EMPR (Part B of this submission).

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• *Section 21* *General requirements for storage of hazardous and general waste.*		
National Water Act, 1998 (Act No. 36 of 1998) [as amended] • *Section 3* *Regulation of flow and control of all water* • *Section 19* *Prevention of pollution to watercourses*	Stormwater need to be managed properly in order to achieve prevention of pollution and hazards.	The proposed Project does not warrant the need to apply for a Water Use Licence Application, however; water management under the NWA will be duly taken into consideration.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996) [as amended] and associated regulations • *Chapter 2, Sections 2 – 4* *Responsibilities of owner* • *Chapter 2, Sections 5 – 13* *Responsibilities of manager;* • *Chapter 2, Sections 14 – 18;* *Documentation requirements;* • *Chapter 2, Section 19 – 20 and 22 to 24* *Employee's rights and duties; and* • *Chapter 2, Section 21* *Manufacturer's and supplier's duty for health and safety*.	The development activities will create an environment that may not be safe and healthy for workers on and visitors to the site. The act provides for measures to prevent threats to the health and safety of humans in the development area.	The Basic Assessment process is undertaken to meet the requirements of the Mine Health and Safety Act, as amended. This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the MHSA and Regulations thereunder.

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National Heritage Resources Act, 1999 (Act No. 25 of 1999) • *Section 38* *Statutory Comments to be obtained from the South African Heritage Resources Agency (SAHRA)* • *Section 44 (1);* *Preservation and protection of heritage resources;* • *Section 3 Types and ranges of heritage resources (i) (i);* *Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens*.	Protection of indigenous heritage resources that may potentially occur on the property. A Phase 1 Archaeological Impact Assessment (AIA)was conducted in 2022 by Tobias Coetzee (**Appendix 7.2**). A total of 10 sites were recorded on historical aerial images and topographical maps and were inspected during the site visit. Nine sites were identified as buildings and one site as a disturbance in the vegetation/soil that might indicate historical surface infrastructure. One of the sites associated with buildings, as well as the site that appears as a vegetation/soil disturbance, have been demolished (B05, B06). A further four sites associated with intact buildings were identified (B03, B07, B08, B10), as well as four sites associated with building ruins (B01, B02, B04, B09). The identified intact building sites and ruins, or parts thereof, might exceed 60 years of age and should	For the Basic Assessment Phase, a Phase 1 Heritage Impact Assessment was compiled. The report is included as **Appendix 7.2** and will be submitted to SAHRA for comment. The Basic Assessment process is undertaken to meet the requirements of the NHRA. This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NHRA.

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	therefore be avoided by the proposed prospecting activities. Alternatively, a destruction permit from the provincial heritage authority will be required. The demolished sites might be associated with subsurface culturally significant material and care should therefore be exercised when prospecting in the vicinity of these sites. Subject to adherence to the recommendations and approval by SAHRA (South African Heritage Resources Agency), the Klei Minerale (Pty) Ltd prospecting project may continue. Should skeletal remains be exposed during prospecting, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage and Resources Act, 25 of 1999 section 36 (6)). Also, should culturally significant material be discovered during the course of the said prospecting, all activities must be suspended pending further investigation by a qualified archaeologist.	

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	Comments to be obtained from SAHRA on the Draft BAR and EMPR and specialist assessment.	
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [as amended] • *Section 32* *Control of dust* • *Section 34* *Control of noise*	Impacts on surrounding landowners need to be managed through dust and noise monitoring and mitigation measures.	An Air Quality Baseline Assessment has been summarised in this Basic Assessment/EMPR (Part B of this submission) and is appended hereto as **Appendix 7.5**. The Project's activities will set out to abide by the NEM: AQA and standards set out in the NAAQS. The Project does not trigger an Atmospheric Emission License.
National Dust Control Regulations, 2013 (Government Notice 827 of 2013) • *Section 3* *Dust fall standard* • *Section 4* *Dust fall monitoring program* • *Section 6* *Measures for control of dust* • *Section 7* *Ambient air quality monitoring (PM10)* • *Section 8* *Offences*	Dust fallout need to be monitored in accordance to the standards set out in the monitoring programme with the specified measures. This is a result of the Applicant being liable to offences and penalties associated with non-conformance to dust which may influence employees and surrounding landowners.	

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• *Section 9* *Penalties*		
Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) [as amended] • *Section 12 (1)* *Duty of the landowner to prevent fire from spreading to neighbouring properties.*	Cautionary steps in avoiding the spread of fires to and from neighbouring properties.	The Basic Assessment process is undertaken to meet the requirements of the Veld and Forest Fire Act, as amended. This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] • *Section 9* *Norms and standards* • *Section 27* *Delegation of power and duties* • *Section 30* *Financial accountability* • *Section 43* *Biodiversity management plans.*	Indigenous vegetation need to be protected and managed in accordance with management measures set out in the management plans developed for the proposed activity. The Applicant need to ensure he is aware of and covers his liabilities.	A Terrestrial Biodiversity Impact Assessment, was conducted as part of the Basic Phase, and appended hereto as **Appendix 7.3**.
(Government Notice 609 of 2017) Notice of the List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998).	It is the responsibility of the Applicant to avoid unnecessary removal of protected tree species. Should	

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	protected tree species need to be removed, a permit must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF).	
Alien and Invasive Species Regulations (Government Notice 598 of 2014) and Alien and Invasive Species List, 2016 in terms of NEMBA (Government Notice 864 of 2016) • *Notice 2* *Exempted Alien Species in terms of Section 66 (1)* • *Notice 3* *National Lists of Invasive Species in terms of Section 70(1) – List 1, 3-6 8 & 11* • *Notice 4* *Prohibited Alien Species in terms of Section 67 (1) – List 1, 3-6, 9 & 12*	It is the responsibility of the Applicant to ensure that all prohibited plant and animal species are eradicated as far as possible.	
Conservation of Agricultural Resources Act (no. 43 of 1983) • *Section 5* *Prohibition of spreading of weeds* • *Section 12* *Maintenance of soil conservation works and maintenance of certain states of affairs*	Listed invader/alien plants occurring on site which requires management measures to be implemented to strive to maintain the status quo environment, especially through the guidelines provided by the Regional Conservation Committee.	

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• *Section 16* *Regional Conservation Committees*		
Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended] • *Section 2* *Declaration of grouped hazardous substances;* • *Section 4* *Licensing;* • *Section 16* *Liability of employer or principle* • *Section 9 (1)* *Storage and handling of hazardous chemical substances* • *Section 18* *Offences*	The Applicant must ensure the safety of people working with hazardous chemicals (specifically fuels), as well as safe storage, use and disposal of containers during the on-site operational phase together with the associated liability should non-compliance be at the order of the day.	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995) • *Section 4* *Duties of persons who may be exposed to hazardous chemical substances* • *Section 9A (1)*	Hazardous substances will be stored and utilised on the site and non-compliance to management measures will result in prosecution of the Applicant in terms of his liabilities to the socio-economic environment.	

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Penalties		
NEMA: Government Notice. 805 Companion Guideline on the Implantation of the Environmental Impact Assessment Regulations, 2010, October 2012.	The application for Environmental Authorisation is submitted in terms of the EIA Regulations.	
NEMA: GN. 807 Public Participation Guideline, October 2012	Consultation with Interested and Affected Parties and Communities.	
National Development Plan 2030 (2012)	Land uses	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NDPs, SDFs, SDPs and Municipal By-Laws.
National Framework for Sustainable Development (2008)	Land uses	
National Strategy for Sustainable Development and Action Plan 2011 – 2014 (NSSD 1) (2011)	Land uses	
Gauteng Spatial Development Framework (SDF)	Land uses	
Gauteng Spatial Development Plan (SDP)	Land uses	
Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector (2013) (Department of Environmental Affairs, Department of Mineral Resources and Energy, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute)	The Guideline provides guidance on the impacts on biodiversity typically associated with mining as well as mitigation measures and strategies. The guideline is taken into consideration in this EIA and the development of the Environmental Management Programme.	A Terrestrial Biodiversity Impact Assessment, was conducted as part of the Basic Phase, and appended hereto as **Appendix 7.3.**
Gauteng Transport Infrastructure Act, 2001 (Act No. 8 of 2001) [as amended];	An application must be submitted to the Department for a way leave if any part of a proposed service falls within 95,0	

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	m (measured from the centreline of any of the Department's existing or future road(s)/railway line or within a 500,0 m radius of any intersection on said road(s)/railway line). Where mining operations are to be undertaken, Section 49 of the Gauteng Transport Infrastructure Act, 2001 (Act No 8 of 2001) shall apply.	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NDPs, IDPS, SDFs, SDPs and Municipal By-Laws.
City of Tshwane Spatial Development Framework (MSDF), 2012	Land use	
City of Tshwane Regional Spatial Development Framework (RSDF): Region 3	Land use	
City of Tshwane Integrated Development Plan (IDP) 2021/26	Land use Socio-economic baseline information and need and desirability for the development.	
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication.	Impacts on surrounding landowners need to be managed through noise mitigation measures.	The Basic Assessment process is undertaken to meet the requirements of the Mine Health and Safety Act, as amended. This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the MHSA and Regulations thereunder.

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SANS 1929: Ambient Air Quality – Limits for Common Pollutants	Impacts on surrounding landowners need to be managed through dust mitigation measures.	An Air Quality Baseline Assessment has been summarised in this Basic Assessment/EMPR (Part B of this submission) and is appended hereto as **Appendix 7.5**. The Project's activities will set out to abide by the NEM: AQA and standards set out in the NAAQS. The Project does not trigger an Atmospheric Emission License.
SANS 1137: Standard test method for the collection and measurement of dust fall (settleable particulate matter).	Impacts on surrounding landowners need to be managed through dust mitigation measures.	
SANS 10234: 2008 Globally Harmonised Systems of classification and labelling of chemicals (GHS) Government Notice 634. August 2013: Waste Classification	All dangerous goods on site need to be managed according to these standards.	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the NEMA and Regulations thereunder.
SANS 10228:2006 The Identification and Classification of Dangerous Goods for Transport	All dangerous goods to be transported to and from the site need to be managed according to these standards.	
ASTM d 1739, 1970 or equivalent approved protocol for dust monitoring.	Impacts on surrounding landowners need to be managed through dust mitigation measures.	An Air Quality Baseline Assessment has been summarised in this Basic Assessment/EMPR (Part B of this submission) and is appended hereto as **Appendix 7.5**. The Project's activities will set out to abide by the NEM: AQA and standards set out in the NAAQS. The Project does not trigger an Atmospheric Emission License

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)*	**COMPLIANCE AND RESPONSE TO THE POLICY AND LEGISLATIVE CONTEXT**	**REFERENCE WHERE APPLIED**
Gauteng Conservation Plan: Version 3.3 (C-Plan 3.3)- 2011	Identifies Critical Biodiversity Areas, Ecological Support Areas, and irreplaceable, protected and important areas.	A Terrestrial Biodiversity Impact Assessment, was conducted as part of the Basic Phase, and appended hereto as **Appendix 7.3**.
City of Tshwane: - Fire Brigade Service - Water and Sewer - Waste Management	The Applicant is required to adhere to the City of Tshwane By-Laws.	This Basic Assessment/EMPR (Part B of this submission) is informed by the requirements of the Municipal By-Laws.

6. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

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

According to the Western Cape Department of Environmental Affairs and Development Planning's (WC DEADP) Guideline on Need and Desirability: EIA Guideline and Information Document Series (2011), to describe the need for a development, it must be determined whether it is the right time for locating the type of land use and/or activity being proposed. To describe the desirability for a development, it must be determined, whether it is the right place for locating the type of land use and/or activity being proposed. Need and desirability can be equated to the concept of wise use of land which can be determined through the question of what is the most sustainable use of land. In light of the above, the need and desirability of an application must be addressed separately and in detail answering *inter alia* the following questions:

Table 9: Need and desirability considerations

Securing Ecological Sustainable Development and Use of Natural Resources		
1.1.1	**How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? How were the following ecological integrity considerations taken into account?** 1.1.1 Threatened Ecosystems, 1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3 Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4 Conservation targets, 1.1.5 Ecological drivers of the ecosystem, 1.1.6 Environmental Management Framework, 1.1.7 Spatial Development Framework, and 1.1.8 Global and international responsibilities relating to the environment (e.g., RAMSAR sites, Climate Change, etc.)	The Prospecting Right area falls within The area falls within the Moot Plains Bushveld and is characterised by low, thorny *Vachellia* savannah (e.g. *V. nilotica* and *V. tortilis* subsp. *heteracantha*) along the plains, low-slope woodlands and a graminoid-dominated herbaceous layer (Mucina & Rutherford, 2018). According to the Critical Biodiversity Areas datasets provided by SANBI (2022); the application area does overlap with a portion of a Critical Biodiversity Area as seen in, however during the site survey it was confirmed that the CBA falls within degraded land. Additionally, the proposed prospecting project falls within the Magaliesburg Important Bird Area, with Vulture species possibly occurring in the area. The bushveld area was dominated by *Acacia retinodes*, *Jacaranda mimosifolia, Tipuana tipu, Vachellia nilotica*, and *Vachellia tortilis* within the application area, however the majority of the area is dominated by alien invasive Eucalyptus, Pine trees and Syringa. Thatch grass was the dominant grass type with patches of *Zinnia* spp. and Pom pom weed. Mammal species that were identified onsite only included the yellow mongoose (*Cynictis penicillata*) and ground squirrel (*Xerus* spp.). Bird species observed within the area included Village indigobird (*Vidua chalybeata*), Helmeted guineafowl (Numida meleagris), Southern red bishop (Euplectes orix), Southern masked weaver (*Ploceus velatus*) and Laughing dove (*Spilopelia senegalensis*).

		The majority of the study site consisted of alien invasive vegetation and limited indigenous vegetation. No red listed faunal species were observed during the site visit, but the Near Threatened Giant Bull Frog (*Pyxicephalus adspersus*), Coppery Grass Lizard (*Chamaesaura aenea*), Striped Harlequin Snake (*Homoroselaps dorsalis*), Lechwe (*Kobus leche*), Vaal Rhebok (*Pelea capreolus*); the Vulnerable *Verreaux's* (Black) Eagle (*Aquila verreauxii*) and Sable (*Hippotragus niger niger*) and the Endangered Oribi (*Ourebia ourebi*) and African wild dog (*Lycaon pictus*) are thought to occur in the area according to the datasets from Animal Demographic Units (ADU). It is unlikely that these animals occur in proximity of the proposed area. Environmental Impact Assessment All forms of development will have an immediate effect on the natural environment. It is therefore of utmost importance to provide information on the environmental consequences these activities will have and to inform the decision-makers thereof. General impacts Assessed: The site has sections which ranges between transformed, slightly impacted to natural, however, the onset of prospecting activities might result in impacts to the natural environment due to increased movement, traffic and large machinery to the area. Heavy machinery and vehicles might result in compaction of the soil and destruction of vegetation

		habitat which in turn will also impact vegetation and on the animals that use the area as habitat. Impacts may lead to the further increase of invasive species from the surrounding areas and may change the vegetation structure and composition of this unit. It may also result in the spread of the invaders already found on-site to other surrounding areas. Continuous rehabilitation and clean-up should take place during the construction and operational phase ensuring the trenches been backfilled and topsoil covered to ensure vegetation growth could recover. However, prospecting is a short-term activity and if done correctly and rehabilitated and filled correctly, impacts will quickly fade. The results may be positive if rehabilitation has been done correctly and the site may be rehabilitated back to a natural landscape. Initial movement around the site to ensure rehabilitation will have similar results as may be expected during the Construction Phase. Incremental losses and fragmentation of habitat are two of the more serious cumulative impacts in terms of fauna and flora. Given the small scale and low intensity of the activities proposed (trenches), the general focus areas and the nature of the proposed development, and the potential for cumulative impacts are expected to be low. Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of alien invasive species, a potential loss of red listed

		plant species, habitat fragmentation and an overall decrease in species richness in the area. The large land surface alterations will also change the composition of the ecosystem on the edge of structures. This will result in a loss of cohesiveness between larger fragments of habitat limiting gene exchanges and resources between these areas. It is the understanding of the specialist that no bulk sampling or drilling will take place and prospecting activities are limited to trenching per prospecting programme (**Appendix 4**).
1.2	**How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	Impacts predicted for the development is Moderate to Low with mitigation. This is largely due to the fact that the activity is only trenching and all sensitive areas as identified by specialist studies will be excluded from the active prospecting area. General impacts, such as dust, noise, etc. have been covered within the Environmental management programme Report (EMPR) proposed for the Prospecting activities. Several mitigation and management measures and monitoring features have been included in the EMPR to ensure minimal and managed operation of the footprint area designed for the prospecting area.
1.3	**How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	Mitigation and Management measures prescribed will aid to avoid and lower any possible impacts that may result from the prospecting activities. Surface infrastructure for the prospecting project is very limited and temporary. Final rehabilitation of trenches will restore Land capability.

1.4	**What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?**	General waste, Hazardous waste and litter will be generated during the prospecting operation and these should be kept in designated areas and disposed of to a licensed landfill facility. Other wastes that may cause soil contamination are from the use of vehicles and drilling equipment during the prospecting process, which may lead to hydrocarbon spills. Regulations for soil clean-up and management have been prescribed in the EMPR.
1.5	**How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	A specialist heritage study was conducted for the project and these findings have been included in the application. The findings have resulted in all sensitive sites to be delineated and these sites will be excluded from the active prospecting area. All other relevant specialist investigations have been incorporated.
1.6	**How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?**	It is noted that due to the nature of this project, will not significantly deplete any natural resource as the activity is very limited. Through implementing good practice environmental management measures and mitigation measures, it will ensure that both human and environment are not negatively affected by the development.
1.7	**How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources,**	Renewable natural resources may include the use of water to a limited amount on-site. Temporary Stormwater management infrastructure might be required during prospecting, but this will be determined during phase 1 of prospecting

	or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? **1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e., de-materialised growth)? (note sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life). 1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e., what are the opportunity costs of using these resources this the proposed development alternative?) 1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?**	Also refer to the impact assessment and mitigation methods in EMPR (**Part B**) of this report. As the project will make use of existing infrastructure in the prospecting area, no additional / new infrastructure will be required,
1.8	**How were a risk-averse and cautious approach applied in terms of ecological impacts? 1.8.1 What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?** **1.8.2 What is the level of risk associated with the limits of current knowledge?** **1.8.3 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?**	The Environmental risk assessment for all environmental features has been included within Section 9 & 10 of the Draft Basic Assessment and the EMPR (**Part B**). Ecological (Fauna, Flora and Avifaunal) and Heritage specialist study (including many other specialist investigations as incorporated within this document) was completed for the project to ensure the impacts of these aspects have been properly assessed and will be catered for within the Environmental Management Programme (EMP). Other specialist investigations were also

		undertaken, and these are relevant for the specific project and adherence to these management measures will mitigate and manage impacts predicted. The level of risk has been informed by these specialist studies and feedback from the I&APs to date. A section regarding limitations of the studies has been included in the EIA/EMP format and will be available for the competent authorities to consider as well.
1.9	**How will the ecological impacts resulting from this development impact on people's environmental right in terms following.** **1.9.1 Negative impacts: e.g., access to resources, opportunity costs, loss of amenity (e.g., open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?** **1.9.2 Positive impacts: e.g., improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?**	Noise, dust and visual pollution can increase if not managed correctly. Possibly water pollution, if impacts are not managed effectively, but with the proper mitigation and good practice environmental management measures, it will result in minimal impacts. These impacts have been assessed and detailed prevention and mitigation measures have been recommended (refer to **Table 16** to **Table 18**).
1.10	**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 (e.g., on livelihoods, loss of heritage site, opportunity costs, etc.)?**	Ecological aspects and specialist impact assessments have been included in the document and risk assessments utilised to guide the Environmental Management Program.
1.11	**Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?**	The Environmental risk assessment for all environmental features has been assessed and included in the BAR/EMPR.

1.13	**Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?**	Incremental losses and fragmentation of habitat are two of the more serious cumulative impacts in terms of fauna and flora. Given the small scale and low intensity of the activities proposed (trenching), the general focus areas and the nature of the proposed development, and the potential for cumulative impacts are expected to be low. Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of alien invasive species, a potential loss of red listed plant species, habitat fragmentation and an overall decrease in species richness in the area. The large land surface alterations will also change the composition of the ecosystem on the edge of structures. This will result in a loss of cohesiveness between larger fragments of habitat limiting gene exchanges and resources between these areas. It is the understanding of the specialist that no bulk sampling or drilling will take place and prospecting activities are limited to trenching per prospecting programme (**Appendix 4**). However, the implementation of the mitigation measures and management measures are applied, cumulative negative impacts as a result of the prospecting will be managed optimally.
Promoting justifiable economic and social development		
2.1	**What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?**	The project is not completely aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP); however, it will not compromise the integrity of these respective forward

	2.1.1 The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, **2.1.2 Spatial priorities and desired spatial patterns (e.g., need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),** **2.1.3 Spatial characteristics (e.g., existing land uses, planned land uses, cultural landscapes, etc.), and** **2.1.4 Municipal Economic Development Strategy ("LED Strategy").**	planning documents, due to the relatively short-term period of the prospecting activities. The approval of this prospecting application will not compromise the integrity of the existing environmental management priorities of the area as defined in the Mogale City EMF or Magaliesburg precinct Plan, provided that sensitive areas and vegetation as indicated by the specialists are avoided and the mitigation measures as recommended in this report and in the EMPR (refer to Part B of this report), are implemented.
2.2	**Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? 2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?**	Also refer to the comments made above
2.3	**How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?**	Refer to comments made above. All aspects and comments received from I&APs during the process will be reasonably addressed and incorporated into the final BAR/EMPR submitted to the DMRE. Local economic growth and work opportunities will be main benefits from the project if approved and may address some of the physical, psychological, development, cultural and social needs. Main benefits from the prospecting, which may possibly address community needs are mentioned below (also refer next comment) and is in-line with the local municipality and national goals of development and transformation.

2.4	**Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?**	The main benefits of the proposed prospecting operation are: • Direct economic benefits will be derived from wages, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and the continued spending power of employees. • Implementation of the proposed project will result in continued skills development associated with prospecting activities. • It contributes to the economic welfare of the surrounding community by creating working opportunities. The project is aligned with the objectives of the MPRDA (Act 28 of 2002) • To promote economic growth and mineral development in the Republic • To promote employment and advance the social and economic welfare of all South Africans.
2.5	**In terms of location, describe how the placement of the proposed development will.** **2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,** **2.5.2. reduce the need for transport of people and goods,** **2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g., will the development result in densification and the achievement of thresholds in terms public transport),** **2.5.4. compliment other uses in the area,** **2.5.5. be in line with the planning for the area,**	Alternatives have been assessed during the BAR phase, the findings of the specialist studies, comments from I&APs to date and resources studies have been taking into consideration to determine alternatives for the proposed project. All additional comments from I&APs will be taken into consideration in the final report to be submitted to the competent authority for adjudication.

	2.5.6. for urban related development, make use of underutilised land available with the urban edge, **2.5.7. optimise the use of existing resources and infrastructure,** **2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g., not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),** **2.5.9. discourage "urban sprawl" and contribute to compaction/densification,** **2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,** **2.5.11. encourage environmentally sustainable land development practices and processes** **2.5.12. take into account special locational factors that might favour the specific location (e.g., the location of a strategic mineral resource, access to the port, access to rail, etc.),** **2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e., an area with high economic potential),** **2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and** **2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?**	
2.6	**How were a risk-averse and cautious approach applied in terms of socio-economic impacts?** **2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?**	Gaps and limits in knowledge have been given within the BAR/EMPR document and where appropriate a pre-cautionary approach has been applied. Gaps and limitations have been properly assessed and addressed. The level of risk is low as the project is not expected to have far reaching negative impacts on socio-economic conditions. In fact, the prospecting will have a positive impact in terms of employment for the prospecting period. The gaps in knowledge related to

	2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? **2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?**	fine tuning of precises prospecting locations but this will be confirmed once the prospecting right is granted.
2.7	**How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:** **2.7.1. Negative impacts: e.g., health (e.g., HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?** **2.7.2. Positive impacts. What measures were taken to enhance positive impacts?**	Refer to all other aspects regarding the Socio-Economic environment, benefits and disadvantages. All of the relevant aspects have also been addressed within the BAR/EMPR and may be viewed within the Impact Assessment, Management and Mitigation tables as contained within this document.
2.8	**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 (e.g., over utilisation of natural resources, etc.)?**	The area where the prospecting right is proposed, is currently utilised for a number of uses including mining, agriculture and grazing. The Land Use and Capability has been described within this document. Refer to the baseline environment section (**Section 9**).
2.9	**What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?**	Health and Safety considerations have been included in the measures taken to pursue the best practicable environmental options in terms of socio-economic considerations, such as implementation of the mitigation measures such as dust, noise and visual management and mitigation. No other socio-economic considerations are relevant, except for work creation for local communities within the area, but these will be same for any footprint chosen on the farms. The environmental features and impacts, known resource and financial restraints associated with prospecting (specific resource) were the deciding

		factors concerning the best suited option. Also refer to the impact assessment and mitigation measures in **Table 11 and 16**.
2.10	**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 (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?**	Refer to the impact assessment and mitigation measures in **Table 11 and 16** of this BAR. The mine will be in line with the regulatory requirements, provide financial provision to ensure that the mitigation measures proposed can be carried out. All alternative scenarios have been discussed in this BAR and EMPR.
2.11	**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 categories of persons disadvantaged by unfair discrimination?**	The main benefits of the proposed prospecting operation are: • Direct economic benefits will be derived from wages • Indirect economic benefits will be derived from the procurement of goods and services and the spending power of employees. • Implementation of the proposed project will result in skills development associated with prospecting. • It contributes to the economic welfare of the surrounding community by creating working opportunities. • It contributes to the upliftment of living standards and the health and safety of the local community. • The project will result in the estimation if a reserve. The project is aligned with the objectives of the MPRDA (Act 28 of 2002)

		• To promote economic growth and mineral development in the Republic; and • To promote employment and advance the social and economic welfare of all South Africans. By conducting a Basic Assessment Process, the applicant ensures that equitable access has been considered. Refer to the impact assessment and mitigation measures in **Table 16 to Table 18** of this BAR and EMPR.
2.12	**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?**	Disturbances in terms of Noise, Dust, Waste and Health and Safety have been assessed according to a Risk Matrix and included within this report. Mitigation and Management measures are prescribed for every possible impact which may result from the prospecting right being granted.
2.13	**What measures were taken to:** **2.13.1. ensure the participation of all interested and affected parties,** **2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,** **2.13.3. ensure participation by vulnerable and disadvantaged persons,** **2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,** **2.13.5. ensure openness and transparency, and access to information in terms of the process,**	Public Participation will be and has been conducted in accordance with the guidelines and regulations. All comments received during the BAR phase will be included in the Final BAR.

	2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and **2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were promoted?**	
2.14	**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 (e.g., a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?**	Refer to comments made above and Refer to **Appendix 5** of this BAR, describing the public participation process that has been implemented for the proposed project.
2.15	**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 prospecting Right holder will need to draft an Environmental Policy and a Health and Safety Policy, along with Standard Operational Procedures (SOPs) which will regulate activities on the prospecting area. All workers and contractors will need to abide to the policies and framework as specified. It is not anticipated that any new jobs will be created; rather, existing jobs will be maintained for a longer period of time.
2.16	**Describe how the development will impact on job creation in terms of, amongst other aspects:** **2.16.1. the number of temporary versus permanent jobs that will be created,** **2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e., do the required skills match the skills available in the area),** **2.16.3. the distance from where labourers will have to travel,**	Refer to comments made above. As the application is for a prospecting Right, it is a long-term project, and the appropriate areas will be rehabilitated afterwards to match the pre-prospecting land use (or alternatively the approved land use).

	2.16.4. the location of jobs opportunities versus the location of impacts (i.e., equitable distribution of costs and benefits), and **2.16.5. the opportunity costs in terms of job creation (e.g., a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).**	
2.17	**What measures were taken to ensure:** **2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and** **2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?**	The applicant is in the process of applying for the following aspects across different legislation requirements: • Prospecting right (this application – Environmental Authorisation). • All legislation which has been incorporated within these processed were discussed within Section regarding Policy and Legislative Content above.
2.18	**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?**	Refer to comment above as these aspects have already been addressed within previous discussions.
2.19	**Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?**	Yes, for a sensitive environment (which is almost always associated with prospecting) all impacts have been addressed optimally as best possible.
2.20	**What measures were taken to ensure that he 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?**	Mitigation and management measures have been described for all environmental aspects identified and is incorporated into the EMPR.

2.21	**Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?**	Alternatives and analysis have already been addressed above, refer to comments made.
2.22	**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?**	Refer to comments made above regarding positive and negative socio-economic impacts. Cumulative impacts have been discussed where relevant and are not easily accurately quantifiable.

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

Prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. On successful completion of this desktop study, further trenching and resource estimations will be performed if the results warrant it. The overall prospecting area was indicated in **Figure 3 in Section 3** on this DRAFT Basic Assessment. Areas to be avoided in terms of sensitivities are also indicated on the sensitivity maps in this report.

There is no site or layout alternative as the property provides the ideal geological formation for the presence of the minerals applied for.

There are no technology alternatives considered and the proposed site was identified as the preferred alternative due to the following reasons:

- The site offers the mineral sought after.
- The majority of the study site consisted of alien invasive vegetation and limited indigenous vegetation.
- As reported by the Terrestrial Specialist (**Appendix 7.3**), the entire area can be regarded as low sensitive as the landscape has been altered by historical anthropogenic activities and the excessive alien invasive plant infestation.
- No camp site or additional infrastructure will be required as there are existing access roads, J Robbertse Vervoer offices, toilets and storage facilities for fuel and machinery that will be utilised.
- Maintenance and servicing of the equipment will be done at the Robbertse Vervoer (Pty) Ltd t/a SABRIX for their workshop, the amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental oil or diesel spillages when trenching.
- Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site and more information will be discussed after the granting of the prospecting right.

The site is; therefore, the preferred site and alternative sites are not considered.

8. 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.)

*(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)

According to the Western Cape Department of Environmental Affairs & Development Planning (WC DEADP) Guideline on alternatives: EIA Guideline and Information Document Series (2011) feasible and reasonable alternatives have to be identified for a development as required by the NEMA EIA Regulations and applicable to EIA. Each alternative is to be accompanied by a description and comparative assessment of the advantages and disadvantages that such development and activities will pose on the environment and socio-economy. Alternatives forms a vital part of the initial assessment process through the consideration of modifications in order to prevent and/or mitigate environmental impacts associated with a particular development. Alternatives are to be amended when the development's scope of work is amended. It is vital that original as well as amended alternative identification, investigation and assessment together with the generation and consideration of modifications and changes to the development and activities are documented.

Although an array of alternatives could be investigated for each project, such alternatives will not necessarily be applicable to each project and/or project phase. However, there must always be strived to seek alternatives that maximises efficient and sustainable resource utilisation and minimise any negative impacts on the bio-physical and socio-economic environments.

8.1 Details of the development footprint alternatives considered

Feasible alternatives

The following alternatives were investigated as feasible alternatives:

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

J. Robbertse Vervoer (Pty) Ltd trading as SABRIX is a brick manufacturer located in Pretoria, Gauteng Province. Infrastructure and resources are available in close proximity to the study area. In addition, geological information indicated that the area potentially contains sand and clay. The study area is focussed on the prospecting activities which includes Portion 32, Portion 34, Portion 35, Portions of Portion 33 and the Remainder of the Farm Boekenhoutkloof 315 JR located in the City of Tshwane Metropolitan Municipality, approximately 16 km northwest of Pretoria (**Figure 2** and **Figure 3**). The surrounding land use is characterised by rural, agricultural and mining activities, while the area is described as having a hot semi-arid climate. A portion of the site is currently utilised by J. Robbertse Vervoer (Pty) Ltd trading as SABRIX for workshops and offices. No camp site or additional infrastructure will be required as the existing access roads, J Robbertse Vervoer offices, toilets and storage facilities for fuel and machinery will be utilised.

No location alternative has been considered. Based on the geological setting of the area, the site has a higher potential for ore reserves which has not been explored. The site is therefore, the preferred site and alternative sites are not considered.

b) The type of activity to be undertaken

It is mandatory that prior to mining activities can be undertaken, a prospecting be conducted so that investments can be made on a proven reserve. The prospecting activity provides the economic value of the ore bodies reserves in the underground and also provides the information on the required earth work for stripping the surface for exposure of the ore bodies. From prospecting activities estimation can be made of the ore tonnages, ore grade, and feasibility of the reserve.

Prospecting activities will not compromise any future land uses on the study area. Should results of the prospecting indicate a viable reserve is present, then a comprehensive social and environmental impact assessment will be conducted to obtain environmental authorisation and a mining right from the competent authority/ies, in accordance with legislation. Alternative land uses to mining would be investigated as part of the social and environmental impact assessments.

c) The design or layout of the activity

Prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. On successful completion of this desktop study, further possible prospecting drilling, trenching and resource estimations will be performed if the results warrant it. No Geochemical or Geophysical Survey is planned.

Description of planned non-invasive activities

Desktop studies to be undertaken over the area would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information about this area.

Description of planned invasive activities

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed

Furthermore, Geological modelling of gathered existing geological data and prospecting data will be performed, if the results warrant it.

d) The technology to be used in the activity

In terms of technologies proposed, prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. Desktop studies to be undertaken would include studying of geological

reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information regarding the specific area.

On successful completion of this desktop study, further possible trenching and resource estimations will be performed if the results warrant it. The type of invasive prospecting activities has been determined based on the historic success of the methods to be utilised. The prospecting activities are, however, dependent on the non-invasive activities as indicated above and therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

e) The operational aspects of the activity

No permanent services including water supply, electricity, or sewerage facilities are required. A portion of the site is currently utilised by J. Robbertse Vervoer (Pty) Ltd trading as SABRIX for workshops and offices. No camp site or additional infrastructure will be required as the existing access roads, J Robbertse Vervoer offices, toilets and storage facilities for fuel and machinery will be utilised.

f) The option of not implementing the activity

According to Section 24 of the Constitution, a development must be ecologically sustainable and also support socio-economic development.

Not implementing the prospecting activities will result in a loss of information of mineral reserves present on the study area. Should economically feasible reserves exist on the study area and the applicant cannot prospect, the opportunity to utilise the reserves for future mining and brick-making will be lost, i.e. the minerals will be sterilised and resultant socio-economic benefits will be lost.

The proposed prospecting activities have the potential to have a negative impact on the ecological environment as well as the social environment of the area. These impacts, however, can potentially be prevented, minimised, mitigated and managed to **low** sensitivity levels, as shown through the impact assessment and as illustrated within the Terrestrial Biodiversity Impact Assessment (**Appendix 7.3**).

The applicant shall ensure that this Environmental Management Plan is provided to the Project Manager and any other person or organisation who may work on the site.

8.2 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)

A Public Participation Process is undertaken for the proposed prospecting. The process is undertaken to ensure compliance with regard to the requirements in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [as amended] (MPRDA) and the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended].

Tasks undertaken for the Public Participation Process (PPP)

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the NEMA requirements and EIA Regulations (2014) [as amended]. It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

The PPP tasks conducted for the proposed prospecting project to date include:

8.2.1 Identification of Key Interested and Affected Parties (Affected and Adjacent Landowners) and Other Stakeholders (Organs of State and other Parties

Public Participation is the involvement of all parties who are either potentially interested and / or affected by the proposed development. The principle objective of public participation is to inform and enrich decision-making. This is also its key role in this BA process.

Interested and Affected parties (I&APs) representing the following sectors of society have been identified:

- National, provincial and local government;
- Agriculture, including local landowners (affected and adjacent);
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Tourism;
- Industry and mining;
- Commerce; and
- Other stakeholders.

8.2.2 Formal Notification of the Application to Interested and Affected Parties (Including all Affected and adjacent Landowners) and other Stakeholders

The project was announced as follows:

- Newspaper advertisement

Publication of media advertisement (English) in ***The Citizen*** on 27 October 2022. *Refer to Appendix 5.1 for newspaper advert. Note that the proof of advert will be submitted to the Department in the Final BAR submission.*

- Site notice placement

In order to inform surrounding communities, affected and adjacent landowners of the proposed development, four site notices were erected on site and at visible locations close to the site on 27 October 2022. *Refer to Appendix 5.2 for site notice. Note that the proof of site notices will be submitted to the Department in the Final BAR submission.*

- Written notification

I&AP's and other key stakeholders, who included the above-mentioned sectors, were directly informed of the proposed development by e-mail on 27 October 2022. I&APs were given 30 days to comment and / or raise issues of concern regarding the proposed development. The commenting period expired on the 28 November 2022. P*roof of email notification will be submitted to the Department.*

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The Draft Basic Assessment Report and Environmental Management Programme is herewith released for comment for a period of 30-days and will be available at The Hercules Police Station (518 Gustav Adolf St, Hercules, Pretoria, 0001).

Copies of the Draft BAR and EMPR was submitted to the client and all Organs of State and relevant authorities. In addition, the document was accessible on Environmental Assurance's website: www.envass.co.za/downloads. (Password: 021#). I&APs will have an opportunity to comment and / or raise issues of concern regarding the Environmental Process. The commenting period was communicated to all registered I&APs.

8.2.3 Consultation and Correspondence with I&AP's and Stakeholders

All I&AP registrations and comments that are received from stakeholders are formally recorded in the Comments and Responses Report. Proof of such will be submitted to the Department during the final submission.

Draft Basic Assessment Report (BAR) and Environmental Management Programme (EMPR)

The Draft BAR and EMPR are herewith released for a period of 30 days from 27 October 2022. to 28 November 2022.

Hard copies of the Draft BAR and EMPR are herewith submitted to all organs of state and relevant authorities. In addition, copies are placed at SAPS Pretoria Moot, (586 17th Ave, Rietfontein, Pretoria, 0084) and on the ENVASS website (www.envass.co.za).

8.2.4 Next phases of the Public Participation Process

All comments received from I&APs and organs of state and responses sent will be included in the final BAR and EMPR to be submitted to the Competent Authority (CA).

Once the BAR and EMPR are submitted, the CA will have 107 days to reach a decision on the application. Thereafter the registered I&APs will be notified of the CA's decision.

8.3 Summary of issues raised by I&APs

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

Table will be completed after the Public Participation Process is completed

Table 10: Summary of issues raised

Interested and Affected Parties List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and pr response were incorporated
AFFECTED PARTIES					
Landowner/s					
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Local Municipality – City of Ekurhuleni Metropolitan Municipality					
District Municipality – N/A					

Interested and Affected Parties **List the names of persons consulted in this column and mark with an X where those who must be consulted were in fact consulted.**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and pr response were incorporated**
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS etc.					
Communities					
Dept. Land Affairs					
Traditional Leaders					
.					
Dept. Environmental Affairs					
Other Competent Authorities affected					
<u>OTHER AFFECTED PARTIES</u>					
<u>INTERESTED PARTIES</u>					

9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES

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

9.1 Baseline Environment

The study area is focussed on the Klei Minerale Boekenhoutkloof prospecting activities which include Portion 32, Portion 34 and Portion 35 and a portion of Portion 33 and the Remainder of the Farm Boekenhoutkloof 315 JR located in the City of Tshwane Metropolitan Municipality, approximately 16 km northwest of Pretoria. The central coordinates are: 25°41'47.52"S; 28° 4'16.09"E. Refer to **Figure 1** presented earlier in this report. The following sub-sections provide a description of the environmental features of the proposed area.

9.1.1 Type of environment affected by the proposed activity.

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

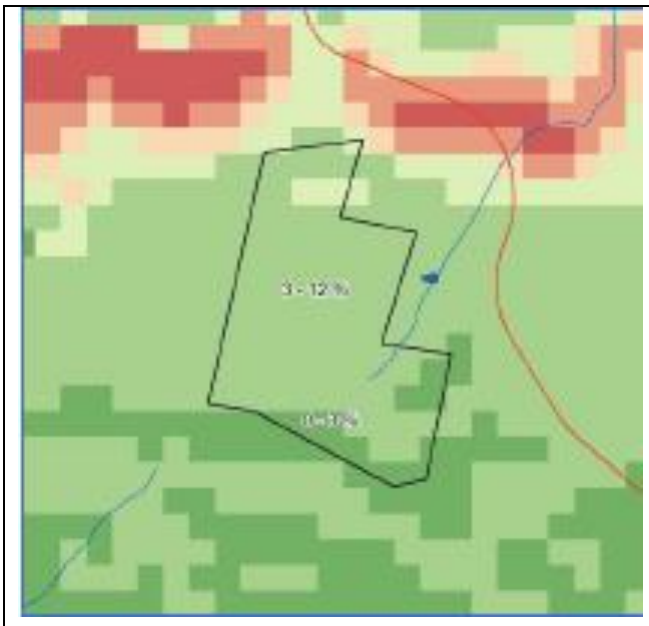
9.1.1.1 Gradient and landscape context

Reference is made to the Agricultural Agro-Ecosystem Assessment (Strydom, 2022)- Appendix 7.1.

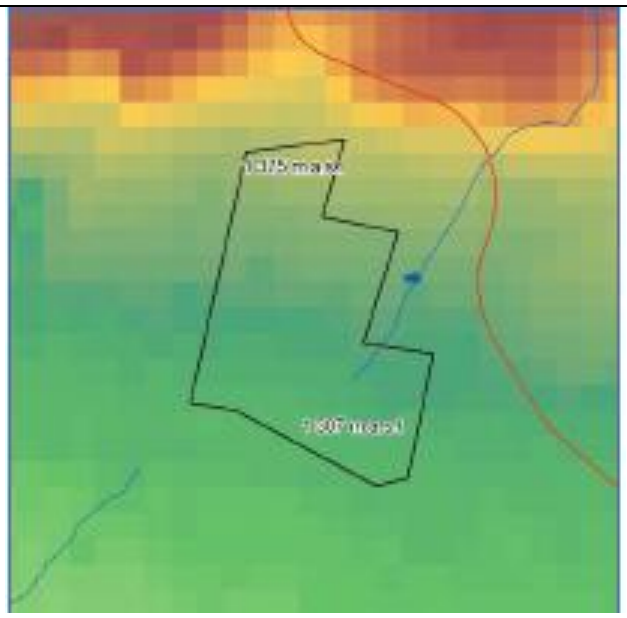
The study area is located within the Boekenhoutkloof valley bordering the Magaliesberg conservation area at the northern side and the Witwatersberg to the south. Approximately 62% of the study area has a slope gradient % of less than 12, the requirement for arable land. The following lists the topographical variable results for the study area:

- Slope gradient: 1 – 35%
- Altitude: 1307 – 1375 m.a.s.l
- Dominant Aspect: South
- Agro-Terrain Suitability: The majority terrain suitability is moderate to

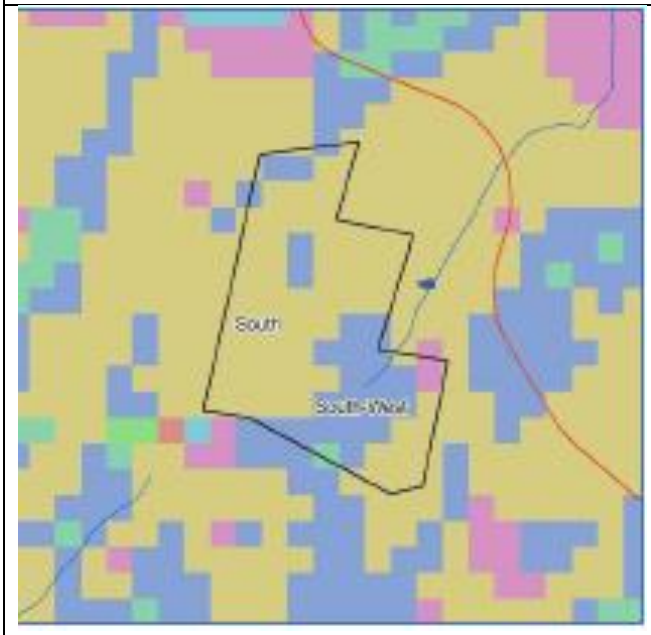
Figure 4 below illustrate the Topographical Variables for the Study Area



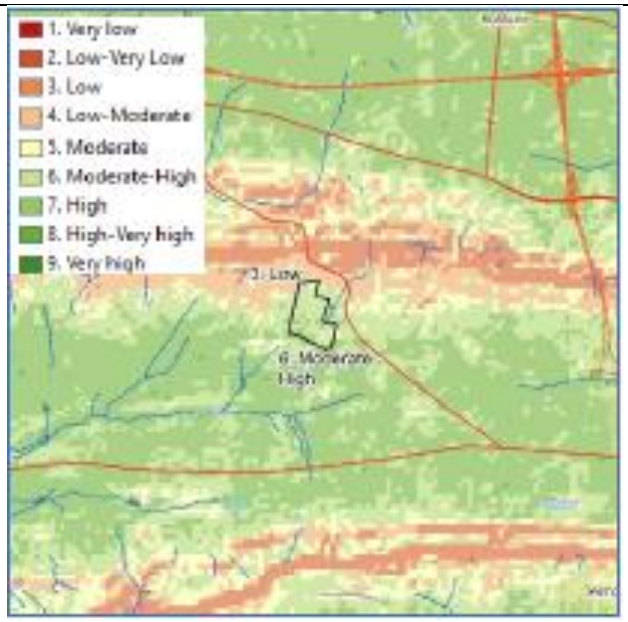
Slope Gradient Percentage



Alitutude (m.a.s.l)



Aspect



Agro-Topographical Suitability:

Figure 4: Topographical Variables (Strydom, 2021).

Geology and Soils

Reference is made to the Terrestrial Biodiversity Impact Assessment (Oasis Environmental Specialists, 2022)- Appendix 7.3.

The geology is dominated by the Transvaal Supergroup, consisting of the Pretoria Group's clastic sediments, carbonates and volcanics, with Malmani dolomites and mafic Bushveld instrusives. The stony soil is characterised by colluvial clay-

loam, often comprised of well-drained red-yellow plinthic, vertic and melanic clays. The land types include Ae, Ba, Ea, Bc and Ac (Mucina & Rutherford, 2018).

Climate

Regional Climate

The Klei Minerale target area is located in the summer rainfall region of north-eastern South Africa. The Klei Minerale taget area has an annual average rainfall of about 668 mm. Rainfall peaks during summer (December to February - DJF), whilst the winters (July to August – JJA) are very dry (Kleynhans et al., 2005). Onset of the rainy season usually occurs in October, and cessation occurs in April. Summers are warm, with an average temperature of about 22 °C, while the winters are mild with an average temperature of about 12 °C (Kleynhans et al., 2005). Winters are characterized by sunny days, clear skies and cold nights (minimum temperatures may occasionally drop to below freezing point). Frost occasionally occurs over the region in winter, usually after a cold front has penetrated deep into the southern African interior (Kleynhans et al, 2005). About 80% of the summer rainfall over the Klei Minerale target area occurs from tropical-temperate cloud bands, and in particular from the thunderstorms embedded within the cloud bands. Isolated heat thunderstorms also occur frequently over the Klei Minerale target area during the warmer months.

Local Climate

The average elevation for the Klei Minerale target area varies between 1317 and 1497 MASL (Metres Above Sea Level) while the average elevation of the study area is 1352 MASL and slopes from the more elevated northern section to the lower southern area.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 668 mm. The average maximum temperature for the study area is recorded during January when an average of 22.3 ºC is reached. The average minimum temperature is recorded during July when an average of 12 ºC is reached (Kleynhans et al, 2005).

Catchment

The study area falls within the A21H Quaternary Catchment within the Crocodile (West) and Marico Water Management Area. The closest perennial rivers to the study area are Swartspruit approximately 1.85 km to the south and the Sand River 6 km to the northwest. A non-perennial offshoot is also associated with the demarcated Remaining Extent of the Farm Boekenhoutkloof 315 JR.

9.1.1.2 Biodiversity

Reference is made to the Terrestrial Biodiversity Impact Assessment (Oasis Environmental Specialists, 2022)- Appendix 7.3

The site is located in the Magaliesberg Important Bird Area near Pretoria in Gauteng and no red listed floral species were found to occur within this area. Additionally, the site comprises both bushveld and old lands. It contains both Critical

Biodiversity Areas (CBA) and Ecological Support Areas (ESA) according to the Gauteng Conservation Biodiversity Plan (GCBP). It occurs within a Critically Endangered ecosystem as well as an Important Bird and Biodiversity Area (IBBA) as well as occurring adjacent to the Magaliesberg Protected Natural Environment and is located with the Magaliesberg Biosphere Reserve. The site is located within the Moot Plains Bushveld.

Floral Assessment

Moot Plains Bushveld (SVcb 8)

The distribution of this vegetation type is predominantly the North West and Gauteng Provinces, with the belt south of the Magaliesberg running from the Selons River Valley to Pretoria along the Magalies River and the belt north of the Magaliesberg running from Rustenburg towards the Crocodile River (Mucina & Rutherford, 2018). The Moot Plains Bushveld is characterised by low, thorny *Vachellia* savannah (e.g. *V. nilotica* and *V. tortilis* subsp. *heteracantha*) along the plains, low-slope woodlands and a graminoid-dominated herbaceous layer (Mucina & Rutherford, 2018). The geology is dominated by the Transvaal Supergroup, consisting of the Pretoria Group's clastic sediments, carbonates and volcanics, with Malmani dolomites and mafic Bushveld instrusives. The stony soil is characterised by colluvial clay-loam, often comprised of well-drained red-yellow plinthic, vertic and melanic clays. The land types include Ae, Ba, Ea, Bc and Ac (Mucina & Rutherford, 2018). This vegetation types is considered vulnerable, with 13% statutorily conserved in the Magaliesberg Nature area and a conservation target of 19% in 2006. A further 28% has been transformed by primarily agriculture and urban development (Mucina & Rutherford, 2018).

Small Trees: *Vachellia nilotica, V. tortilis subsp. heteracanth, Rhus lancea. Tall Shrubs: Buddleja saligna, Euclea undulata, Olea europaea subsp. africana, Grewia occidentalis, Gymnosporia polyacantha, Mystroxylon aethiopicum subsp. burkeanum. Low Shrubs: Aptosimum elongatum, Felicia fascicularis, Lantana rugosa, Teucrium trifidum. Succulent Shrub: Kalanchoe paniculata. Woody Climber: Jasminum breviflorum. Herbaceous Climber: Lotononis bainesii. Graminoids: Heteropogon contortus, Setaria sphacelata, Themeda triandra, Aristida congesta, Chloris virgata, Cynodon dactylon, Sporobolus nitens, Tragus racemosus. Herbs: Achyropsis avicularis, Corchorus asplenifolius, Evolvulus alsinoides, Helichrysum nudifolium, H. undulatum, Hermannia depressa, Osteospermum muricatum, Phyllanthus maderaspatensis*

Goldreef Mountain Busveld (SVcb 9)

Adjacent to the site is the Goldreef Mountain Bushveld which occurs within the North-West, Free State, Mpumalanga and Gauteng provinces (Mucina & Rutherford 2011). It occurs on rocky hills and ridges that are west-east trending with denser vegetation on the south facing slopes associated with distinct differences in floristic composition. Tree cover can be variable with tree and shrub layers often continuous and a herbaceous layer dominated by grasses. Important species include Acacia caffra, Combretum mole, Celtis Africana, Dombeya rotundifolia, Vangueria infausata, Grewia occidentlis, Loudetia simplex, Panicum natalense, Helichrysum nudifolium and others. There are two endemic taxa in this vegetation type: Aloe peglerae and Frithia pulchra. This vegetation type is considered Least Threatened, with a conservation target of 24% and 22% statutorily conserved. About 15% has been transformed by cultivation and urban sprawl (Mucina & Rutherford 2011).

Vegetation communities that have been broadly defined are outlined in **Figure 5**.

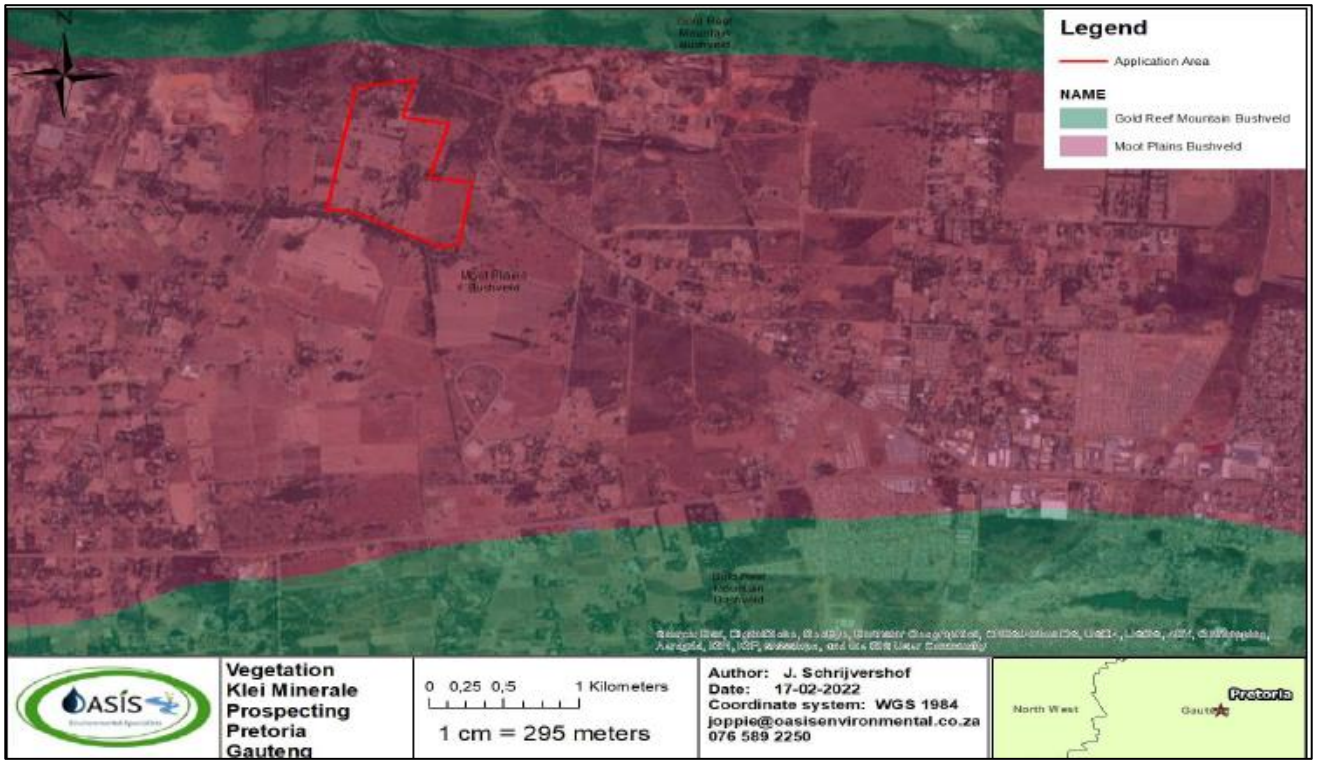


Figure 5: Vegetation Map for Klei Minerale

Faunal Assessment

Important Bird Areas

The proposed prospecting project falls within the Magaliesburg Important Bird Area, here expected avifaunal species (Pentad 2540_2800 South African Bird Atlas Project 2), with Vulture species possibly occurring in the area.

This large area includes the magisterial districts of the former Bophuthatswana, Brits, Rustenburg, Swartruggens, Ventersdorp, Koster and Oberholzer. The Magaliesberg range extends in an arc from just south of Rustenburg in the west to Hartbeespoort Dam near Pretoria in the east. Peaks in the west include Tshufi (1,592 m) and Rustenburgkloof (1,688 m), in the centre Nooitgedacht (1,851 m) and Doornhoek (1,786 m), and in the east Versigtig (1,563 m), Myoko (1,523 m) and Sun Glory (1,601 m) are found in the vicinity of Hartbeespoort Dam.

To the south, the Witwatersberg range runs parallel to the Magaliesberg, extending from the town of Magaliesberg in the west to Hartbeespoort Dam in the east. The Ben-Tor Gloster (1,674 m), Hartebeeshoek (1,585 m) and Skeerpoort (1,544 m) peaks dominate the Witwatersberg. Several large rivers have their headwaters in these mountains, including the Crocodile, Sterkstroom, Magalies and Skeerpoort rivers. Three major impoundments lie along the Magaliesberg; the massive Hartbeespoort Dam in the east, Buffelspoort Dam in the centre and Olifantsnek Dam about 7 km south of Rustenburg.

The mountain peaks and slopes are clothed in open broadleaved woodland of Faurea, Acacia, Bequaertiodendron, Burkea, Peltophorum, Kirkia, Combretum, Albizia and Diplorrhynchus, and proteoid shrubland occurs on cool slopes. The surrounding land, especially that to the north of the mountain range, is used primarily for cattle-ranching, with some intensive crop and fruit-farming on the northern slopes of the Magaliesberg range.

The Cape Vulture (Gyps coprotheres) breeds at two main colonies—the larger Skeerpoort (25°45'S 27°45'E) and the sister colony at Robert's Farm (25°50'S 27°17'E)—as well as a satellite colony at Nooitgedacht. There appears to be a decline in the numbers of vultures breeding at Robert's Farm, and it seems that birds may have transferred to Nooitgedacht, following the introduction of a vulture restaurant there, below an abandoned colony. Many other raptor species have been recorded at Skeerpoort, including Gyps africanus and Torgos tracheliotus. Patches of grassland are known to hold small numbers of Grus paradisea. Most of the area falls within the Magaliesberg Protected Natural Environment. This large area has legal conservation status under the Environment Protection Act. Within the IBA, several publicly owned protected areas occur. The Diepsloot Nature Reserve, controlled by the Johannesburg Municipality, lies 10 km south of Hartbeespoort Dam. Other protected areas within the IBA include Rustenburg Nature Reserve, 2 km south-west of the town, Mountain Sanctuary Park and Hartbeespoort Dam Nature Reserve as well as several private reserves and conservancies.

There is widespread, indiscriminate use of poison by small-stock farmers in the area to combat mammalian predators such as jackals, caracals and domestic dogs. Poisonings pose a major threat to the vulture colonies as hundreds of birds, which scavenge on carcasses set for vermin, can be unintentionally killed in a single poisoning incident. Most natural populations of large ungulates, and their associated predators, have disappeared from the Magaliesberg. It is hypothesized that depleted food supply, and the loss of vital nutrients in the diet, have resulted in increased vulture mortalities as a result of metabolic bone disease, osteodystrophy, and other physiological abnormalities.

The Vulture Monitoring Project, through the Vulture Study Group, counts nestlings annually as a measure of breeding success, which can fluctuate alarmingly in this population. The Magaliesberg vultures forage quite widely, some travelling to the Pilanesberg (IBA ZA017) nearly 100 km away. Several vulture restaurants have been established near the colonies to provide a regular food supply to breeding birds. The restaurant on Nooitgedacht Farm is supported by the land-owners. A second lies 1 km south of the colony at Leopard Lodge, a third is in operation 27 km north of Skeerpoort at Rhino Park, near Zwartkop, and a fourth at the De Wildt Captive Breeding Centre. The Robert's Farm colony is still in need of a regular food supply.

Non-bird biodiversity: *Hyaena brunnea* (LR/nt) is a major large predator in the area.

Mammals

Mammal species that were identified onsite only included the yellow mongoose (*Cynictis penicillata*) and ground squirrel (*Xerus* spp.).

Bird species observed within the area included Village indigobird (*Vidua chalybeata*), Helmeted guineafowl (Numida meleagris), Southern red bishop (*Euplectes orix*), Southern masked weaver (*Ploceus velatus*) and Laughing dove (*Spilopelia senegalensis*) (**Figure 6**).

No red listed faunal species were observed during the site visit, but the Near Threatened Giant Bull Frog (*Pyxicephalus adspersus*), Coppery Grass Lizard (*Chamaesaura aenea*), Striped Harlequin Snake (*Homoroselaps dorsalis*), Lechwe (Kobus leche), Vaal Rhebok (Pelea capreolus); the Vulnerable Verreaux's (Black) Eagle (*Aquila verreauxii*) and Sable (*Hippotragus niger niger*) and the Endangered Oribi (*Ourebia ourebi*) and African wild dog (Lycaon pictus) are thought to occur in the area according to the datasets from Animal Demographic Units (ADU). It is unlikely that these animals occur in proximity of the proposed area.

Also reported as occurring on site (by the manager of lodge at which the specialist stayed adjacent to the site) were Black-backed jackal, bushbabies, mongoose and rabbits.

Figure 6: Bird species included Village indigobird (Vidua chalybeate)

9.1.1.3 Cultural and Heritage

Reference is made to the Heritage Impact Assessment- Phase 1 (Agri Civils Geo-Tech & Heritage, 2022)- Appendix 7.2.

Phase 1 Heritage Impact Assessment (Coetzee 2021)

Coetzee (2019) conducted a Phase 1 Heritage Impact Assessment. The purpose of this study is to examine the demarcated portion in order to determine if any archaeological resources of heritage value will be impacted by the proposed prospecting, as well as to archaeologically contextualise the general study area. The aim of the report is to provide the developer with information regarding the location of heritage resources on the demarcated portion.

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Later Iron Ages; and Historical or Colonial Periods. This section of the report provides a general background to archaeology in South Africa and focuses on more site-specific elements where relevant.

The Stone Ages

The earliest stone tool industry, the Oldowan, was developed by early human ancestors which were the earliest members of the genus Homo, such as Homo habilis, around 2.6 million years ago. It comprises tools such as cobble cores and pebble choppers (Toth & Schick 2007). Archaeologists suggest these stone tools are the earliest direct evidence for culture in southern Africa (Clarke & Kuman 2000). The advent of culture indicates the advent of more cognitively modern hominins (Mitchell 2002: 56, 57).

The Acheulean industry completely replaced the Oldowan industry. The Acheulian industry was first developed by Homo ergaster between 1.8 to 1.65 million years ago and lasted until around 300 000 years ago. Archaeological evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. The most typical tools of the ESA (Early Stone Age) are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals.

Middle Stone Age (MSA) artefacts started appearing about 250 000 years ago and replaced the larger Early Stone Age bifaces, handaxes and cleavers with smaller flake industries consisting of scrapers, points and blades. These artefacts roughly fall in the 40-100 mm size range and were, in some cases, attached to handles, indicating a significant technical advance. The first Homo sapiens species also emerged during this period. Associated sites are Klasies River Mouth, Blombos Cave and Border Cave (Deacon & Deacon 1999). Although the transition from the Middle Stone Age to the Later Stone Age (LSA) did not occur simultaneously across the whole of southern Africa, the Later Stone Age ranges from about 20 000 to 2000 years ago. Stone tools from this period are generally smaller, but were used to do the same job as those from previous periods; only in a different, more efficient way. The Later Stone Age is associated with: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Examples of Later Stone Age sites are Nelson Bay Cave, Rose Cottage Cave and Boomplaas Cave (Deacon & Deacon 1999). These artefacts are often associated with rocky outcrops or water sources.

The Iron Age & Later History

The Early Iron Age marks the movement of farming communities into South Africa in the first millennium AD, or around 2500 years ago (Mitchell 2002:259, 260). These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Archaeological evidence from Early Iron Age sites is mostly artefacts in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Some scholars classify Early Iron Age ceramic traditions into different "streams" or "trends" in pot types and decoration, which emerged over time in southern Africa. These "streams" are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. This period continued until the end of the first millennium AD (Mitchell 2002; Huffman 2007). Some well-known Early Iron Age sites include the Lydenburg Heads in Mpumalanga, Happy Rest in the Limpopo Province and Mzonjani in Kwa-Zulu Natal.

The Middle Iron Age roughly stretches from AD 900 to 1300 and marks the origins of the Zimbabwe culture. During this period cattle herding appeared to play an increasingly important role in society. However, it was proved that cattle remained an important source of wealth throughout the Iron Age. An important shift in the Iron Age of southern Africa took place in the Shashe-Limpopo basin during this period, namely the development of class distinction and sacred leadership. The Zimbabwe culture can be divided into three periods based on certain capitals. Mapungubwe, the first period, dates from AD 1220 to 1300, Great Zimbabwe from AD 1300 to 1450, and Khami from AD 1450 to 1820 (Huffman 2007: 361, 362).

The Late Iron Age (LIA) roughly dates from AD 1300 to 1840. It is generally accepted that Great Zimbabwe replaced Mapungubwe. Some characteristics include a greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tend to occur only in certain localities compared to a wide distribution during earlier times. It was also during the Late Iron Age that different areas of South Africa were populated, such as the interior of KwaZulu Natal, the Free State, the Gauteng Highveld and the Transkei. Another characteristic is the increased use of stone as building material. Some artefacts associated with this period are knife-blades, hoes, adzes, awls, other metal objects as well as bone tools and grinding stones. In terms of the general project area, the region is well known for LIA sites. The area west of Wonderboompoort is associated with one of the earliest LIA sites. Further to the west a high concentration of sites is also found that stretches to Olifantspoort in the Magaliesberg. These sites date to the Moloko period that roughly stretched from AD 1100 – 1500 (Van Vollenhoven 2006).

Oral traditions of Nguni-speaking Ndebele groups indicate their sites in the area to the east of Pretoria, while heritage reports conducted on the stone-walled sites of this area suggest that Ndebele-speaking people inhabited this area between the late 1600s and mid-1800s (Antonites 2020). According to Van Vuuren (2006), Ndebele oral traditions state that they first settled at Emhlangeni, translating to "At the reeds", near Randfontein in the Gauteng Province. Accordingly, they entered the Pretoria region during the early to mid- 1600s and settled at KwaMnyamana, which translates to "Place of the Black Hills". KwaMnyamana is located close to the Hippo Quarries crusher site on the farms De Onderstepoort (300JR) and Doornpoort

(295JR). The first chief to settle at this site was called Musi. A split between his sons caused the Ndebele to divide into several tribal entities. The descendants of the youngest son, Ndzundza, moved further to the east, while the descendants of the eldest son, Manala, stayed behind. A later Ndebele invasion that was led by Mzilikaze in 1827, settled at Kungwini, present day Wonderboom in Pretoria North. In 1832, the Zulu king Dingane attacked Mzilikaze at Kungwini. According to Van Vollenhoven (2006), the Sotho-Tswana groups are the largest Bantu language speaking people who are formed by the Northern and Southern Sotho, as well as the Tswana. These groups are responsible for large stone-walled towns and according to oral histories, these groups re-established themselves after the 1827 arrival of Mzilikaze during the Mfecane/Difaquane.

According to Huffman (2007), the following pottery is associated with the general area surrounding Pretoria:

- Mzonjani facies of the Kwale Branch of the Urewe Tradition (AD 450 to 750).
- Uikomst facies of the Blackburn Branch of the Urewe Tradition (AD 1650 to 1820)
- Olifantspoort facies of the Moloko branch of the Urewe Tradition (AD 1500 to 1700)
- Buispoort facies of the Moloko branch of the Urewe Tradition AD (1700 – 1840)

Figure 7 indicates the study area on a recent site visit and aerial backdrop with structures/areas that are potentially sensitive from a heritage perspective indicated according to date first observed on aerial imagery. These areas were identified using historical areal imagery.

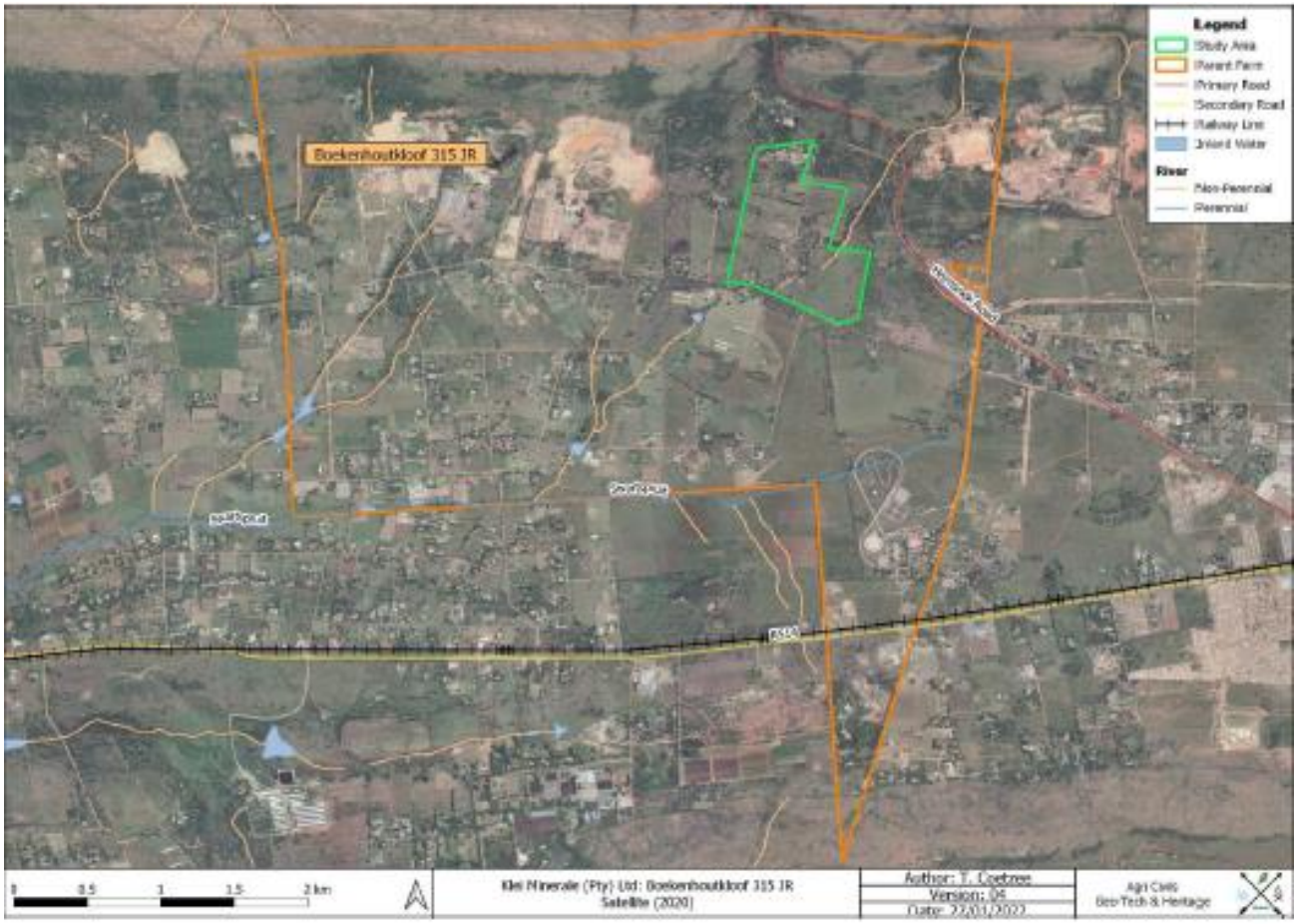


Figure 7 : Study area with survey track indicated on a 2020 satellite image.

9.1.1.4 Desktop Palaeontological Impact Assessment: (Prof Bamford, 2021).

Reference is made to the Desktop Paleontological Impact Assessment (Prof Marion Bamford, 2022)- Appendix 7.4.

The site is in the middle of the Transvaal Basin that was being infilled about 2600 to 2050 million years ago by marine sediments and volcanic rocks. The rocks are known as the Transvaal Supergroup and have been divided into four groups, with the basal Protobasinal Rocks, Black Reef Formation, Chuniespoort Group (with seven formations), a break of about 80 million years with no deposits and the top group, the Pretoria Group which has twelve formations (Eriksson et al., 2006, 2012; Lenhardt et al., 2012). The Silverton Formation (Pretoria Group) was laid down in a shallow to deep marine environment in an intracratonic sag basin (ibid) and the sediments are composed of shales, tuffaceous shales and a pyroclastic volcanic member. According to Eriksson et al., (2009), the basal Boven Shale Member is present to the east of Rustenburg. Although the Silverton Formation deposition style is a Shaw-Irwin model there are some differences because the inshore low-energy zone is missing and instead there seems to have been a strongly tidal coastline (Eriksson and Reczko, 1995; Eriksson et al., 2002, 2012).

There is no objection to the prospecting rights, as it is extremely unlikely that any fossils would be preserved in the shales of the Silverton Formation (Pretoria Group, Transvaal Supergroup) because the rocks are ancient and were deposited in a high energy environment where neither stromatolites would grow nor microbial mats form. According to the Palaeotechnical Report fossil stromatolites are present so a Fossil Chance Find Protocol should be added to the EMPR: if fossils are found once excavations has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample.

9.1.1.5 Desktop Agricultural Assessment (Strydom, 2022)

Reference is made to the Agricultural Agro-Ecosystem Assessment (Strydom, 2022)- Appendix 7.1.

The KLEI MINERALE study area is located within the Boekenhoutkloof valley bordering the Magaliesberg conservation area at the northern side and the Witwatersberg to the south. The Akasia suburb is located approximately 2.5 km from the northern boundary of the study area. A mixture of mining, brick works, and agricultural activities (agricultural holdings) surrounds the study area.

A mix of high to medium intensity cultivation and small holdings is present in the surrounding areas, indicating a high suitability for cultivated agriculture. Pressure is however experienced by an increase in residential and commercial development, resulting in a high degree of land fragmentation. The agricultural suitability of the larger agri-ecosystem will therefore decrease over time.

<u>Land Cover and Use</u>

The National Land Cover (DEA 2018/19) data were used to extract land cover- and -use data for the study area. The following maps show the 72-class classification and the cultivated fields of the larger study area. Refer to **Figure 8** overleaf.

National Land Cover 2020 72 Classes:

Figure 5: Land Cover- Scale 1:10 000.

Cultivated Fields 2020:

Figure 4: Cultivation- Scale 1:10 000.

The following figure shows the land cover % distribution for the study area.

Land Cover & -Use Results:

Figure 6: Land Cover Class % Values.

Figure 8 : 72-class classification and the cultivated fields

Cultivation is present within the boundaries of the study area. The type of cultivation (DAFF) is classified as 'commercial annual crops rainfed and dryland – temporary crops'. Upon investigation all fields within the study area boundaries are

currently (2020 season) converted to pastures and 'old fields', not ploughed. A smaller % is classified as 'fallow lands and old fields'. The majority of the remainder is classified as 'open woodland'. Refer to **Figure 9**.

Figure 9: Fields classified as pastures and 'old fields' not ploughed.

Agro-Climate Suitability

Agro-Climate suitability is a function of (i) moisture supply capacity, (ii) physiological capacity and (iii) climate constraints.

1. Median annual rainfall inputs into moisture supply capacity that is calculated as a function of
    a) Length of the moisture growing season, and
    b) Available moisture balance as determined by the
        i) Median annual precipitation and
        ii) Potential plant reference crop evaporation.
2. Mean Annual Temperature inputs into plant physiological capacity (temperature growth season) as a function of:

a) Degree days (as calculated from temperature hours).

3. Evaporation (annual and growing season) inputs into moisture supply capacity as a function of

a) Length of the moisture growing season, and

b) Available moisture balance as determined by the

i) Median annual and monthly precipitation and

ii) Potential plant reference crop evaporation.

Climate Results

- Median annual precipitation: 668 – 687 mm.
- Mean annual temperature: 17.6 – 18oC.
- Mean annual Apan evaporation: 2 204 - 2 249 mm.
- Majority Agro-Climate suitability: Moderately suitable to rainfed cultivation

The following **Figure 10** presents the climate values for the larger Agro-Eco System.

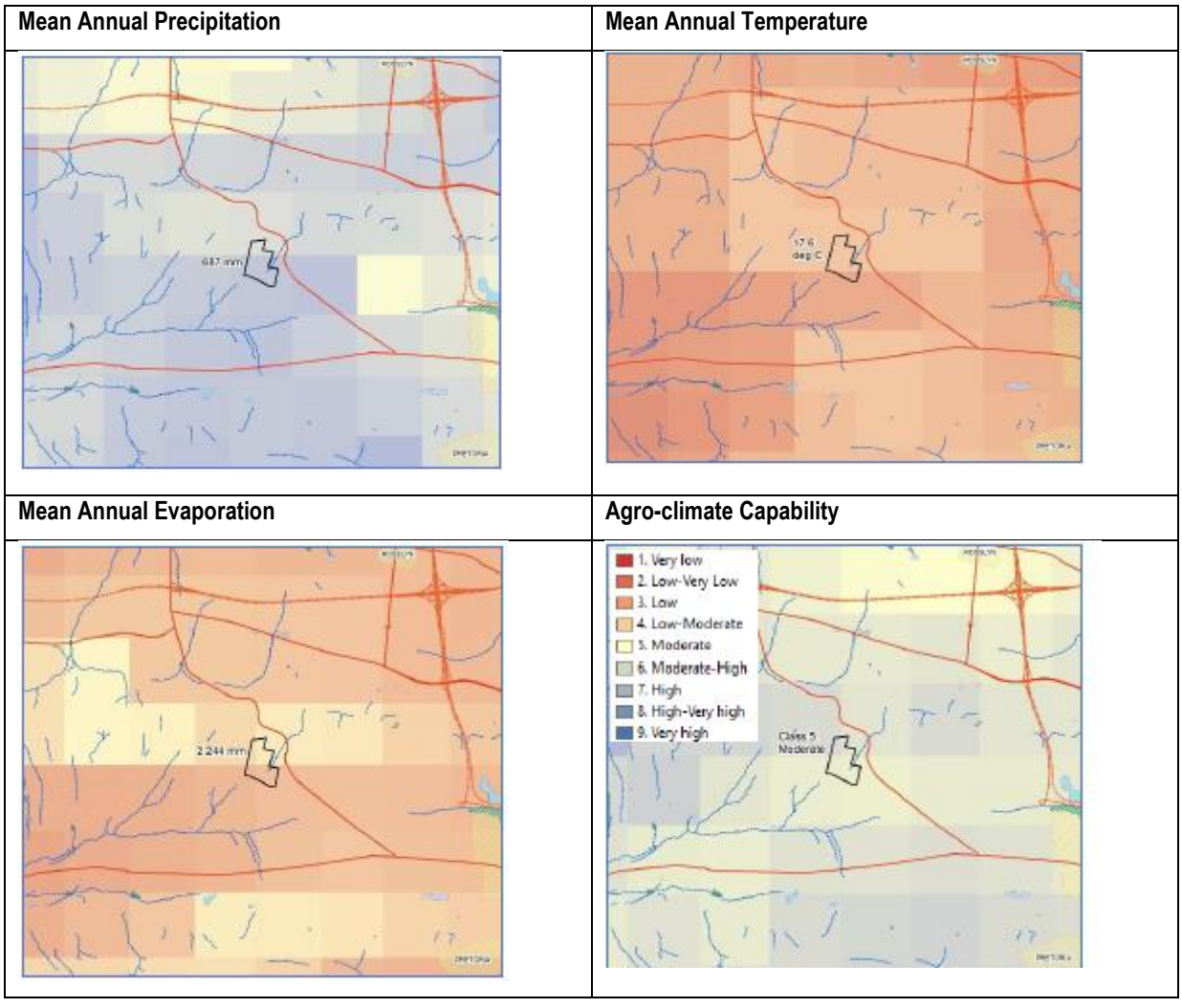


Figure 10: Description of Agro-Eco System.

A third of evaporation should not exceed the moisture supply (rainfall) for rainfed cultivation to be possible (resulting in irrigation or supplementary irrigation needed). (e.g. if the median annual rainfall is 500 mm, the evapotranspiration should not exceed 1 500 mm for rainfed to be a consideration. Rainfed cultivation would be possible**.** Supplementary irrigation is recommended for shallow-rooted crops (e.g. most vegetables).

Climate Capability

Figure 11: Climate Capability Data

The moisture growing season starts at 12 October. The moisture growing season refers to plant available moisture balances as a function of moisture supply capacity and available soil moisture. This positive balance continues until 16 March resulting in 155 days of positive moisture balances. Crops with growth season requirement of more than 155 days would therefore need supplementary irrigation. Most seasonal crops require a moisture growing season of 90 – 120 days. Considering moisture supply balances, the area is suitable for the cultivation of seasonal crops under rainfed conditions. The main agro-climate risk is the inter-annual rainfall concentration – a high % of the annual rainfall is concentrated in a short period. The rainfall is however concentrated within the summer growing season, resulting a very low in-seasonal rainfall concentration risk.

Agro-Soil Suitbaility

The Ba soil group is the dominant soil group present at the study area (adjacent map). The Ba group includes red and/or yellow apedal soils with red dystrophic and mesotrophic soils dominant. Plinthic catenas can occur. The dominant soil forms are Shortland, Hutton, Arcadia, Valsrivier, Avalon, Westleigh, Bainsvlei and Longlands.

Soil Depth and Clay %

- Total soil depth range: 15 – 85cm.
- Topsoil clay: 10 – 30%.
- Subsoil clay: 5 – 30%.
- Agro Soil-Suitability: The majority agro-soil suitability is high

The following **Figure 12** shows the soil values for the larger Agro-Eco System:

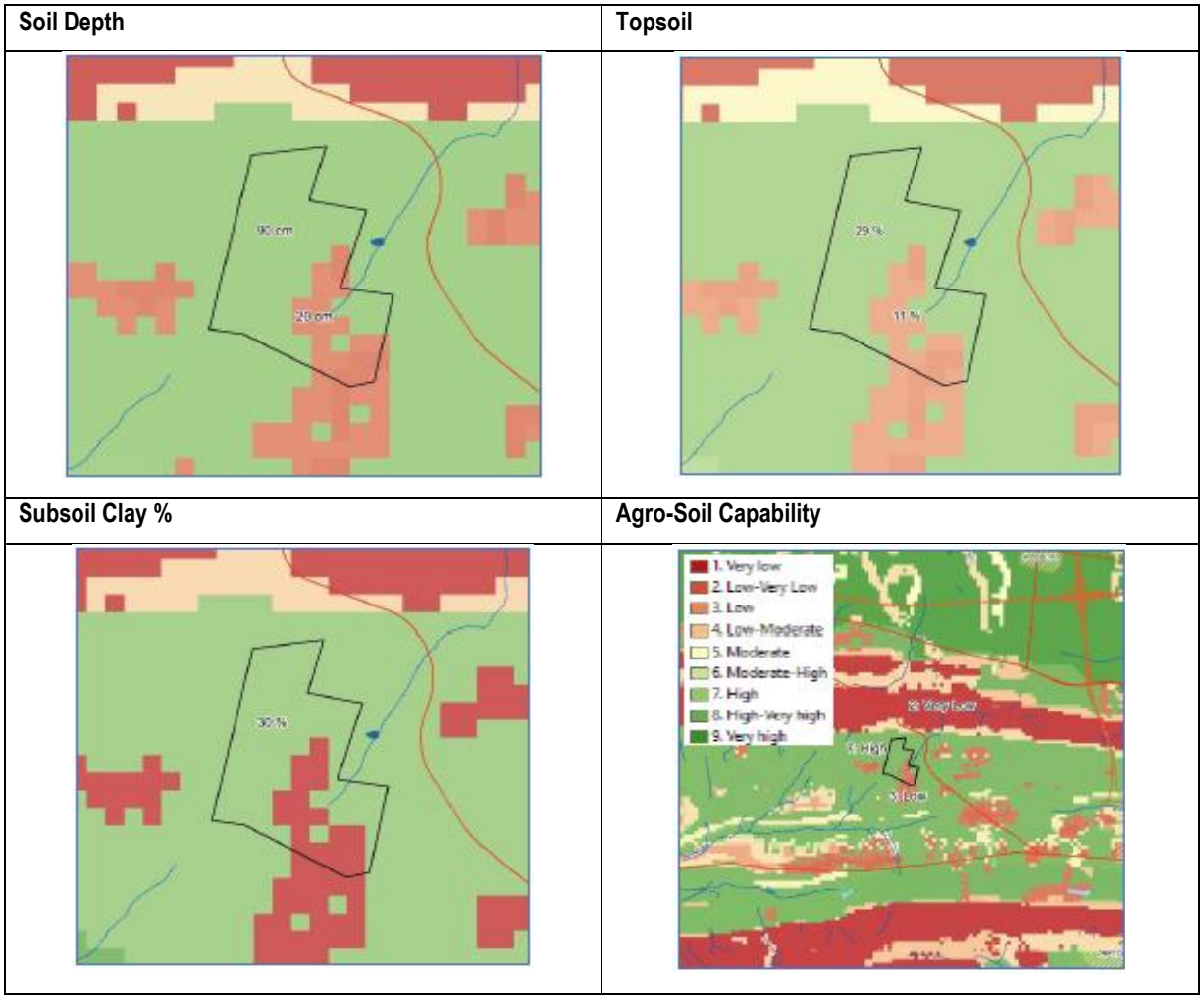


Figure 12: Soil values for the larger Agro-Eco System

Soil ecotopes are uniform regarding a repeating pattern of soil classification variables linked to topographical units (landform). Soil depth is an important indicator of soil- and land capability and inputs into the available plant moisture and soil fertility ratings. Weighted total soil depth values were calculated for each uniform ecotope based on 15 dominant soil

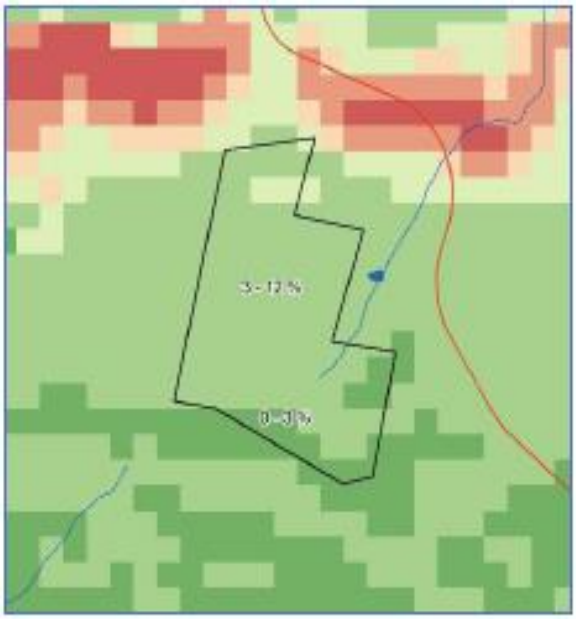
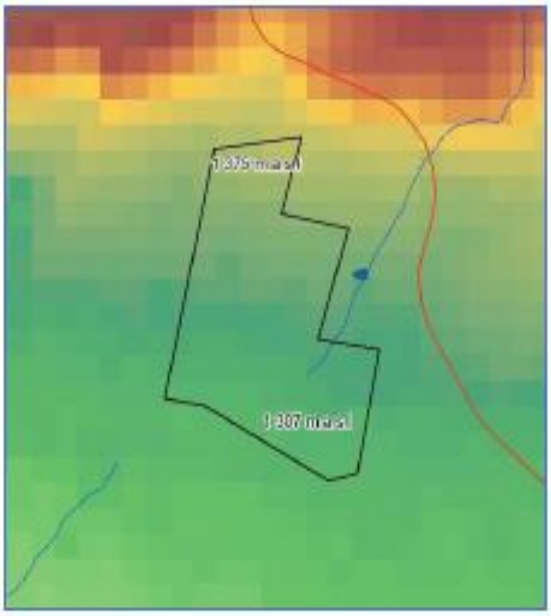
form and series values. Clay and soil texture impact directly on the availability of soil moisture to the plant as well as soil risk for e.g. compaction. Weighted clay % values were calculated for each uniform ecotope based on 15 dominant soil form and series values (ecotope data). The majority area soil depth value is 88 cm. The majority area top- and sub-soil clay % values are 29% and 30% respectively. The soil conditions are optimal for cultivated agriculture.

Agro-Topographically Suitability

The following lists the topographical variable results for the study area:

- Slope gradient: 1 – 35%
- Altitude: 1324 – 1470 m.a.s.l
- Dominant Aspect: South
- Agro-Terrain Suitability: The majority terrain suitability is moderate to high.

The following **Figure 13** shows the values for the larger Agro-Eco System:

Slope Gradient	**Altitude**
	
Aspect	**Agro-Terrain Capability**

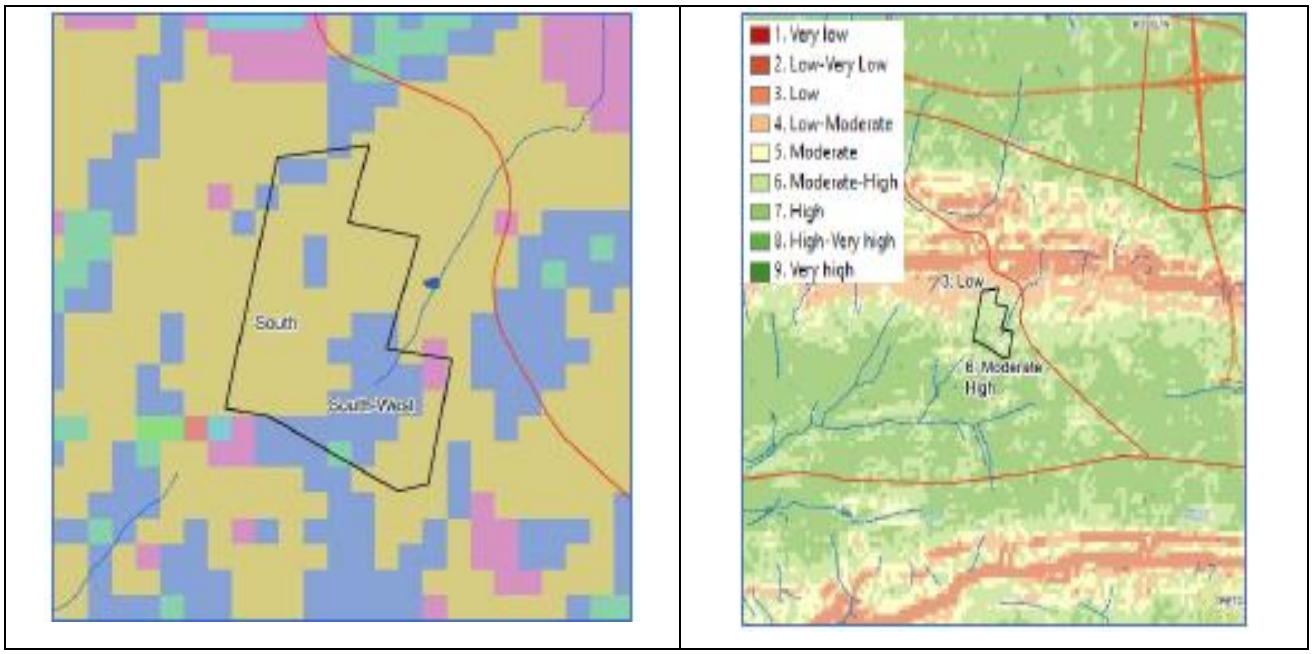


Figure 13: Topographical Values for the larger Agro-Eco System

9.1.1.6 Baseline Noise

Reference is made to the Baseline Noise Assessment (ENVASS, 2022)- Appendix 7.5.

Noise sources and baseline

ENVASS conducted a baseline environmental noise assessment of the site in line with the requirements of the South African National Standard 10103 ("The measurement and rating of environmental noise with respect to annoyance and to speech communication".). The land use for the site is characterised by a natural environment, while surrounding areas include mining activities rural areas.

Prospecting and associated activities often emit significant noise levels which can become a nuisance or health risk when not properly managed. This impact may affect not only to the prospecting area, but also to the surrounding land users and occupiers. The most sensitive receptors identified for the project area is the landowners and lawful occupiers of the study area itself, surrounding communities including land users, mine workers, industry, residential areas and permanent small holding homesteads and settlements. The local area is predominantly occupied by mining, agricultural, military and residential land uses.

The closest sensitive receptor areas were identified as the adjacent land users and farms directly adjacent and bordering the site. According to the principles of sound propagation, the impact is expected to be greatest in the immediate vicinity of the site and will diminish rapidly over distance, with additional factors including terrain and possible future infrastructure such as buildings that presents an influence on the impact on background levels. The results indicate that the current baseline noise levels on average were characterised by external sources of noise generating activities as undertaken in the area.

Various activities can contribute to the noise profile in the vicinity of the proposed activity which can be classified as noise generators. These include, but are not limited to:

- The M17 tar road to the north and east of the site;
- Kenneth Street tar road situated to the south of the site;
- Klei Minerale Boekenhoutkloof mining and brickmaking activities situated to the West of the site (± 1.3 km);
- J Robbertse Vervoer (Pty) Ltd trading as SABRIX Boekenhoutkloof brickmaking activities situated to the West of the site (± 1.3 km
- Klei Minerale Zandfontein mining and brickmaking activities situated to the East of the site (± 1.6 km);
- J Robbertse Vervoer (Pty) Ltd trading as SABRIX Zandfontein brickmaking activities situated to the East of the site (± 1.6 km
- Internal gravel roads of the site utilised by residents and employees (Klei Minerale/SABRIX); and
- Ambient noise from the physical environment (wind, birds, insects etc.).

The main noise generation activities of the proposed activities during all phases are:

Construction phase:

- Construction of temporary water handling infrastructure and other required infrastructure; and
- Loading and off-loading of movable infrastructure.

Planning phase:

- Vehicle and personnel movement for pegging and staking out proposed prospecting areas;

Operational phase:

- Vehicles travelling to and from the site on dirt roads;
- Heavy & light vehicle movements, equipment usage leading to noise generation; and
- Excavations of prospecting holes.

Rehabilitation / Closure

- Vehicles travelling to and from the site on dirt roads
- Heavy & light vehicle movements, equipment usage leading to noise generation

9.1.1.7 Baseline Air Quality

Reference is made to the Baseline Air Quality Assessment (ENVASS, 2022)- Appendix 7.6.

The current ambient air quality profile is affected through residential traffic on the associated gravel roads. Planned sources of air pollution from the prospecting includes as a minimum equipment use:

- Mobile Trackless Machinery and Equipment;
- Light motor vehicles;
- Bulldozer;

- Excavator;
- Generators; and
- Front End Loader

9.1.1.8 Baseline Visual Impact Assessment (ENVASS, 2021)

Reference is made to the Baseline Visual Impact Assessment (ENVASS, 2022)- Appendix 7.7.

The study area for the assessment comprises the spatial extent of the project footprint and related activities, as well as an associated buffer area. For the purposes of this VIA, the study area was defined as a 10 km radius around the physical footprint of all surface components of the project. The distance of 10 km was selected based on the location of sensitive receptors, topography and the elevation of the proposed prospecting area. For the purposes of this VIA, the term 'site' refers to the areas that will be physically affected by the prospecting activities. Similarly, the term 'study area' refers to the area that will potentially be visually affected by the project and represents the ten (10) km radius buffer around the visible components of the prospecting infrastructure.

The visual baseline assessment was informed by a field visit, assessment of on-site photographs and Google Earth imagery. To determine the visual resource value of the study area, specific attention was given to the following aspects:

- The nature of existing vegetation cover, in terms of its overall appearance, density and height, and level of disturbance.
- The general topographical character of the study area, including prominent or appealing landforms, and their spatial orientation in terms of the project sites.
- The nature and level of human transformation or disturbance of the study area.
- The location, physical extent and appearance of water bodies within the study area, if present; and
- The perceived level of compatibility of existing land uses in terms of the study area and each other

The Magaliesburg Protected Natural area is located to the north of the site, while the site is dominated by the Threatened Ecosystem (Magaliesburg Pretoria Mountain Bushveld). The current land cover on site is cultivated and natural. The land uses around the site include cultivated lands, rural residential areas, mining activities and natural hills. The proposed prospecting site falls within two vegetation units, namely the Gold Reef Mountain Bushveld and the Moot Plains Bushveld as displayed in **Figure 14**. The characterised by mountains with moderate relief towards the north and south of the site. No large rivers are present that traverse the area.

The visual character of the area is influenced by the geology, vegetation, and land use of the area, giving rise to a predominantly mountainous landscape to the north and south under predominantly natural cover with rural activities but with significant influence from agricultural and mining activities. Most of the area can be defined as a natural transition landscape

as it is mostly natural scenery but agricultural and mining elements and, to a lesser degree, rural elements, are visible in the landscape.

Viewpoints

Since topography and visual landscape modification has already occurred as a result of various activities in the area, the viewshed is only a theoretical study. For this assessment to be more accurate, viewpoints have been identified and a visual inspection was conducted from these points to identify the current state of the environment and to provide information that can assist in determining the severity of the visual impact of the proposed activity. As indicated in **Figure 16**, eight (8) viewpoints were identified from where inspections were conducted, and corresponding visual influence and characteristics have been defined

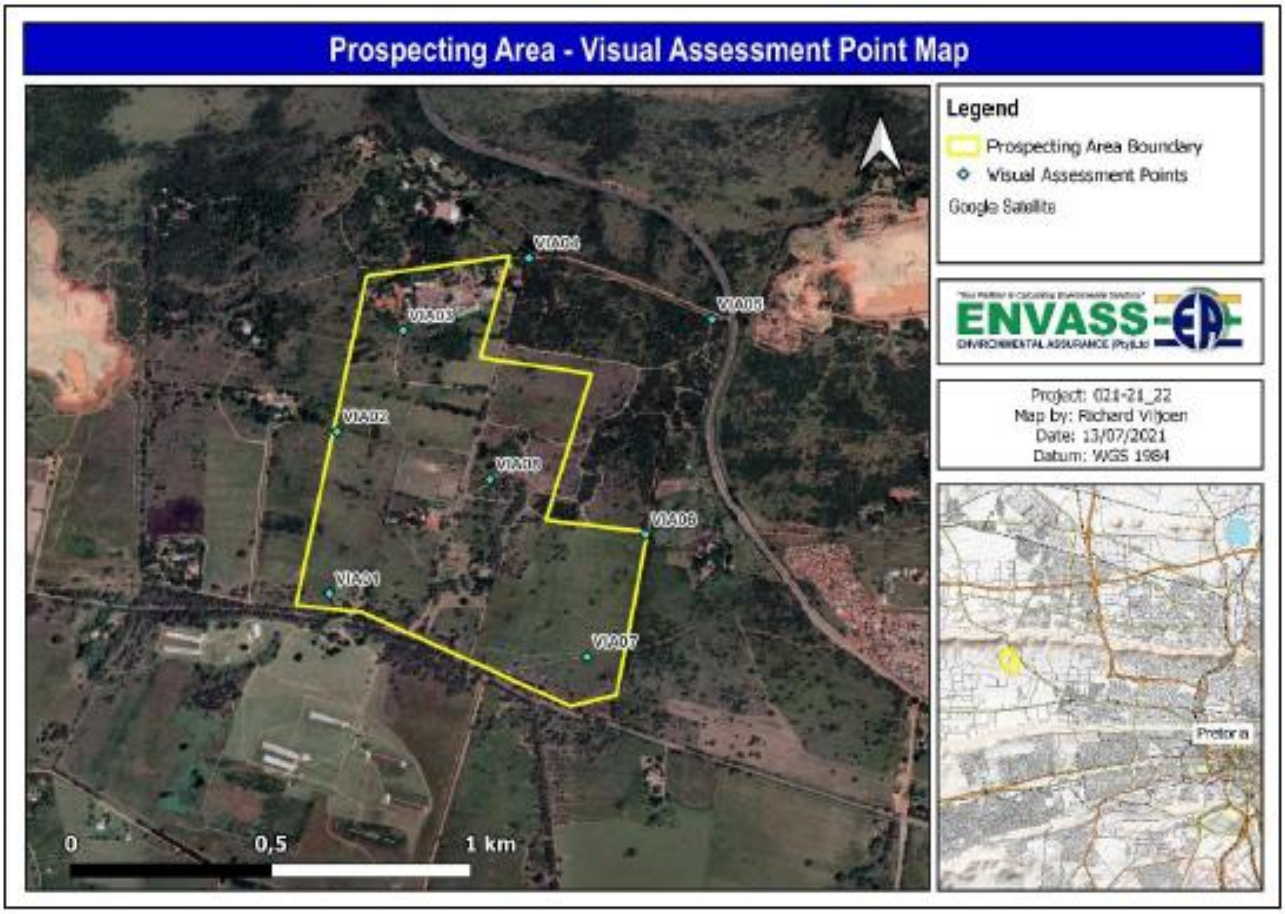


Figure 14: Viewpoints of the Proposed Development Site

The project site and most of the surrounding land comprises of mining operations, businesses, residential areas and farming. The topography has prominent hills located to the north and south directions. Mining, residential and farming are the predominant land uses in the area.

Prospecting equipment can conceivably have a negative impact on the visual environment, while secondary impacts, such as dust emission and lighting at night, will also manifest as visual disturbances from project initiation. The study area comprises of residential settlements, businesses, and various established mining activities which have had a visual impact

on the natural environment. Therefore, the proposed prospecting is predicted to have a low impact before mitigation on the visual environment. After mitigation the impact remains rated as low.

9.1.1.9 Socio-Economic Environment

Reference is made to the Baseline Air Quality Assessment (ENVASS, 2022)- Appendix 7.7.

9.1.1.9.1 Social Profile

Description of the City of Tshwane Local Municipality

The City of Tshwane is the single-largest metropolitan municipality in the country, comprising seven regions, 107 wards and approximately 210 councillors (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020).

According to the latest 2016 Community Survey data, the municipality has a population of 3 275 152 people with an annual growth rate of 11% since 2011 (Municipal Elections 2016: Electoral Commission of South Africa-IEC). In terms of population composition by age group, the highest percentage of the population distribution is between the ages 20-29, 30-39 and 0-9 years accounting for 19%, 17% and 18% respectively of the population (Municipal Elections 2016: Electoral Commission of South Africa-IEC). The City of Tshwane's population has risen from 2 478 557 in 2007 to 3 555 741 in 2017, i.e. at 2, 92% annually, which is double the growth rate of the population of South Africa as a whole and of the Province (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020). The biggest share of the population is concentrated in Regions 1 (Ga-Rankuwa, Soshanguve, Mabopane, Rosslyn) at 27%, followed by Region 6 (Eersterust, Lethabong, Mamelodi, Silverlakes, Garsfontein) and Region 3 (Pretoria Central Business District-CBD , Hercules, Danville, Atteridgeville, Laudium, Saulsville, Lotus) at 22% and 18%, respectively) (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020). The average household size is now 2.9 with the female headed households at 37.5% of the population (Municipalities of South Africa- https://municipalities.co.za/demographic/3/city-of-tshwane-metropolitan-municipality) .

The City has been identified as a hotspot for Covid-19. As at 04 June 2020, the Metro had a total of 614 Covid 19 positive cases, 6 deaths and 323 recoveries (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020). In comparison to the provincial statistics, for 2020, the City of Tshwane with all respective wards, accounted for 12,67%, 16,2% and 14% of the total number of infections, deaths and recoveries, respectively (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020). The region with highest infections is Region 3 (Pretoria CBD, Hercules, Danville, Atteridgeville, Laudium, Saulsville, Lotus) with 203 infections, followed by region 4 (Lyttleton, Eldoraigne, Rooihuiskraal, The Reeds, Olievenhoutbosch, Waterkloof), with 127 infections (City of Tshwane- Cooperative Governance and Traditional Affairs, 2020).

The following section provides an overview into the Municipal Wards and is abstracted from Census data 2011.

Description of Ward 55

Population Description- Ward 55

According to Census 2011, Ward 55 has approximately 28 461 people (Census 2011: Statistics South Africa). The population is divided into the following race groups as illustrated in the Census data (2011). Refer to **Figure 15**.

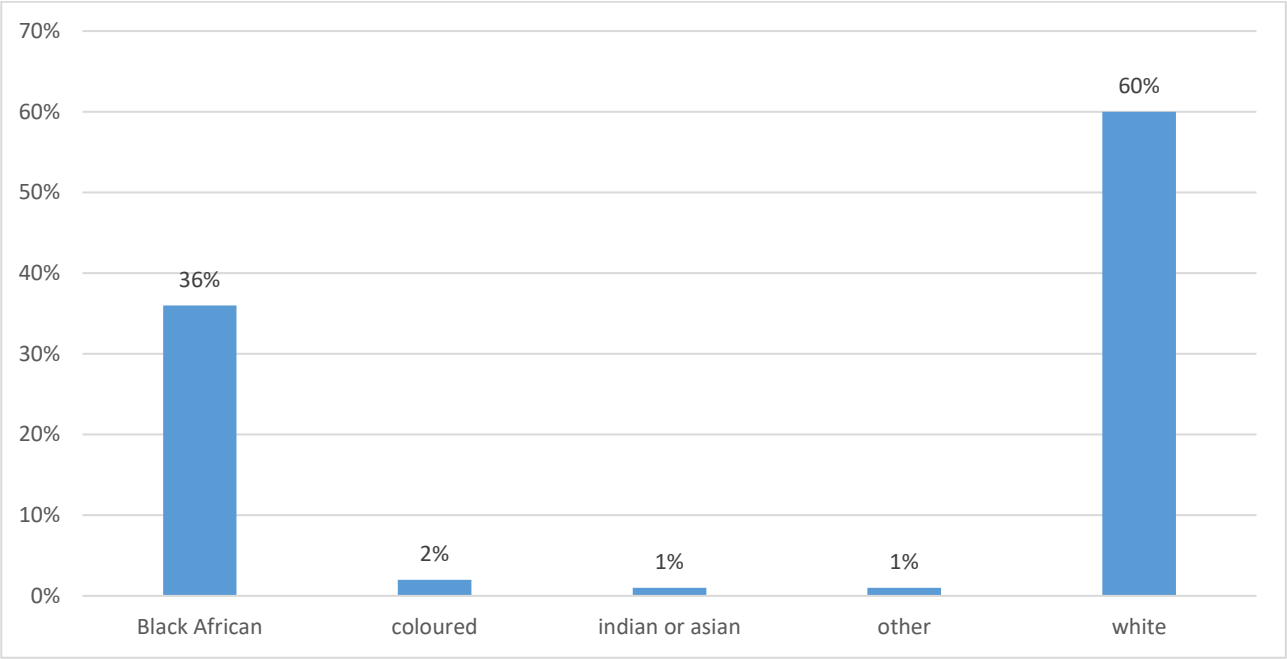


Figure 15: Population Group within the Ward 55.

69% of the Ward's population are between the ages of 16-64 with under eighteens comprising of 24% and over sixty fives comprising of 7% (Municipal Elections 2016: Electoral Commission of South Africa-IEC). Refer to **Figure 16**. This is reflective of a mature population. Fifty percent (50%) of the population are recorded as 'female'.

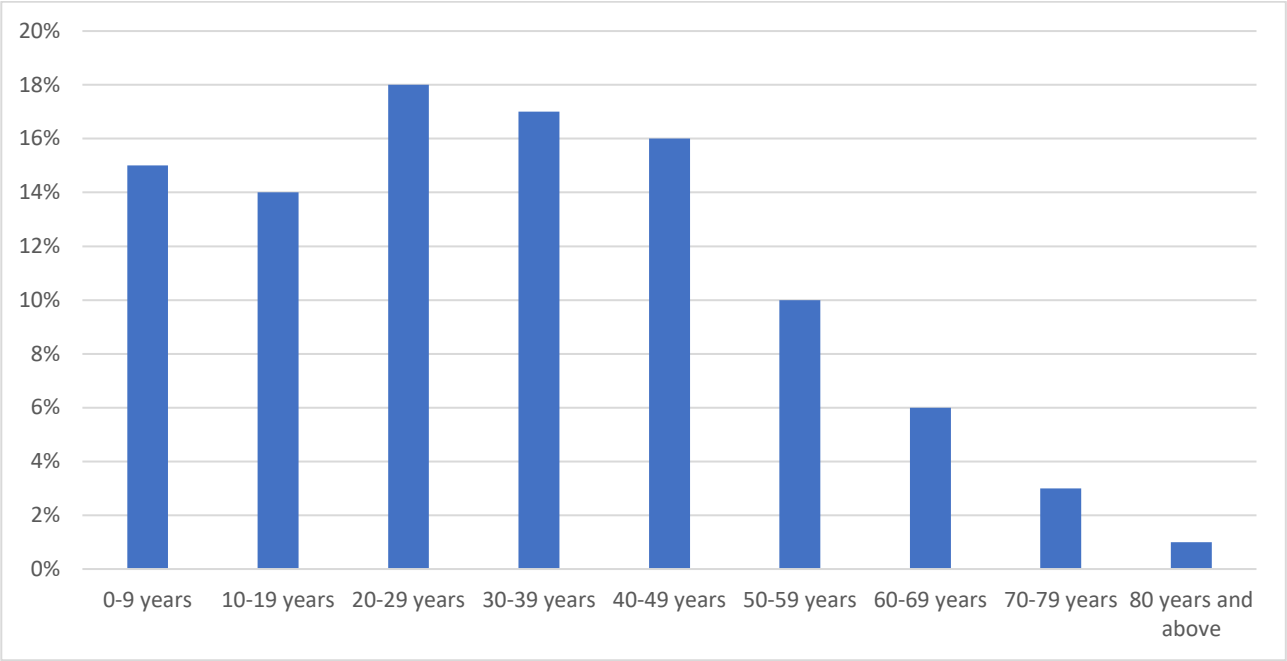


Figure 16: Population by Age Range within the Ward 55.

Sixty-One percent (61%) of the Ward's population speak Afrikaans, and 62% are reportedly born in Gauteng (Census 2011: Statistics South Africa)-Refer to **Figure 17** and **Figure 18** respectively. There are 9 071 households in the Ward, with 7.6% households that are regarded as informal dwellings. Fifty-One, four percent (51.4%) of formal households have confirmed owning and already paid off their residences. Heads of Households are primarily male (67%). This may be due to a number of reasons, although the primary reason may be that men are mainly responsible for the economic well-being of the household affording them more access to economic opportunities.

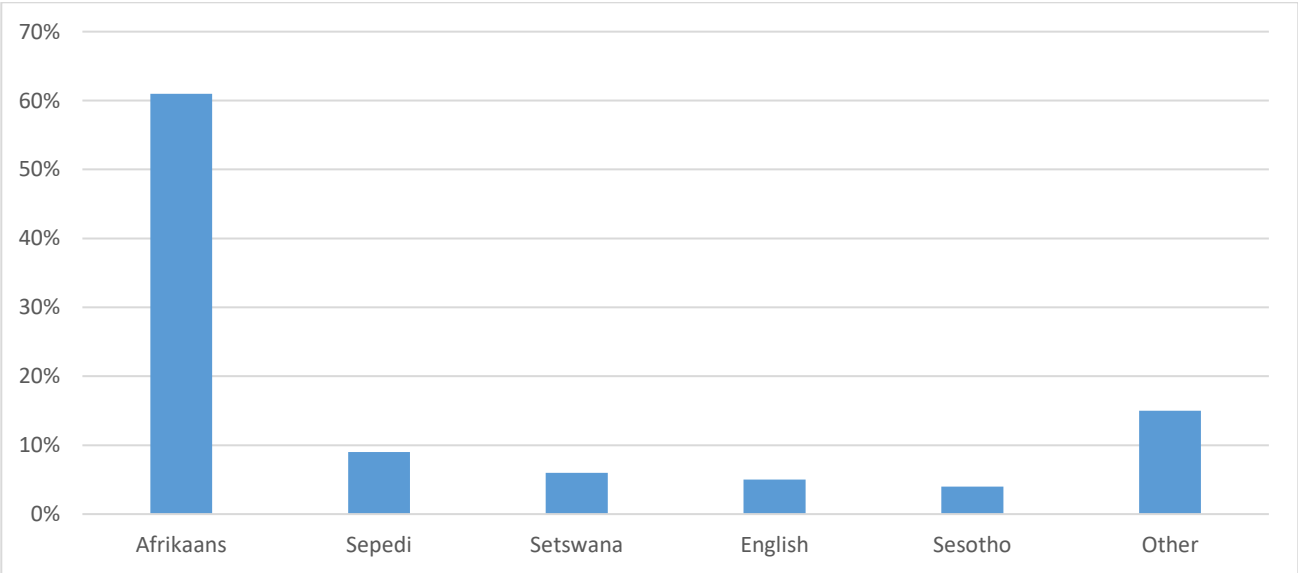


Figure 17: Population by Language most spoken at home.

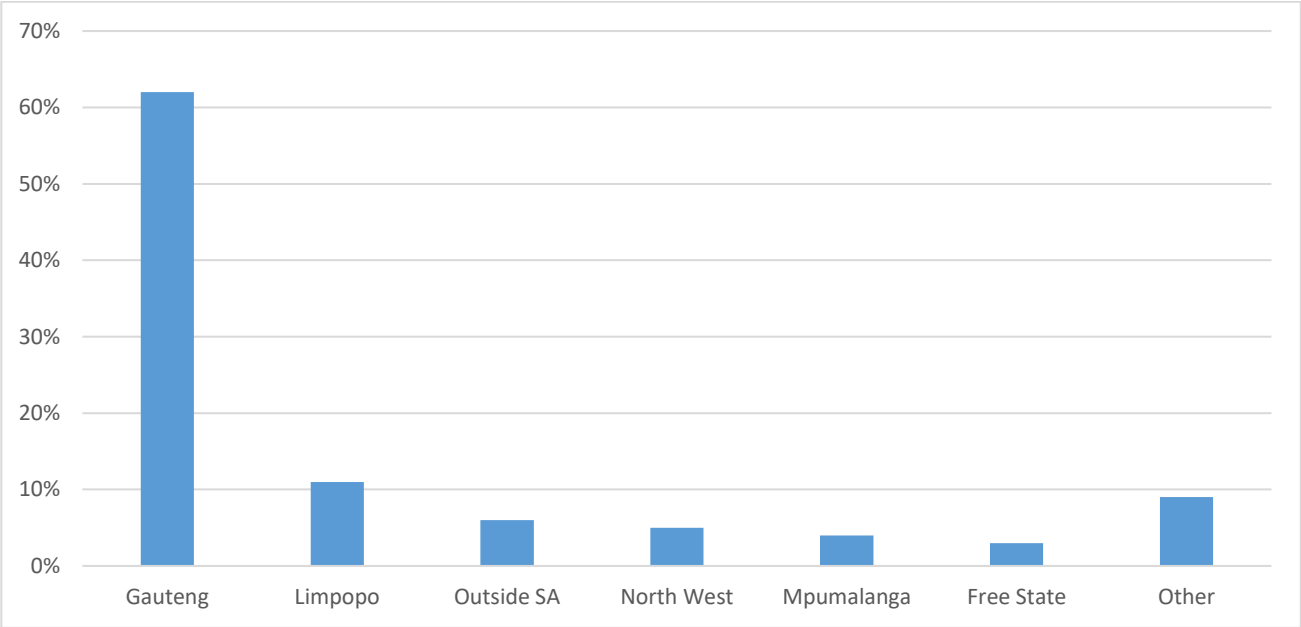


Figure 18: Province of birth.

Access to Services- Ward 55

Access to Water

An estimated 81% of the Ward's population utilise the local municipal services for access to water. With the remaining population either obtaining water from a borehole or alternative sources. Refer to **Figure 19**.

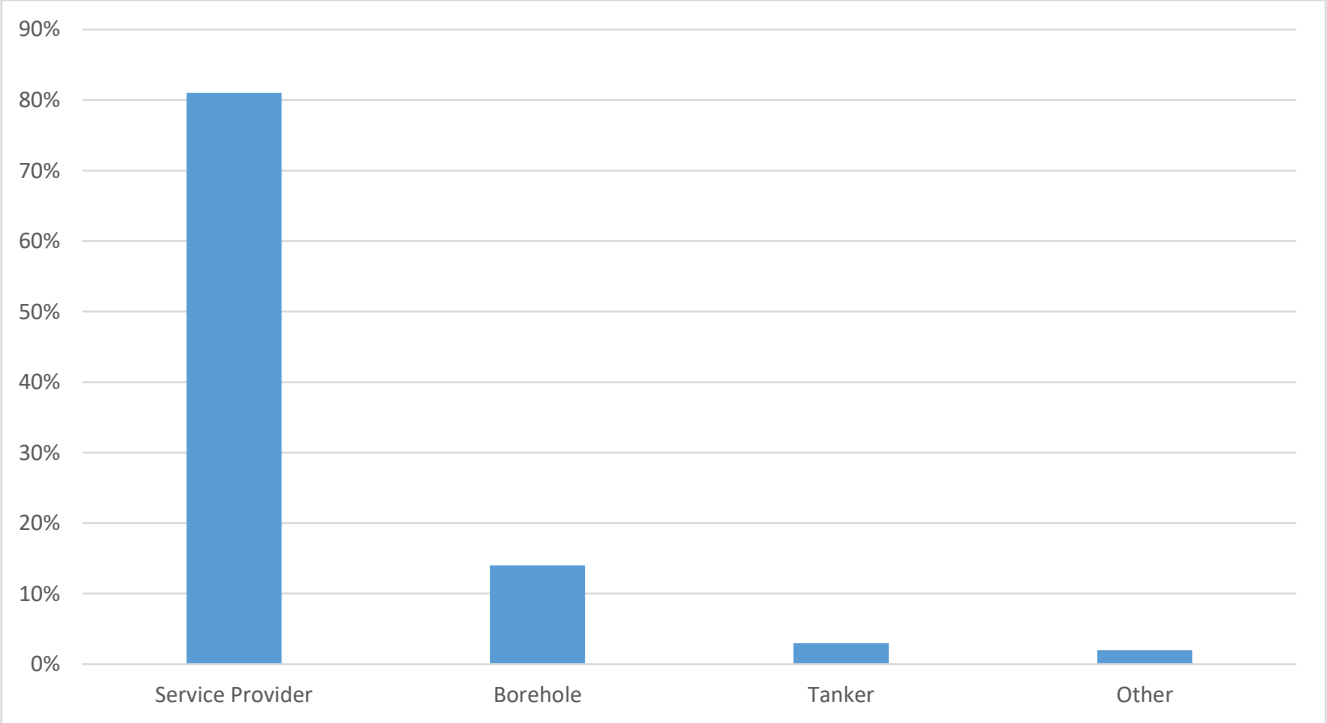


Figure 19: Population by Water Source.

Ablution facilities

The number of homes with access to chemical/flush toilets were calculated at 83.9% (Census 2011: Statistics South Africa). Approximately 9% of Ward residents still utilise pit latrines and a miniscule amount of 2.2% utilises bucket toilets (Census 2011: Statistics South Africa). The is an uncounted population of 5% which is unknown. Refer to **Figure 20**.

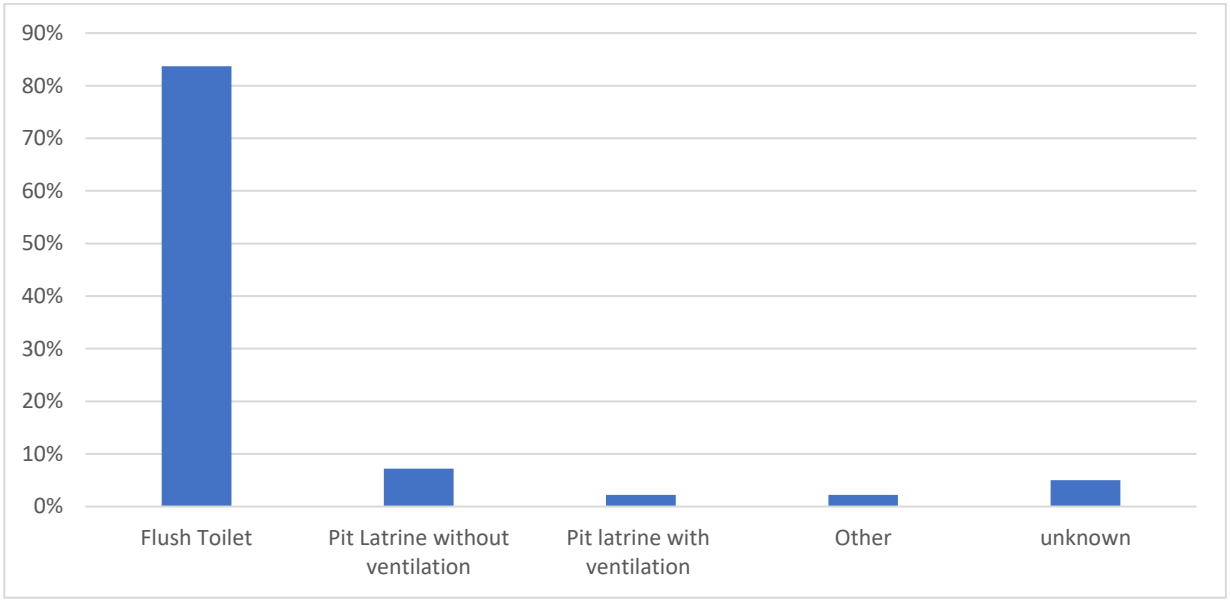


Figure 20: Population by Toilet Facilities.

Waste Disposal

Reportedly 82% of the Ward's population are regularly serviced by a service provider (municipal or privately) to remove their waste (Census 2011: Statistics South Africa). Refer to **Figure 21**.

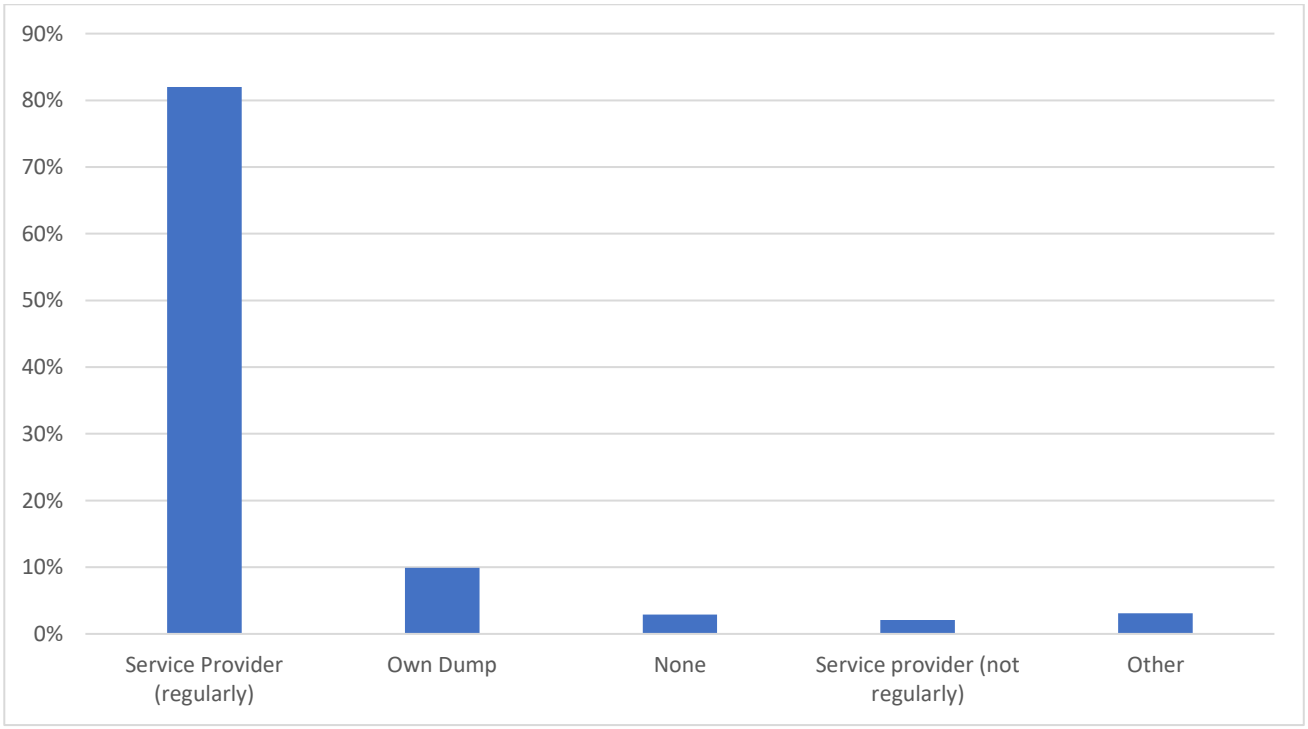


Figure 21: Refuse Disposal.

Economic Profile

Gross Domestic Product for the City of Tshwane

The economic state of City of Tshwane Metropolitan Municipality is put in perspective by comparing it on a spatial level with its neighbouring metropolitan municipalities, Gauteng Province and South Africa (City of Tshwane Integrated Development Plan, 2021-2026).

The City of Tshwane is the fourth biggest municipality in South Africa and second biggest in Gauteng in terms of gross value added by region with a gross value add of R497 billion. In 2019, City of Tshwane contributed 28.4%to the provincial economy (City of Tshwane Integrated Development Plan, 2021-2026). Moreover, Tshwane accounted for 9.79%of the country's economy (City of Tshwane Integrated Development Plan, 2021-2026).

The City of Tshwane has emerged as a diversified and vibrant economy with significant community services, finance and transport (City of Tshwane Integrated Development Plan, 2021-2026). Tshwane has a large government sector (community services), reflecting the presence of national and provincial departments and parastatals. The sector recorded 32.04% contribution to Tshwane's GVA in 2019 (City of Tshwane Integrated Development Plan, 2021-2026). The three main sectors in 2019 were community services (32.04%), finance (22.0%) and trade (13.5%) (City of Tshwane Integrated Development Plan, 2021-2026). The sector that contributes the least to the economy of City of Tshwane Metropolitan Municipality is the agriculture sector with a contribution of R 2.32 billion or 0.52% of the total GVA (City of Tshwane Integrated Development Plan, 2021-2026).

Additionally, the City of Tshwane also has higher-value functions such as corporate headquarters, financial and business services and manufacturing, and high-order public services, such as national departments, universities and major hospitals (City of Tshwane Integrated Development Plan, 2021-2026). It accommodates more than 30 Johannesburg Stock Exchange (JSE) listed companies, home of national government departments, three Universities, hosts 134 foreign embassies and missions and 26 international organisations, giving it the largest concentration of diplomatic and foreign missions in the world after Washington DC in the USA (City of Tshwane Integrated Development Plan, 2021-2026).

The Gross Domestic Product (GDP), an important indicator of economic performance, is used to compare economies and economic states (City of Tshwane Integrated Development Plan, 2021-2026). With reference to **Table 11**, the municipality had a GDP of R 497 billion in 2019 (up from R 235 billion in 2009), the City of Tshwane Metropolitan Municipality contributed 28.12% to the Gauteng Province GDP of R 1.77 trillion in 2019 increasing in the share of the Gauteng from 27.20% in 2009 (City of Tshwane Integrated Development Plan, 2021-2026). The City of Tshwane Metropolitan Municipality contributes 9.79% to the GDP of South Africa which had a total GDP of R 5.08 trillion in 2019 (as measured in nominal or current prices). It's contribution to the national economy stayed similar in importance from 2009 when it contributed 9.36% to South Africa, but it is lower than the peak of 9.81% in 2018 (City of Tshwane Integrated Development Plan, 2021-2026).

Table 11: City of Tshwane, Gauteng And National Total, 2009-2019 (R Billions Using 2010 Constant Prices)

	City of Tshwane	Gauteng	National Total	City of Tshwane as % of province	City of Tshwane as % of national
2009	0.23	0.86	2.51	*27.2%*	*9.4%*
2010	0.26	0.95	2.75	*27.4%*	*9.5%*
2011	0.29	1.05	3.02	*27.9%*	*9.7%*
2012	0.31	1.12	3.25	*28.0%*	*9.6%*
2013	0.34	1.22	3.54	*28.1%*	*9.7%*
2014	0.37	1.32	3.81	*28.0%*	*9.7%*
2015	0.39	1.40	4.05	*28.0%*	*9.7%*
2016	0.43	1.52	4.36	*27.9%*	*9.8%*
2017	0.45	1.62	4.65	*28.0%*	*9.8%*
2018	0.48	1.70	4.87	*28.2%*	*9.8%*
2019	0.50	1.77	5.08	*28.1%*	*9.8%*

(Source: City of Tshwane Integrated Development Plan, 2021-2026)

In 2019, the City of Tshwane Metropolitan Municipality achieved an annual growth rate of 0.26% which is a slightly lower GDP growth than the Gauteng Province's 0.47%, and is higher than that of South Africa, where the 2019 GDP growth rate was 0.15% (City of Tshwane Integrated Development Plan, 2021-2026). Contrary to the short-term growth rate of 2019, the longer-term average growth rate for City of Tshwane (2.40%) is significantly higher than that of South Africa (1.68%). The economic growth in City of Tshwane peaked in 2011 at 5.64% (City of Tshwane Integrated Development Plan, 2021-2026)- Refer to **Table 12**.

Table 12: GDP - City Of Tshwane, Gauteng And National Total, 2009-2019 (R Billions Using 2010 Constant Prices)

	City of Tshwane	Gauteng	National Total
2009	-0.8%	-1.5%	-1.5%
2010	4.2%	3.3%	3.0%
2011	5.6%	3.6%	3.3%
2012	3.3%	2.5%	2.2%
2013	3.1%	2.7%	2.5%
2014	2.5%	2.3%	1.8%
2015	1.4%	1.2%	1.2%
2016	1.1%	1.1%	0.4%
2017	1.3%	1.0%	1.4%
2018	1.4%	1.1%	0.8%
2019	0.3%	0.5%	0.2%
Average Annual growth 2009-2019	***2.40%***	***1.93%***	***1.68%***

(Source: City of Tshwane Integrated Development Plan, 2021-2026)

The City of Tshwane Metropolitan Municipality had a total GDP of R 497 billion and in terms of total contribution towards Gauteng Province the City of Tshwane Metropolitan Municipality ranked second relative to all the regional economies to total Gauteng Province GDP (City of Tshwane Integrated Development Plan, 2021-2026)- Refer to **Table 13**. This ranking

in terms of size compared to other regions of City of Tshwane remained the same since 2009 (City of Tshwane Integrated Development Plan, 2021-2026). In terms of its share, it was in 2019 (28.1%) slightly larger compared to what it was in 2009 (27.2%). For the period 2009 to 2019, the average annual growth rate of 2.4% of City of Tshwane was the highest relative to its peers in terms of growth in constant 2010 prices (City of Tshwane Integrated Development Plan, 2021-2026).

Table 13: GDP - Sub-Metro Regions of City Of Tshwane Metropolitan Municipality, 2009 To 2019, Share And Growth

	2019 (Current prices)	Share of metropolitan municipality	2009 (Constant prices)	2019 (Constant prices)	Average Annual growth
Region 1	83.7	*16.84%*	37.9	51.9	***3.19%***
Region 2	26.6	*5.36%*	13.2	16.6	***2.33%***
Region 3	152.8	*30.73%*	82.2	98.3	***1.80%***
Region 4	93.7	*18.85%*	48.6	60.4	***2.21%***
Region 5	7.6	*1.52%*	3.9	4.8	***2.13%***
Region 6	116.6	*23.45%*	56.6	74.8	***2.83%***
Region 7	16.1	*3.24%*	7.7	10.3	***2.95%***
City of Tshwane	497.2		250.1	317.2	

(Source: City of Tshwane Integrated Development Plan, 2021-2026)

As per the **Table 13** above, Region 1 had the highest average annual economic growth, averaging 3.19% between 2009 and 2019, when compared to the rest of the regions within the City of Tshwane Metropolitan Municipality (City of Tshwane Integrated Development Plan, 2021-2026). The Region 7 Sub-metro Region had the second highest average annual growth rate of 2.95% (City of Tshwane Integrated Development Plan, 2021-2026). **Region 3** Sub-metro Region had the lowest average annual growth rate of 1.80% between 2009 and 2019 (City of Tshwane Integrated Development Plan, 2021-2026). Refer to **Figure 22.**

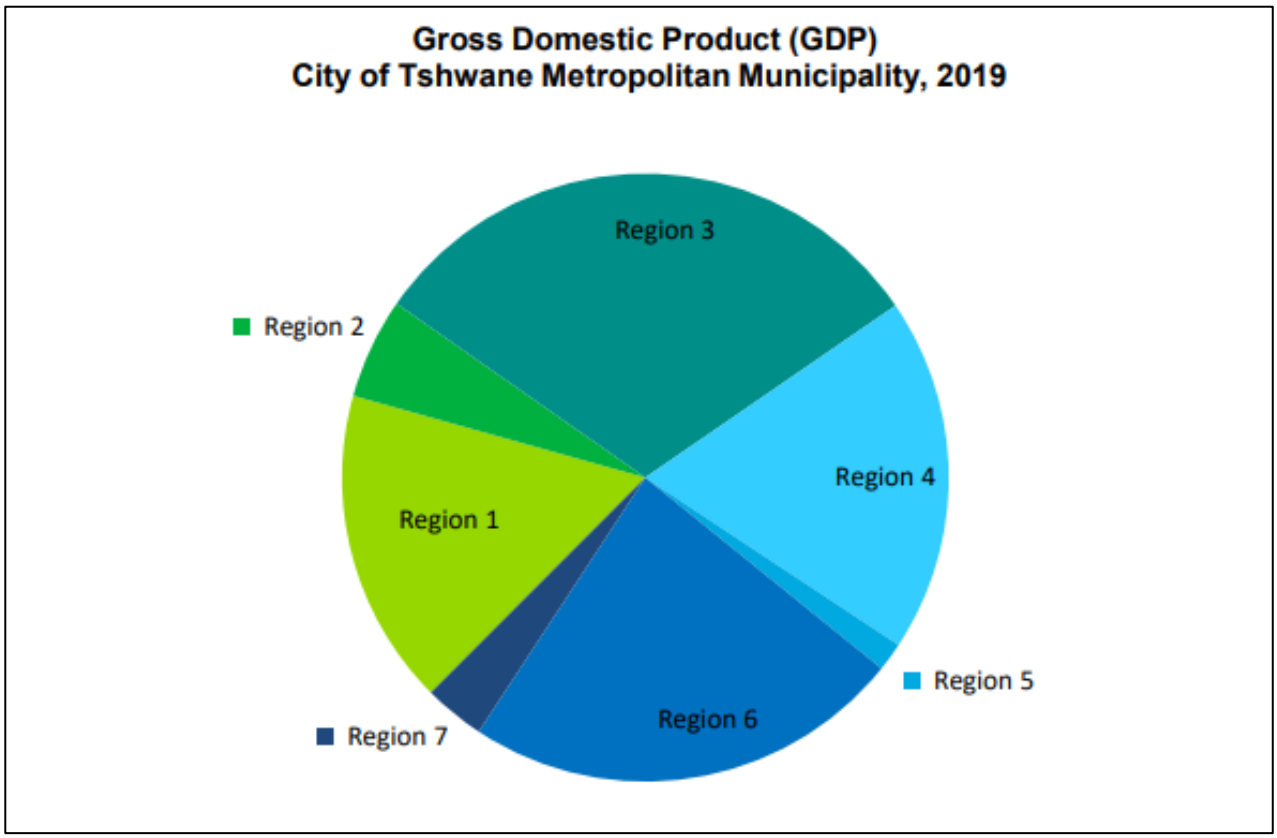


Figure 22:GDP Contribution - Sub-Metro Regions of City Of Tshwane Metropolitan Municipality, 2019 [Constant Price (Source: City of Tshwane Integrated Development Plan, 2021-2026).

The greatest contributor to the City of Tshwane Metropolitan Municipality economy is the **Region 3** Sub-metro Region with a share of 30.73% or R 153 billion, increasing from R 77 billion in 2009 (City of Tshwane Integrated Development Plan, 2021-2026). The economy with the lowest contribution is the Region 5 Sub-metro Region with R 7.55 billion growing from R 3.69 billion in 2009 (City of Tshwane Integrated Development Plan, 2021-2026).

Economic Growth Forecast for the City of Tshwane

It is expected that City of Tshwane Metropolitan Municipality will grow at an average annual rate of 0.60% from 2019 to 2024 (City of Tshwane Integrated Development Plan, 2021-2026). The average annual growth rate of Gauteng Province and South Africa is expected to grow at 0.34% and 0.34% respectively (City of Tshwane Integrated Development Plan, 2021-2026).

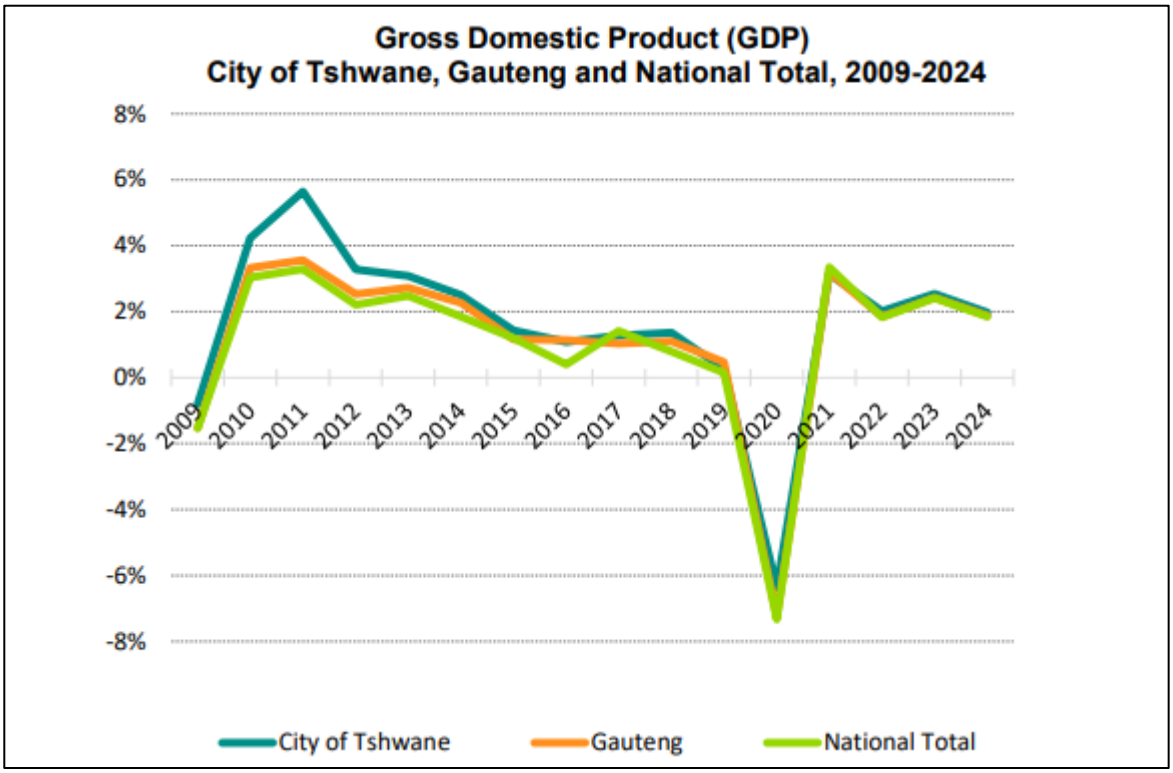


Figure 23: Gross Domestic Product (GDP) - City Of Tshwane, Gauteng and National Total, 2009-2024 [Average Annual Growth Rate, Constant 2010 Prices] (Source: City of Tshwane Integrated Development Plan, 2021-2026).

In 2024, City of Tshwane's forecasted GDP will be an estimated R 327 billion (constant 2010 prices) or 28.8% of the total GDP of Gauteng Province (City of Tshwane Integrated Development Plan, 2021-2026). The ranking in terms of size of the City of Tshwane Metropolitan Municipality will remain the same between 2019 and 2024, with a contribution to the Gauteng Province GDP of 28.8% in 2024 compared to the 28.4% in 2019 (City of Tshwane Integrated Development Plan, 2021-2026). At a 0.60% average annual GDP growth rate between 2019 and 2024, City of Tshwane ranked the highest compared to the other regional economies (City of Tshwane Integrated Development Plan, 2021-2026).

Economic Profile for Ward 55

The average income of households is R115 100.00 per year (Census 2011: Statistics South Africa). When assessed further one can estimate that each household is living off approximately R315 or 45 US Dollars per day. This is well above the United National Poverty assessment of 'breadline' conditions of 2 US Dollars per person, per day (Census 2011: Statistics South Africa). There is no indication of poverty. Refer to **Figure 24**.

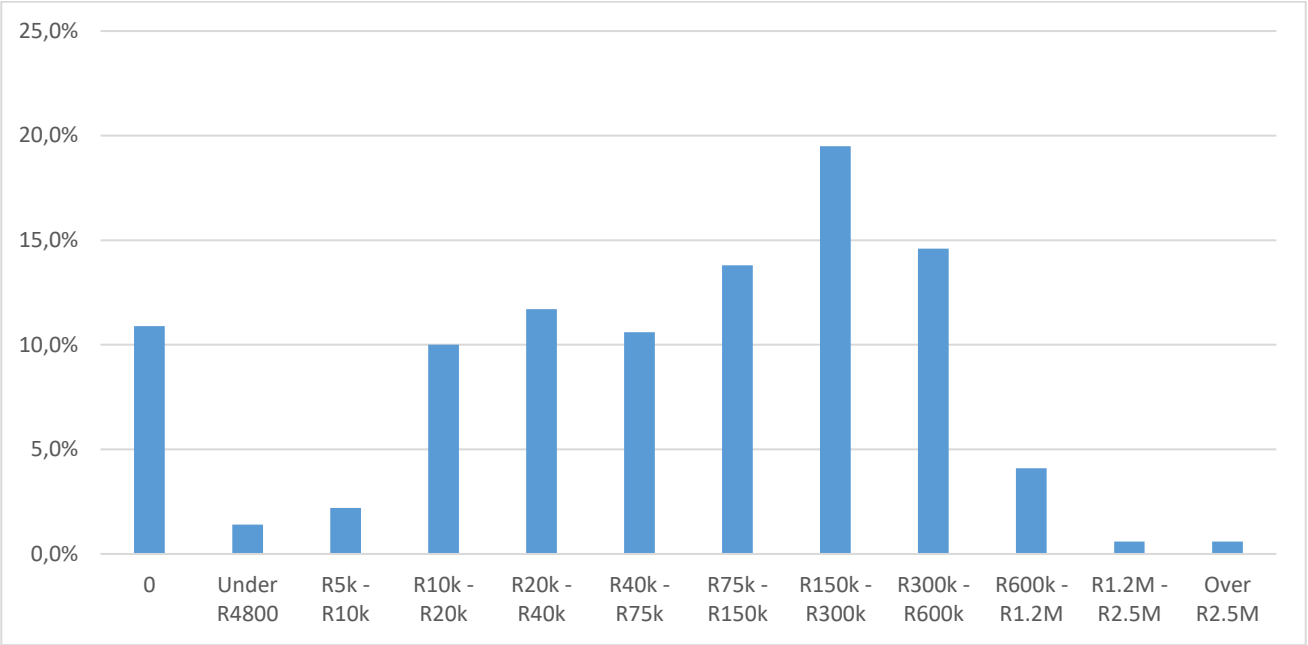


Figure 24: Average Annual Household Income.

Furthermore, 64.6% of the Ward's population is employed with 70% being employed in the formal sector, with a small percentage (11%) in the informal sector (Census 2011: Statistics South Africa). Refer to **Figure 25** and **Figure 26**.

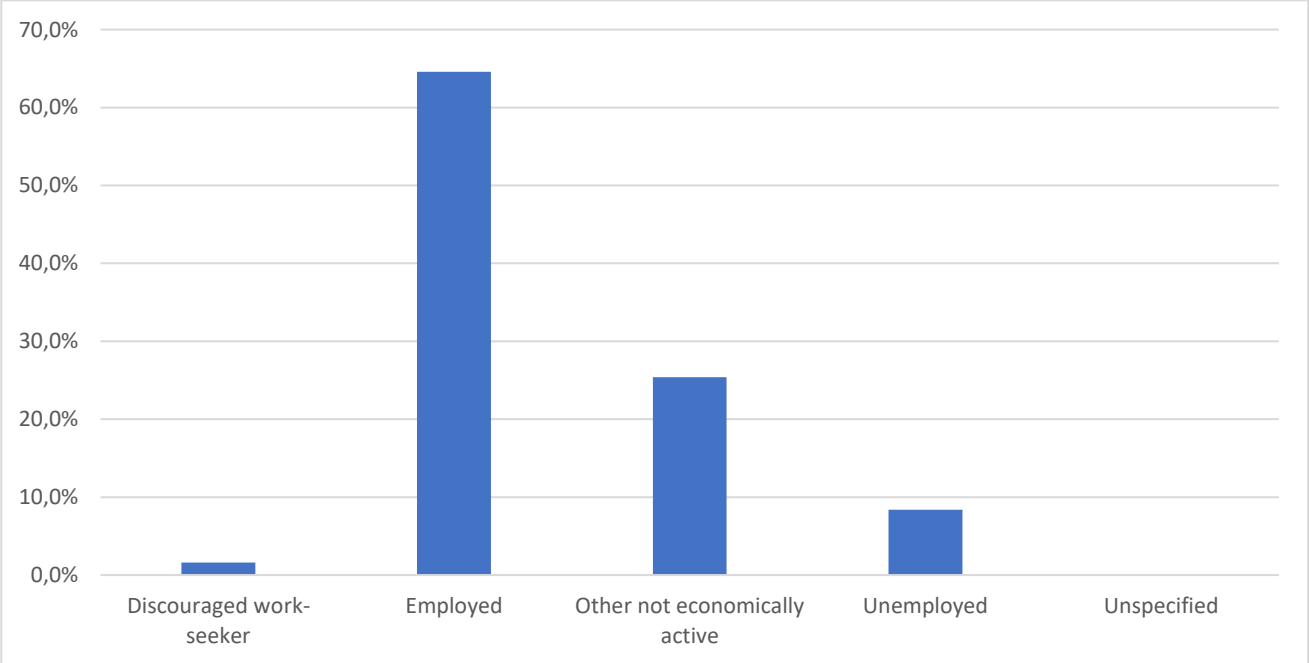


Figure 25: Population by employment Status.

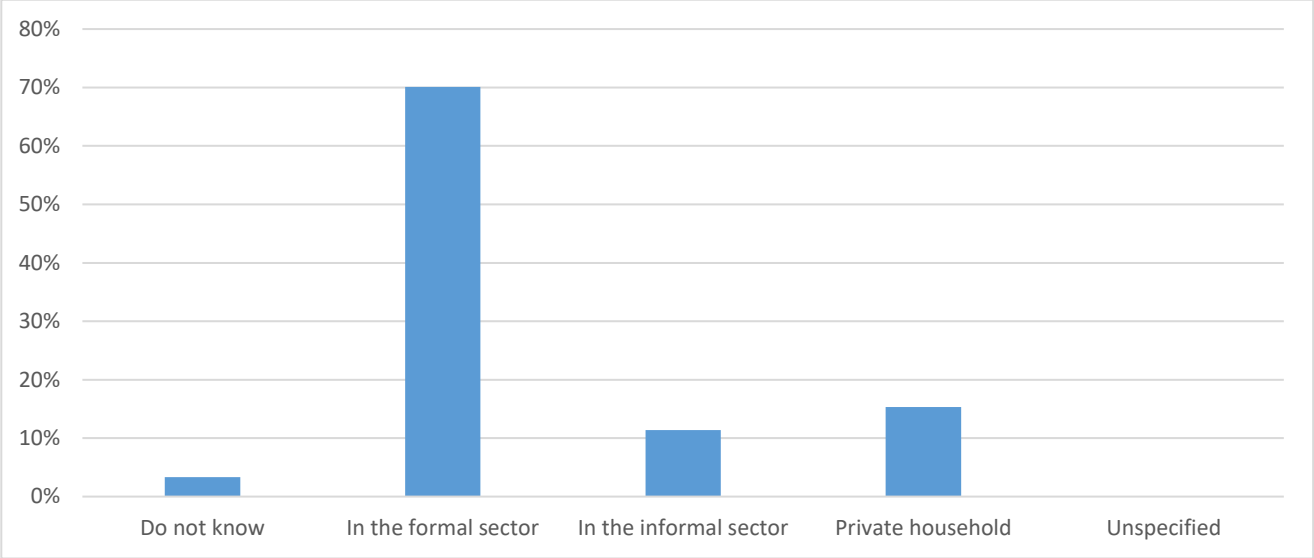


Figure 26: Sector of Employment.

Furthermore, approximately 84% of the Wards population have completed Grade 9 or a higher education level, with just over 56.3% of that figure completing Grade 12. Only 2% of individuals have never been to school. The following section provides an understanding into potential impacts and their associated mitigation measures.

9.1.2 Description of the current land uses

The locality and extent of current land use within and around the prospecting right area is shown in the figure below. The study area comprises of residential settlements, businesses, and various established mining activities which have had a visual impact on the natural environment.

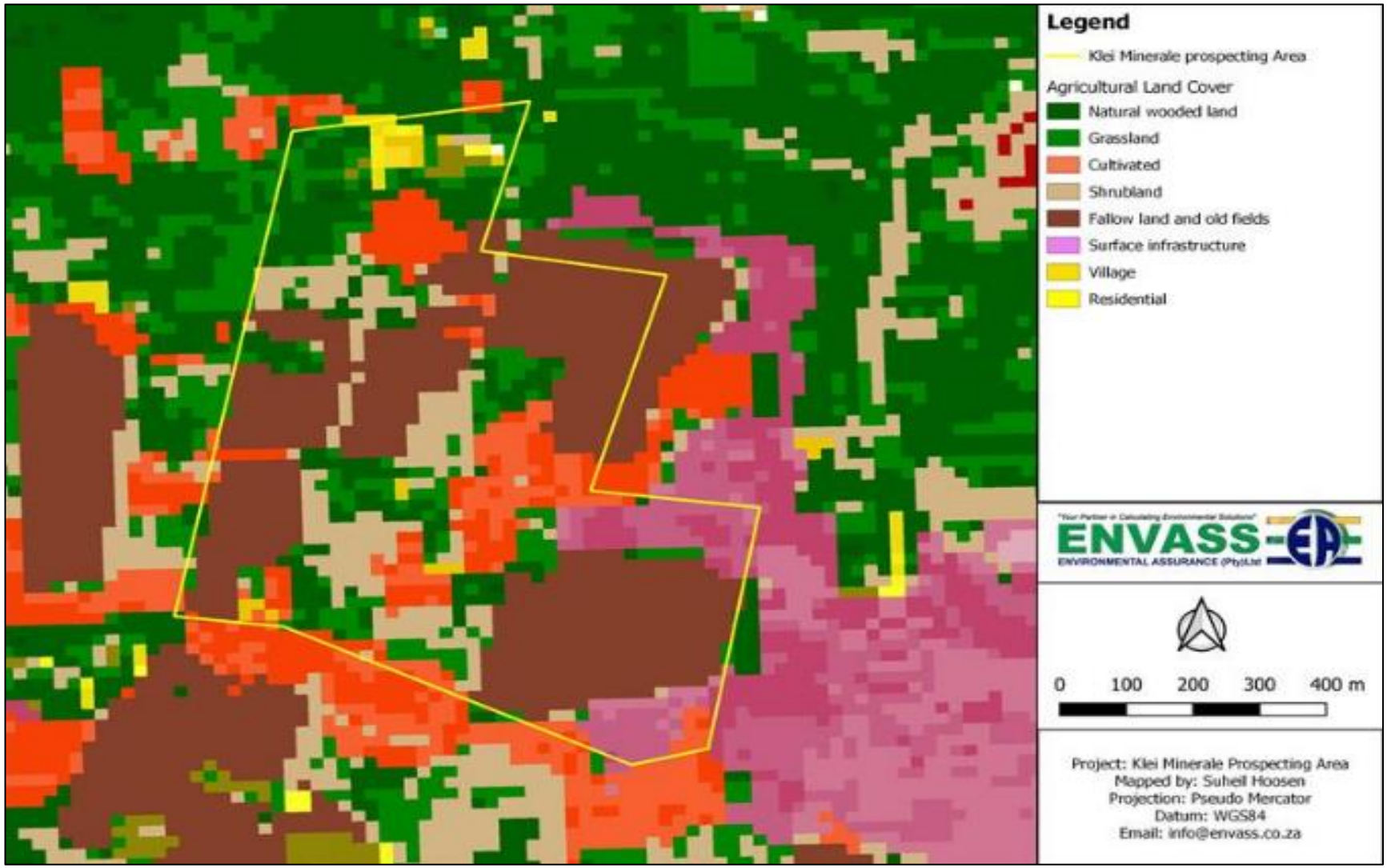


Figure 27: Land Use Classes of the Study Area

9.1.3 Description of specific environmental features and infrastructure on the site

Environmental Features

The major sensitive features within the study area include:

- Houses and residents on the small holdings;
- Potential heritage objects or buildings;
- Sensitive flora and fauna areas and ridge ecosystem.
- Surface water features.

Infrastructure on the study area and in close proximity

Engineering Services

Adequate and reliable engineering infrastructure plays an important role in the facilitation of development and ensuring that basic needs are met, also in the context of rural development in South Africa. Access to bulk infrastructure, such as water, electricity, sanitation and roads, determines the location, direction and intensity of development. Infrastructure is used as one of the important criteria to evaluate the possibility and readiness of a particular proposed development area.

Any proposed land development area should not be addressed in isolation with regards to infrastructure but should be addressed in the broader developmental context. The limited availability of engineering services in the Magaliesburg area will have dire consequences in the short to medium term, and new development will depend on when major engineering infrastructure investment take place in this area.

i) Water

Water provision in the study area is via a existing infrastructure, as a portion of the site is currently utilised by J. Robbertse Vervoer (Pty) Ltd trading as SABRIX for workshops and offices.

ii) Sewer

The minimum acceptable basic level of sanitation is set out in the Water Services Act of 1998. This Act inter alia directs that each household should have a basic sanitation facility that adheres and promotes the appropriate health and hygiene behaviours.

iii) Electricity

The supply authority in this area is Eskom. The Tshwane Municipality is responsible to supply public lighting. There are no high voltage stations in the study area and a number of medium voltage stations throughout the study area.

iv) Solid Waste

It has been identified that there are waste management operations for Region 3 that is serviced by the municipality. The waste management division of the municipality is responsible for:

- Collecting and transporting general waste to disposal facilities on a daily and weekly basis
- Cleaning public spaces (picking up litter, preventing and clearing illegal dumping sites)
- Managing waste disposal facilities
- Minimising waste
- Recycling
- Providing a bulk waste collection service – collecting and transporting bulk waste
- Implementing policies, strategies, models, norms and standards

Roads

At a regional scale, the most prominent movement lines are the N1 and the R21 providing linkage.

The Pretoria CBD is located about 13 km southeast of the Klei Minerale prospecting project, while Rosslyn is located 6 km to the north-northeast and Atteridgeville 8 km to the south. The study area falls on the southern slopes of the Magaliesberg within the Tshwane Metropolitan Municipality in the Gauteng Province. The Hornsnek primary road runs in a northwest – southeast direction and forms the north-eastern boundary of the study area, while a local road forms the southern boundary (**Figures 1 & 2**). Access to the study area within the boundary wall is via the local road to the south, while the access to the area to the north of the boundary wall is via a local dirt road turning from the Hornsnek primary road.

General Site Pictures with Directions

The following pictures present a cardinal view of the site from North to South (central position).

Northern Direction	**North Eastern Direction**
	
Eastern Direction	**Southern Eastern Direction**
	
South Direction	**South Western Direction**

	
Western Direction	**North Western Direction**
	

9.1.4 Environmental and current land use map

(Show all environmental, and current land use features)

Refer to **Appendix 6.**

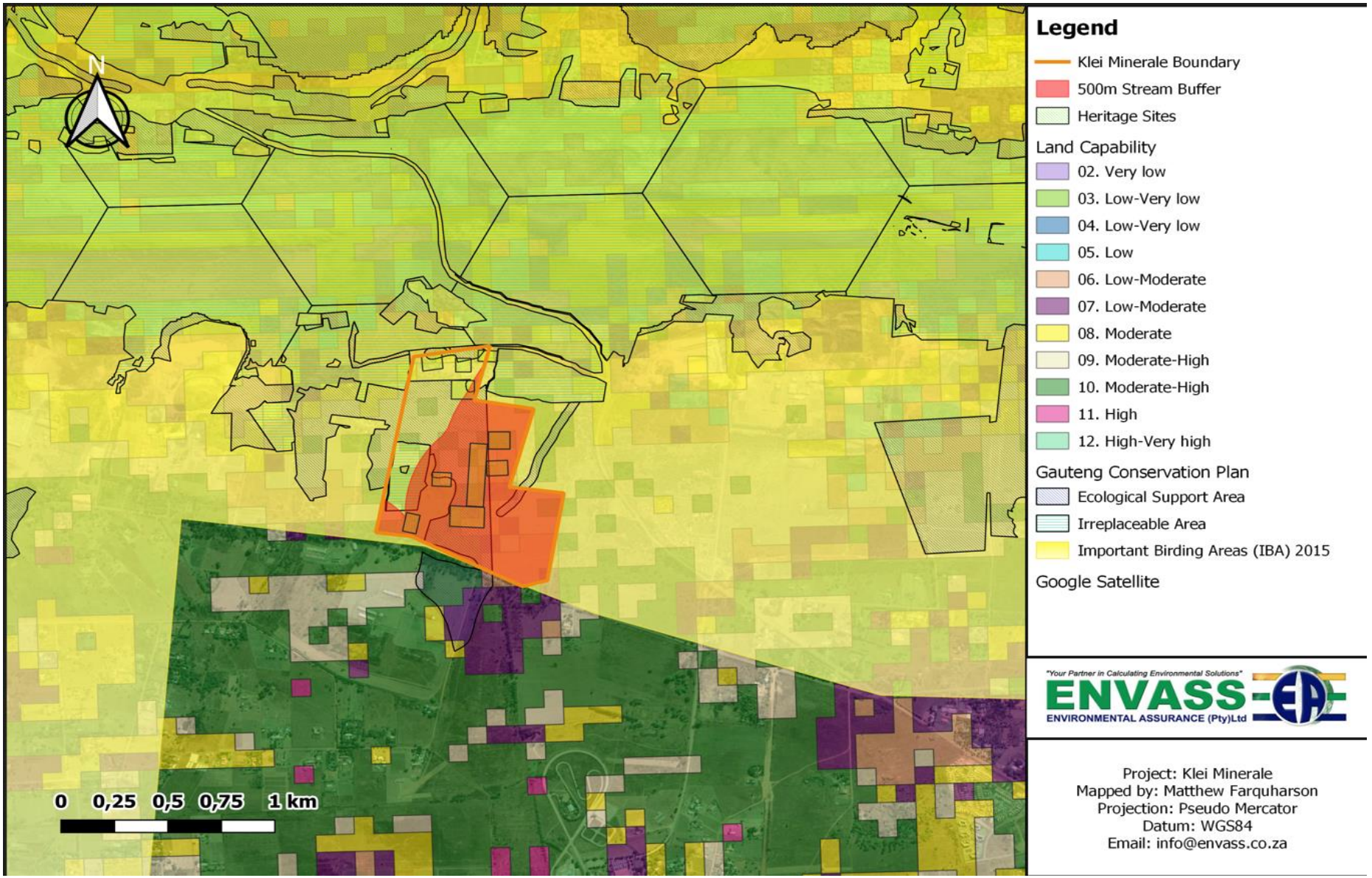


Figure 28: Combined Sensitivity Map

10. IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND THE PROBABILITY OF THE IMPACTS

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

Table 14: Impact Significance Calculation – Construction, Operational and Rehabilitation Phase

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
Planning Phase Data collection and assessment Compile high-level desktop study and potential desktop resource evaluation using sourced data	**ALL ASPECTS**	Inconsiderate planning of infrastructure placement and design, leading to the loss of intact (or sensitive) areas, as well as unnecessary edge effect impacts on areas outside of the proposed mining footprint (e.g., fragmentation of landscapes).	**X**				**-**	**3**	**2**	**1**	**2**	**8**	**5**	**40**	**Medium**	**20**	**Certain**	**Very Low**	**As per the EMPR (Part B)**
Construction and Operational Phase Clearing of vegetation and topsoil and excavation for the access. Soil disturbance and topsoil stockpiling resulting in soil compaction and erosion. Stockpiling of topsoil for rehabilitation purposes after trenching. Earthworks to excavate in preparation for trenches for the prospecting activity. Dust emission resulting from site	**GEOLOGY AND SOILS**	Minor loss and disturbance to topsoil as a result of clearing of vegetation and trenching. When vegetation is cleared and the topsoil is stripped, the soils natural structure is disturbed and as a result the natural cycle is broken exposing the bare soil to erosion. Vehicles driving on these soils causes compaction of soils and reduces the soils ability to be penetrated by root growth. Compaction also increases erosion potential. When soils are not stripped and stockpiled according to the soil stripping guidelines these soils would have lost their natural physical and chemical properties, reducing the topsoil's ability to be a plant growth medium.		**X**	**X**		**-**	**3**	**2**	**1**	**2**	**8**	**5**	**40**	**Medium**	**20**	**Certain**	**Very Low**	

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
clearing, soil stripping and construction activities (including vehicle entrained dust) **<u>Closure Phase / Decommissioning and Rehabilitation Phase</u>** Backfilling and landscaping. Topsoil placement and reseeding concurrent rehabilitation. Monitoring of rehabilitated areas		The above factors all contribute to a loss of the topsoil's ability to be a resource through alterations and removal.																	
		Hydrocarbon spills on soils can occur where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking.		**X**	**X**		**-**	**3**	**2**	**1**	**3**	**9**	**2**	**18**	**Medium**	**9**	**Sure**	**Very Low**	
	HYDROLOGY GROUNDWATER SURFACE WATER	Stormwater, erosion and siltation impacts due to a lack of implementing temporary measures to manage stormwater run-off quantity and quality.		**X**	**X**		**-**	**3**	**3**	**1**	**3**	**10**	**3**	**30**	**Medium**	**15**	**Sure**	**Very Low**	
		Contamination of stormwater runoff and ground water, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.		**X**	**X**		**-**	**3**	**2**	**1**	**3**	**9**	**2**	**18**	**Medium**	**9**	**Sure**	**Very Low**	

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
	BIODIVERSITY	As the prospecting will result in the loss of the floral diversity- Loss of Species of Conservation Concern for both Floral and Faunal Species.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	
		The prospecting will result in the influx of alien invasive species.		X	X		-	3	3	1	3	10	4	40	Medium	20	Sure	Low	
		Loss of ecological connectivity through the clearing of vegetation.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	
		Loss of habitat and habitat fragmentation will disrupt ecological functioning.		X	X		-	4	4	1	3	12	4	44	Low	22	Sure	Low	
		Loss of indigenous vegetation, floral and faunal habitat and ecological structure of water resources and soil.		X	X		-	4	3	1	3	11	4	48	Low	22	Sure	Low	
		Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of alien invasive species, a potential loss of red listed plant species, habitat fragmentation and an overall decrease in species richness in the area		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	
		The results may be positive if rehabilitation has been done correctly and the site may be rehabilitated back to a natural landscape. Initial movement around the site to ensure rehabilitation will have similar results as may be expected during the Construction Phase.				X	+	3	3	1	3	10	3	30	Medium	15	Sure	Low	

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
	ARCHAEOLOGICAL/ HERITAGE RESOURCES	Alteration of archaeological, historical and palaeontological resources that may be discovered during earthworks.		X	X		-	3	1	5	5	14	3	42	Medium	21	Sure	Low	
	VISUAL AND SENSE OF PLACE	Reduction in visual resource value due to presence of prospecting equipment.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
		Reduction in visual resource value due to presence of trenches.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
		Formation of dust plumes as a result of construction activities.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
		Light pollution at night due to safety lighting		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
	NOISE AND VIBRATION	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and vibration impacts associated with the operation of vehicles, machinery and equipment.		X	X		-	4	3	1	2	10	3	30	Medium	15	Sure	Very Low	
	AIR QUALITY	Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and treching.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
		Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	
	WASTE	Generation of additional general waste, litter and building rubble and hazardous waste.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	
	SERVICES	Minor impact caused by need for services i.e. water, electricity and sewerage systems during		X	X		-	2	2	1	3	8	5	40	Medium	20	Certain	Very Low	

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		the prospecting phase causing additional strain on natural resources and service infrastructure.																	
	TRAFFIC	Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.		X	X		-	2	3	1	1	7	5	35	High	11,66	Sure	Very Low	
		Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.		X	X		-	5	3	5	5	18	3	54	High	18	Sure	Very Low	
	HEALTH AND SAFETY	Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.		X	X		-	5	4	5	5	19	3	57	High	19	Sure	Very Low	
		Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.		X	X		-	5	3	5	5	18	3	54	High	18	Sure	Very Low	
	SOCIO-ECONOMIC	Capital investment into the establishment of the mine- Stimulation of employment due to investment		X	X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	
		Multiplier effects on local economy will be positive, but very limited in extent and only short term.		X	X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	
		Restricted access to land and other destinations (obstruction).		X			-	3	3	1	1	8	5	40	N/A	40	Certain	Low	
		Increase in road safety risks due to increased road traffic.		X	X		-	2	3	1	1	7	5	35	Medium	17,5	Sure	Very Low	
		Skills development.			X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		Expenditure on decommissioning and closure of any temporary infrastructure.				X	-	2	3	1	1	7	5	35	N/A	35	Certain	Low	

11. 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).

A "significant impact" is defined as it is defined in the EIA Regulations, 2014 (as amended): "an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence". The objective of this EIA methodology is to serve as framework for accurately evaluating impacts associated with current or proposed activities in the biophysical, social and socio-economical spheres. It aims to ensure that all legal requirements and environmental considerations are met in order to have a complete and integrated environmental framework for impact evaluations.

The process of determining impacts to be assessed is one of the most important parts of the environmental impact assessment process. It is of such high importance because the environmental impacts identified can and are often linked to the same impact stream. In this method all impacts on the biophysical environment are assessed in terms of the overall integrity of ecosystems, habitats, populations, and individuals affected. For example, the removal of groundcover for the sloping or scraping of an embankment, can lead to higher amounts of water runoff which increases the rate of erosion. Further down in the river the amount of sediment increases because of the increased erosion. A number of fish species cannot endure the high amount of sediment and moves off. The habitat is thus changed or in the process of changing. Thus, one needs to understand that the root of the problem (removal of groundcover) is assessed in terms of the degree of change in the health of the environment and/or components in relation to their conservation value. If the impact of removal of groundcover of a definable system is high and the conservation value is also high, then the impact of removal of groundcover is highly significant.

11.1 Environmental Impact Assessment (EIA) Regulations, 2014 [As Amended] Requirements

The Environmental Impact Assessment (EIA) 2014 Regulations promulgated in terms of Sections 24 (5), 24M and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended] (NEMA), requires that all identified potential impacts associated with the proposed project be assessed in terms of their overall potential significance on the natural, social and economic environments. The criteria identified in the EIA Regulations (2014) include the following:

- Nature of the impact;
- Extent of the impact;
- Duration of the impact
- Probability of the impact occurring;
- Degree to which impact can be reversed;

- Degree to which impact may cause irreplaceable loss of resources;
- Degree to which the impact can be mitigated; and
- Cumulative impacts.

ENVASS has developed an impact assessment methodology (as defined below) whereby the Significance of a potential impact is determined through the assessment of the relevant temporal and spatial scales determined of the Extent, Magnitude and Duration criteria associated with a particular impact. This method does not explicitly define each of the criteria but rather combines them and results in an indication of the overall significance.

11.2 ENVASS Impact Assessment Methodology

11.2.1 Nature of the impact

The NATURE of an impact can be defined as: "*a brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact*".

11.2.2 The status of the impact

	Status	Description
STATUS	**Positive (+)**	A benefit to the holistic environment
	Negative (-)	A cost to the holistic environment
	Neutral (N)	No cost or benefit to the holistic environment

11.2.3 Magnitude of the Impact

The MAGNITUDE of an impact can be defined as: "*a brief description of the intensity or amplitude of the impact on socio-economic or environmental aspects*".

Determining the magnitude of an impact			
MAGNITUDE Magnitude / intensity of impact (at the specified scale)	**Magnitude**	**Score**	**Description**
	Zero	**1**	Natural and/or social functions and/or processes remain unaltered
	Very low	**2**	Natural and/or social functions and/or processes are negligibly altered
	Low	**3**	Natural and/or social functions and/or processes are slightly altered
	Medium	**4**	Natural and/or social functions and/or processes are notably altered
	High	**5**	Natural and/or social functions and/or processes severely altered

11.2.4 Extent of the Impact

The EXTENT of an impact can be defined as: "*a brief description of the spatial influence of the impact or the area that will be affected by the impact"*.

Determining the extent of an impact			
EXTENT **Extent or spatial influence of impact**	**Extent**	**Score**	**Description**
	Footprint	**1**	Only as far as the activity, such as footprint occurring within the total site area
	Site	**2**	Only the site and/or 500m radius from the site will be affected
	Local	**3**	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
	Region	**4**	Entire region / province is affected
	National	**5**	Country is affected

11.2.5 Duration of the Impact

The DURATION of an impact can be defined as: "*a short description of the period of time the impact will have an effect on aspects*".

Determining the duration of an impact			
DURATION **Duration of the impact**	**Extent**	**Score**	**Description**
	Short term	**1**	Less than 2 years
	Short to medium term	**2**	2 – 5 years
	Medium term	**3**	6 – 25 years
	Long term	**4**	26 – 45 years
	Permanent	**5**	46 years or more

11.2.6 Probability of the Impact Occurring

The PROBABILITY of an impact can be defined as: "*the estimated chance of the impact happening*".

Determining the probability of an impact			
PROBABILITY	**Probability**	**Score**	**Description**
	Unlikely	**1**	Unlikely to occur (0 – 15% probability of impact occurring)
	Possible	**2**	May occur (15 – 40% chance of occurring)
	Probable	**3**	Likely to occur (40– 60% chance of occurring)
	Highly Probable	**4**	Between 60% and 85% sure that the impact will occur
	Definite	**5**	Will certainly occur (85 - 100% chance of occurring)

11.2.7 Degree to which Impact can be reversed

The REVERSIBILITY of an impact can be defined as: "*the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects*".

Determining the probability of an impact			
REVERSIBILITY	**Reversibility**	**Score**	**Description**
	Completely reversible	**1**	Will reverse with minimal rehabilitation & negligible residual affects
	Partly reversible	**2**	Impacts can be reversed through the implementation of mitigation measures
	Irreversible	**3**	Impacts are permanent and can't be reversed by the implementation of mitigation measures or rehabilitation is not viable

11.2.8 Degree to which Impact may cause irreplaceable loss of resources

The irreplaceability of an impact can be defined as "*the amount of resources that can/can't be replaced*".

Irreplaceability = Magnitude + Extent + Duration + Reversibility

IRREPLACEABILITY **Irreplaceable loss of resources**	**No loss**	No loss of any resources
	Low	Marginal loss or resources
	Medium	Significant loss of resources
	High	Complete loss of resources

11.2.9 Degree to which the Impact can be mitigated

The degree to which an impact can be MITIGATED can be defined as: "*the effect of mitigation measures on the impact and its degree of effectiveness*".

Determining the mitigation rating of an impact			
MITIGATION RATING	**MITIGATED** **Degree impact can be mitigated**	**High**	Impact 100% mitigated
		Medium	Impact >50% mitigated
		Low	Impact <50% mitigated

11.2.10 Confidence Rating

CONFIDENCE in the assessment of an impact can be defined as the: "*level of certainty of the impact occurring*".

Determining the confidence rating of an impact			
CONFIDENCE RATING	**CONFIDENCE**	Certain	Amount of information on and/or understanding of the environmental factors that potentially influence the impact is *unlimited and sound*
		Sure	Amount of information on and/or understanding of the environmental factors that potentially influence the impact is *reasonable and relatively sound*

		Unsure	Amount of information on and/or understanding of the environmental factors that potentially influence the impact is *limited*

11.2.11 Cumulative Impacts

The effect of CUMULATIVE impacts can be described as: "*the effect the combination of past, present and "reasonably foreseeable" future actions have on aspects*".

Determining the confidence rating of an impact			
CUMULATIVE RATING	**CUMULATIVE EFFECTS**	Low	*Minor* cumulative effects
		Medium	*Moderate* cumulative effects
		High	*Significant* cumulative effects

11.2.12 Significance of Impacts

The SIGNIFICANCE can be defined as: *"the combination of the duration and importance of the impact, in terms of physical and socio-economic extent, resulting in an indicative level of mitigation required*".

The significance of an impact is determined as follows:

Significance = Irreversibility x Probability

Table 15: Significance Rating

Score	Significance	Description
0	**Neutral**	• Zero magnitude with any combination of extent and duration.
1 to 20	**Very low**	• Very low magnitude with any combination of extent and duration except regional and long term. • Low magnitude with a site-specific extent and short-term duration.
		• Very low magnitude with a site-specific extent and regional or long-term duration. • Low magnitude with any combination of extent and duration except site specific and short, regional, or long-term duration. • Medium magnitude with a site-specific extent and short-, medium- or long-term duration. • High magnitude with a site-specific extent and short-term duration.
21 to 40	**Low**	• Low magnitude with a regional extent and long-term duration. • Medium magnitude with any combination of extent and duration except site specific and short, regional or long-term duration.

Score	Significance	Description
		• High magnitude with either a local extent and short-term duration or a site-specific extent and medium-term duration. • High magnitude with a regional extent and short-term duration or a site-specific extent and long-term duration. • High magnitude with a local extent and medium-term duration.
		• Medium magnitude with a regional extent and long-term duration. • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration.
		• Medium magnitude with a national extent and long-term duration. • High magnitude with either a regional extent and long-term duration or a national extent and long-term duration. • Zero magnitude with any combination of extent and duration.
41 to 60	**Medium**	• Very low magnitude with any combination of extent and duration except regional and long term. • Low magnitude with a site-specific extent and short-term duration.
		• Very low magnitude with a site-specific extent and regional or long-term duration; • Low magnitude with any combination of extent and duration except site specific and short, regional, or long-term duration • Medium magnitude with a site-specific extent and short-, medium- or long-term duration • High magnitude with a site-specific extent and short-term duration.
		• Low magnitude with a regional extent and long-term duration. • Medium magnitude with any combination of extent and duration except site specific and short, regional, or long-term duration. • High magnitude with either a local extent and short-term duration or a site-specific extent and medium-term duration. • High magnitude with a regional extent and short-term duration or a site-specific extent and long-term duration. • High magnitude with a local extent and medium-term duration.
		• Medium magnitude with a regional extent and long-term duration. • High magnitude with either a regional extent or medium term. duration or a local extent and long-term duration.

Score	Significance	Description
		• Medium magnitude with a national extent and long-term duration. • High magnitude with either a regional extent and long-term duration or a national extent and long-term duration.
		• Zero magnitude with any combination of extent and duration.
61 to 80	High	• Very low magnitude with any combination of extent and duration except regional and long term. • Low magnitude with a site-specific extent and short-term duration.
		• Very low magnitude with a site-specific extent and regional or long-term duration. • Low magnitude with any combination of extent and duration except site specific and short, regional, or long-term duration • Medium magnitude with a site-specific extent and short-, medium- or long-term duration. • High magnitude with a site-specific extent and short-term duration.
		• Low magnitude with a regional extent and long-term duration. • Medium magnitude with any combination of extent and duration except site specific and short, regional, or long-term duration. • High magnitude with either a local extent and short-term duration or a site-specific extent and medium-term duration. • High magnitude with a regional extent and short-term duration or a site-specific extent and long-term duration. • High magnitude with a local extent and medium-term duration.
81 to 100	Very high	• Medium magnitude with a regional extent and long-term duration. • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration.
		• Medium magnitude with a national extent and long-term duration. • High magnitude with either a regional extent and long-term duration or a national extent and long-term duration.

12. 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).

As discussed in this report, Klei Minerale (Pty) Ltd is applying for a prospecting right over the study area- **Figure 3.** The study area is focussed on the prospecting activities which includes Portion 32, 34, 35, Portions of Portion 33 and the Remainder of the Farm Boekenhoutkloof 315 JR located in the City of Tshwane Metropolitan Municipality, approximately 16 km northwest of Pretoria. Prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. On successful completion of this desktop study, further trenching and resource estimations will be performed if the results warrant it. No Geophysical or Geochemical Surveys are planned. Based on information available information the site is the preferred site due to the allocation of the minerals to be prospected and infrastructure available.

Klei Minerale (Pty) Ltd is an operating mining company which conducts mining immediately to the West and North-east of the study area and a related company, J. Robbertse Vervoer (Pty) Ltd trading as SABRIX, also has brick making operations to the West and North-east of the study area. Therefore, infrastructure and resources are available in close proximity to the study area. In addition, geological information indicated that the area potentially contains shale that weathers to clay on surface. The clay present in the area can be used in various applications with numerous quarries and brickworks located in the region. The site is therefore, the preferred site and alternative sites are not considered.

The site is therefore regarded as the preferred site and alternative sites are not considered.

The following impacts (positive and negative) are regarded as community impacts:

- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion;
- Noise due to the undertaking operational and construction work;
- Poor access control resulting in impacts on cattle movement, breeding and grazing practices;
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime;
- Visual Impact;
- Creation of limited temporary jobs for locals; and
- Contribution to the GDP and economic and infrastructural development of the immediate vicinity.

NB: The public participation engagement process will further highlight any additional impacts onto the community which will further be unpacked.

13. THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK.

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

The detailed mitigation measures are identified in **Part B- EMPR** of this Basic Assessment Report.

NB: The public participation engagement process will further highlight any additional impacts onto the community which will further be unpacked.

14. MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Klei Minerale (Pty) Ltd is an operating mining company which conducts mining immediately to the West and North-east of the study area and a related company, J. Robbertse Vervoer (Pty) Ltd trading as SABRIX, also has brick making operations to the West and North-east of the study area. Therefore, infrastructure and resources are available in close proximity to the study area. In addition, geological information indicated that the area potentially contains shale that weathers to clay on surface. The clay present in the area can be used in various applications with numerous quarries and brickworks located in the region.

Based on information available, sedimentary rocks of the Silverton Formation of the Pretoria Group (which forms part of the Transvaal Supergroup) and Diabase Intrusions are the main lithologies are present. Sedimentary rocks of the Magaliesberg Formation of the Pretoria Group (which forms part of the Transvaal Supergroup) and Igneous rocks of the Lower Zone of the Rustenburg Layered Suite (which forms part of the Bushveld Complex) are found to the north of the proposed prospecting area which is the reason he applicant wants to apply for a mining right in this area- **Figure 3** of this report. The clay present in the area can be used in various applications with numerous quarries and brickworks located in the region.

The site is therefore, the preferred site and alternative sites are not considered.

15. STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE

(Provide a statement motivating the final site layout that is proposed)

The specific locations of trenching activities will be determined during Phase 1 of the Prospecting Work Programme. All infrastructure to be developed will be mobile and temporary. Specialists have recommended that no prospecting be conducted on the sensitive portions of the study area as per the Ecological, Heritage and Agricultural Assessments.

16. 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).

- **Approach to the EIA**

An Environmental Impact Assessment (EIA) is a good planning tool. It identifies the environmental impacts of a proposed development and assists in ensuring that a project will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

The Basic Impact Assessment for this project complies with the National Environmental Management Act (1998) (as amended) and the NEMA EIA Regulations (2014) and guidelines of the Department of Environmental Affairs (DEA). The guiding principles of an EIA are listed below.

- **Guiding principles for an EIA**

The EIA must take an open participatory approach throughout. This means that there should be no hidden agendas, no restrictions on the information collected during the process and an open-door policy by the proponent. Technical information must be communicated to stakeholders in a way that is understood by them and that enables them to meaningfully comment on the project.

There should be ongoing consultation with interested and affected parties representing all walks of life. Sufficient time for comment must be allowed. The opportunity for comment should be announced on an on-going basis. There should be opportunities for input by specialists and members of the public. Their contributions and issues should be considered when technical specialist studies are conducted and when decisions are made.

- **Information gathering**

Early in the Basic Assessment process, the Environmental Assessment Practitioner (EAP) identified the information that would be required for the impact assessment and the relevant data were obtained. In addition, available information about the receiving environment was gathered from reliable sources, interested and affected parties, previous documented studies in the area and previous EIA Reports. The project team visited the site to gain first-hand information and an understanding of the existing operations and the proposed project.

- **Specialist Assessments**

The following specialist studies have been conducted:

- Phase 1- Heritage Impact Assessment
- Desktop Palaeontological Assessments;
- Terrestrial Biodiversity Assessment;
- Desktop Agricultural and Land Capability Assessments; and
- Baseline Visual, Noise and Air Quality Assessments.
- Baseline Socio-Economic Assessment

The main objective of the specialist studies is to provide independent scientifically sound information on issues of concern relating to the project proposal.

The findings and recommendations identified by the various specialist studies undertaken, were incorporated into the Basic Impact Assessment.

- **Legislative Framework**

The legal requirements were described and assessed in detail.

- **Alternatives**

Prospecting is conducted in phases, where the activities and location of trenching is dependent on the previous phase.

The following alternatives were investigated as feasible alternatives:

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

Neighbouring the site, Klei Minerale has a site which already has an authorisation for mining activities. Therefore, infrastructure and resources are available in close proximity to the study area. In addition, geological information indicated that the area potentially contains shale that weathers to clay on surface. The clay present in the area can be used in various applications with numerous quarries and brickworks located in the region.

The site is therefore, the preferred site and alternative sites are not considered.

2) The type of activity to be undertaken

Prospecting activities will not compromise any future land uses on the study area. Should results of the prospecting indicate a viable reserve is present, then a comprehensive social and environmental impact assessment will be conducted to obtain environmental authorisation and a mining right from the competent authorities, in accordance with legislation. Alternative land uses to mining would be investigated as part of the social and environmental impact assessments.

Description of planned non-invasive activities:

Desktop studies to be undertaken over the area would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information about this area.

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

Description of planned invasive activities

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed.

(These activities result in land disturbances- without bulk sampling)

Description of Pre-Feasibility Studies

Geological modelling of gathered existing geological data and prospecting data will be performed, if the results warrant it.

The overall prospecting area is indicated in **Figure 1** of this Draft Basic Assessment. Areas to be avoided in terms of sensitivities are also indicated on the sensitivity maps in this report.

3) The design or layout of the activity

Since prospecting is temporary in nature no permanent structures will be constructed, negotiations and agreements may be made with the farm owners to use any existing infrastructure like access roads and other things like workshops. No accommodation is permitted on site. The specific locations for trenching will be determined on the recommendations from specialists (i.e. best areas / areas to rather avoid) and the geologist (as per the Prospecting Works Programme-PWP). All infrastructure to be developed will be mobile and temporary. The prospecting activities will be located outside of the sensitive areas and buffer zones as identified by the specialist. No camp site or additional infrastructure will be required as the existing access roads, J Robbertse Vervoer offices, toilets and storage facilities for fuel and machinery will be utilised.

4) The technology to be used in the activity

In terms of technologies proposed, prospecting work will initially entail a high-level desktop study and potential desktop resource evaluation. This will include a data search of any previous drilling, trenching, sampling activities, prospecting activities, existing maps and relevant historical data. Desktop studies to be undertaken would include studying of geological reports, prospecting data, plans/maps, aerial photographs, topography maps and any other related geological information regarding the specific area.

On successful completion of this desktop study, further possible trenching and resource estimations will be performed if the results warrant it. The type of invasive prospecting activities has been determined based on the historic success of the methods to be utilised. The prospecting activities are, however, dependent on the preceding phase (non-invasive) as indicated above and therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

Trenching will involve the digging of excavation trenches down to approximately 3 metres below surface using graders and excavators. The trenches will be approximately 750mm wide and approximately 3 metres long. Mapping of the trench walls will then be performed.

No permanent services including water supply, electricity, or sewerage facilities are required. All existing infrastructure will be used.

5) The operational aspects of the activity

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage facilities are required. The prospecting will commence with non-invasive prospecting for 6 – 8 months which will entail Multi-Spectral and Aerial Surveys providing digital raster data of the area of interest delineating the Paleo channel on a map. Thereafter a further literature survey will be conducted for 2 - 4 months, combining the results from phase 1 with interpreted geological report. This will again be followed with further non-Invasive prospecting through GIS & analytical desktop studies for 6 – 12 months, producing Pre-Feasibility reports, resource statements and 3D mapping.

The applicant shall ensure that this Environmental Management Plan is provided to the Project Manager and any other person or organisation who may work on the site.

6) The option of not implementing the activity

The option of not approving the activities will result in a significant loss to valuable information regarding the mineral status present on these properties. The proposed activities have very low significance since these are short term activities. The probability of occurrence of an impact was determined and most of these activities can be controlled and impacts can be reduced or avoided. The probability was also used basing on looking at other prospecting activities of similar nature. Generally prospecting activities have low impact on the environment. The planned activities negative impacts can be controlled and avoided or minimised therefore the layout does not require revision. In addition to this, should economical reserves be present

and the applicant does not have the opportunity to prospect, the opportunity to utilize the said reserves for future phases will be lost. Loss of potential employment opportunities for Gauteng as a province.

Description and assessment of impacts identified

A comprehensive list of all potential impacts of the prospecting as identified by the EAP and the specialists, are provided and are assessed.

- **Environmental management programme**

An Environmental Management Programme containing mitigation, management and monitoring measures and specifying roles and responsibilities was compiled with specialist input and are included in this report.

- **Stakeholder engagement**

Registered interested and affected parties including relevant organs of state, are consulted with during the process. All their comments will be formally responded to and incorporated into the Final Basic Assessment Report and Environmental Management Programme that will be submitted to the competent authority.

17. 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)

Potential impacts that may be caused by the proposed development will be identified using input from the following:

- Views of I&APs;
- Existing information;
- Specialist investigations;
- Site visit with the project team; and
- Legislation.

The following potential major direct, indirect and cumulative impacts were identified:

- Contamination and compaction of soils;
- Erosion;
- Contamination of ground- and surface water quality and decline in quantity;
- Impacts on biodiversity;
- Loss and displacement of flora and fauna;

- Destruction or loss of heritage features including graves and other historical sites of importance that may be uncovered during excavations;
- Decreased aesthetic value and impact on “Sense of Place”;
- Poor air quality and decreased visibility due to dust pollution;
- Increased noise levels;
- Waste generation;
- Slight increase in traffic and need for maintenance of road infrastructure;
- Potential injury and loss of health and life of humans; and
- Altered Socio-Economic Environment (Positive or negative).

Table 16: Assessment of each identified potentially significant impact and risk

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				SIGNIFICANCE	SIGNIFICANCE	MITIGATION MEASURES
			P	C	O	CP	PRE-MITIGATION	POST-MITIGATION	
Planning Phase Data collection and assessment Compile high-level desktop study and potential desktop resource evaluation using sourced data	**ALL ASPECTS**	Inconsiderate planning of infrastructure placement and design, leading to the loss of intact (or sensitive) areas, as well as unnecessary edge effect impacts on areas outside of the proposed mining footprint (e.g., fragmentation of landscapes).	**X**				**40**	**20**	**As per the EMPR (Part B)**
Construction and Operational Phase Clearing of vegetation and topsoil and excavation for the access. Soil disturbance and topsoil stockpiling resulting in soil compaction and erosion. Stockpiling of topsoil for rehabilitation purposes after trenching. Earthworks to excavate in preparation for trenches for the prospecting activity. Dust emission resulting from site clearing, soil stripping and construction activities (including vehicle entrained dust)	**GEOLOGY AND SOILS**	Minor loss and disturbance to topsoil as a result of clearing of vegetation and trenching. When vegetation is cleared and the topsoil is stripped, the soils natural structure is disturbed and as a result the natural cycle is broken exposing the bare soil to erosion. Vehicles driving on these soils causes compaction of soils and reduces the soils ability to be penetrated by root growth. Compaction also increases erosion potential. When soils are not stripped and stockpiled according to the soil stripping guidelines these soils would have lost their natural physical and chemical properties, reducing the topsoil's ability to be a plant growth medium. The above factors all contribute to a loss of the topsoil's ability to be a resource through alterations and removal.		**X**	**X**		**40**	**20**	**As per the EMPR (Part B)**

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				SIGNIFICANCE	SIGNIFICANCE	MITIGATION MEASURES
			P	C	O	CP	PRE-MITIGATION	POST-MITIGATION	
Closure Phase / Decommissioning and Rehabilitation Phase Backfilling and landscaping. Topsoil placement and reseeding concurrent rehabilitation. Monitoring of rehabilitated areas		Hydrocarbon spills on soils can occur where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking.		X	X		18	9	As per the EMPR (Part B)
	HYDROLOGY GROUNDWATER SURFACE WATER	Stormwater, erosion and siltation impacts due to a lack of implementing temporary measures to manage stormwater run-off quantity and quality.		X	X		30	15	As per the EMPR (Part B)
		Contamination of stormwater runoff and ground water, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.		X	X		18	9	As per the EMPR (Part B)
	BIODIVERSITY	As the prospecting will result in the loss of the floral diversity- Loss of Species of Conservation Concern for both Floral and Faunal Species.		X	X		44	22	As per the EMPR (Part B)
		The prospecting will result in the influx of alien invasive species.		X	X		40	20	As per the EMPR (Part B)
		Loss of ecological connectivity through the clearing of vegetation.		X	X		44	22	As per the EMPR (Part B)
		Loss of habitat and habitat fragmentation will disrupt ecological functioning.		X	X		44	22	As per the EMPR (Part B)
		Loss of indigenous vegetation, floral and faunal habitat and ecological structure of water resources and soil.		X	X		48	22	As per the EMPR (Part B)
		Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of		X	X		44	22	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				SIGNIFICANCE	SIGNIFICANCE	MITIGATION MEASURES
			P	C	O	CP	PRE-MITIGATION	POST-MITIGATION	
		alien invasive species, a potential loss of red listed plant species, habitat fragmentation and an overall decrease in species richness in the area							
		The results may be positive if rehabilitation has been done correctly and the site may be rehabilitated back to a natural landscape. Initial movement around the site to ensure rehabilitation will have similar results as may be expected during the Construction Phase.				X	30	15	As per the EMPR (Part B)
	ARCHAEOLOGICAL/ HERITAGE RESOURCES	Alteration of archaeological, historical and palaeontological resources that may be discovered during earthworks.		X	X		42	21	As per the EMPR (Part B)
	VISUAL AND SENSE OF PLACE	Reduction in visual resource value due to presence of prospecting equipment.		X	X		40	20	As per the EMPR (Part B)
		Reduction in visual resource value due to presence of trenches.		X	X		40	20	As per the EMPR (Part B)
		Formation of dust plumes as a result of construction activities.		X	X		40	20	As per the EMPR (Part B)
		Light pollution at night due to safety lighting		X	X		40	20	As per the EMPR (Part B)
	NOISE AND VIBRATION	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and vibration impacts associated with the operation of vehicles, machinery and equipment.		X	X		30	15	As per the EMPR (Part B)
	AIR QUALITY	Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and trenching.		X	X		40	20	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				SIGNIFICANCE	SIGNIFICANCE	MITIGATION MEASURES
			P	C	O	CP	PRE-MITIGATION	POST-MITIGATION	
		Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.		X	X		40	20	As per the EMPR (Part B)
	WASTE	Generation of additional general waste, litter and building rubble and hazardous waste.		X	X		44	22	As per the EMPR (Part B)
	SERVICES	Minor impact caused by need for services i.e. water, electricity and sewerage systems during the prospecting phase causing additional strain on natural resources and service infrastructure.		X	X		40	20	As per the EMPR (Part B)
	TRAFFIC	Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.		X	X		35	11,66	As per the EMPR (Part B)
		Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.		X	X		54	18	As per the EMPR (Part B)
	HEALTH AND SAFETY	Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.		X	X		57	19	As per the EMPR (Part B)
		Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.		X	X		54	18	As per the EMPR (Part B)
	SOCIO-ECONOMIC	Capital investment into the establishment of the mine- Stimulation of employment due to investment		X	X		40	40	As per the EMPR (Part B)
		Multiplier effects on local economy will be positive, but very limited in extent and only short term.		X	X		40	40	As per the EMPR (Part B)
		Restricted access to land and other destinations (obstruction).		X			40	40	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				SIGNIFICANCE	SIGNIFICANCE	MITIGATION MEASURES
			P	C	O	CP	PRE-MITIGATION	POST-MITIGATION	
		Increase in road safety risks due to increased road traffic.		X	X		35	17,5	As per the EMPR (Part B)
		Skills development.			X		40	40	As per the EMPR (Part B)
		Expenditure on decommissioning and closure of any temporary infrastructure.				X	35	35	As per the EMPR (Part B)

The supporting impact assessment is attached as an *Appendix 9*– Please refer to **Table 16** for the full impact assessment.

18. 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):-

Table 17: Summary of Specialist Reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Phase 1 Archaeological Impact Assessment	• Historical Sites B01, B09 & B10 used to be associated with buildings exceeding 60 years of age, but have been demolished. Even though surface structures are no longer present, subsurface cultural material might exist and care should therefore be exercised during the proposed prospecting. Should culturally significant material be unearthed during the prospecting process, it is advised that a qualified archaeologist be contacted. • Sites B02, B03, B04, B08, B11, B12, B13 and B14 consist of building ruins and intact buildings located on the same premises as historically identified buildings. The possibility therefore exists that these buildings, or parts thereof, might exceed 60 years age and should therefore be avoided by the proposed prospecting. Should this not be possible, a destruction permit from the provincial heritage authority will be required.	X	Basic Assessment Report and EMPR Part B (EMPR)

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Due to dense vegetation and poor representation on aerial imagery, the existence of Sites B05, B06, B07, B15 and B16 could not be determined. It is, however, likely that these sites are not associated with surface remains. If the demarcated areas cannot be avoided by the proposed prospecting, it is recommended that the vegetation be cleared in a manner that won't impact potential surface or subsurface features and that a qualified archaeologist be contacted should cultural material or structures be encountered. • Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during the course of the project, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)). • Should the need arise to expand the proposed project beyond the surveyed area outlined in this study, the following applies: A qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment on the sections beyond the demarcated area that will be affected by the development, in order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites. • From a heritage point of view, the proposed prospecting may proceed, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.		
Desktop Palaeontological Impact Assessment	• 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 shales of the Silverton Formation (Pretoria Group, Transvaal Supergroup) because the rocks are ancient and were deposited in a high energy environment where neither stromatolites would grow nor microbial mats form. According to the Palaeotechnical Report fossil stromatolites are present so a Fossil Chance Find Protocol should be added to the EMPR: if fossils are found once excavations has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample.	X	Basic Assessment Report and EMPR Part B (EMPR)
Air Quality Baseline Assessment	• Aspect: Stakeholder Communication - Implement a programme of stakeholder communication that includes community engagement should work be expected to result in extreme emissions. - Maintain a complaint register on site where complaints can be made. This register should enable effective communication of complaints where these are reasonably addressed. - Clearly display the contact details of the site manager. • Aspect: Dust and Emissions Management - Implement and maintain a Dust and Emission Management / Monitoring Plan which provides clear details on preventing, maintaining, and improving the air quality in terms of site-specific activities. • Aspect: Site Management	X	Basic Assessment Report and EMPR Part B (EMPR)

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	- All complaints should be logged in the complaints register and should be available on the site at all times. All complaints regarding air quality should be adequately investigated and actions taken to reduce the impact in a timely manner should it be required. - Note must be taken of incidents that cause air emissions and this must be recorded to ensure that these are resolved and prevented from reoccurring. • Aspect: Monitoring - In the event where frequent complaints about emission levels occur, monitoring should be initiated. • Aspect: Preparing and maintaining the site - Should the conditions require it, erect screens, and barriers around the sensitive receptors. - Ensure that all areas, fencing, barriers, and scaffolding is kept clear of debris and dust. - Remove any accumulating matter that could serve as emission generator from the site as soon as possible. - Minimise open / bare or unvegetated areas as far as possible. • Aspect: Operating vehicle/machinery and sustainable travel - Ensure that all vehicles are maintained in good working condition and that they are services on regular intervals. - Ensure that all vehicles are switched off when stationary – no vehicles should be idling for extended period. - Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. - Impose and regulate a speed limit of 30 km/h on the site at all times. • Aspect: Operations - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction. - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible. - Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. • Waste management - Only use registered waste carriers to take waste off-site. - Avoid bonfires and burning of waste materials. No incineration to take place on site except if authorised by the relevant competent authority. - Measures specific to earthworks - Re-vegetate exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in a small area during work and not all at once.		

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	• Aspect: Measures specific to materials handling - Ensure sand and other aggregates are stored in wind shielded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. - Ensure cement and other fine powder materials are delivered in enclosed containers and stored in appropriate storage. - For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. • Aspect: Measures specific to track-out - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as soon as practicable any material tracked out of the site. This may require the sweeper being continuously in use. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. - Record all inspections of haul routes and any subsequent action in a site logbook. - Install hard surfaced routes. - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as practicable; - Access gates to be located at least 10m from receptors where possible.		
Noise Baseline Assessment	In order to minimise the possible impact of the proposed activity the following general mitigation measures should be implemented for the prospecting phase of the project: • General - Personal Protective Equipment must be provided to all persons working in areas where high levels of noise can be expected; - An occupational health specialist can be consulted to determine the correct level of noise reducing PPE to be issued; - Placement of noise generating activities can be planned as far away as possible from affected areas and/or persons; - Installation of acoustic enclosures for equipment to stop noise at the source if especially noisy; - Ensure that all staff on the activity is provided with “noise sensitivity” training to ensure noise generation is limited; - The efficiency of noise mitigation measures should be assessed on a regular basis; - Good public relations are essential. The information provided to stakeholders should be factual and not set unrealistic expectations; - A clear line of communication should be in place where complaints can be lodged and response can be provided on; - A clear commitment should be made on accommodating the local communities in preventing noise as far as possible; and - Should any complaints regarding noise be received from the adjacent community / staff, follow-up investigations should be conducted to determine and mitigate noise measured.	X	Basic Assessment Report and EMPR Part B (EMPR)

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALIST REPORTS**	**SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)**	**REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.**
	• Vehicles and Vehicle Movement - Limit vehicles speeds; - All vehicles must be fitted with low noise and frequency hooters; - Ensure that vehicles are fitted with noise reduction measured such as mufflers; - Ensure that vehicles on the site are serviced on a regular basis to ensure that noise suppression mechanisms are effective; - Regular inspections and maintenance of equipment, vehicles and machinery to prevent unnecessary noise; and - All vehicles should be switched off when not in use. • Prospecting Activities - A noise prevention barrier should be erected in areas where noise can travel to sensitive receptors. This barrier should be placed as close to the noise generating activity as possible; - All equipment and machinery should be serviced on a regular basis or as per manufacturer requirements; - All equipment and machinery should be fitted with noise reduction technology to prevent noise generation as far as possible; - All activities should be limited to day-time hours as far as possible. Generally, work should not be allowed on Sundays and Public Holidays; - All noise generating activities/installations should be planned and placed as far away from sensitive receptors as possible. Should this not be possible, noise barriers should be installed at various positions around these noise generators; - All equipment should be switched off when not in use; - No workers should be allowed to take residence on the site; - Site workers must comply with the Provincial Noise Regulations; - Appropriate directional and intensity settings are to be maintained on all hooters and sirens; and - Excessively noisy machinery must only be used during regular operating hours and not after hours where possible.		
Baseline Visual Impact Assessment	Visual mitigation of a mine can be divided into two (2) options. Typically using a combination of the two (2) options is most effective. The first option is an attempt to "hide" the source of the visual impact from view, by placing visually appealing elements between the viewer and the source of the visual impact. The second option aims to minimise the severity of the visual impact itself. This can be achieved in numerous ways for example limiting heights or by blending the infrastructure to match the surrounding environment. During the prospecting phase the following mitigation measures should be implemented to minimise the visual impact. • General site management: - Maintain the construction site in a neat and orderly condition at all times; - Plan the placement of lay-down areas and any potential temporary camps in order to minimise vegetation clearing; - Ensure that litter and disused materials are managed and removed regularly	X	Basic Assessment Report and EMPR Part B (EMPR)

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	- Utilise vegetation screens as visual screening devices; and - Ensure that all infrastructure and the site and general surrounds are maintained in a neat and appealing way. • Dust Management: - Vegetation stripping and soil stripping should be minimised as far as possible; - Implement dust suppression using a watercart to minimise airborne dust; - Enforce a 50 km/h speed limit on-site for Light Duty Vehicles and a 40 km/h speed limit for large vehicles and machinery. • Light pollution management: - Plan the lighting requirements of the facilities to ensure that lighting meets the need to keep the site secure and safe, without resulting in excessive illumination; - Avoid up-lighting of structures by rather directing lighting downwards and focussed on the area to be illuminated; and - Reduce the height and angle of illumination from which floodlights are fixed as much as possible while still maintaining the required levels of illumination. - Lighting should be shielded in areas where specific objects are to be illuminated. - Minimise the use of lighting on the track itself. - Lighting should exclude the blue-rich wavelengths and be closer to the red-rich wavelength spectrum. Globes used in lighting outside areas and should be warm white. This also applies to light spilling out from within buildings. A colour temperature of no more than 3000 Kelvins is recommended for lighting. - Light intensity of illuminating lights should be limited as far as possible, i.e., to limit lighting to areas required to serve operational functionality. - Illumination where not permanently required should be fitted with timers, motion activated sensors or be dimmable to reduce total light emitted.		
Terrestrial Impact Assessment	- The footprint should be kept as small and as linear as possible for the prospecting areas. - The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. No activities are to infringe upon any channels and/or rivers. - Edge effects of all phases, such as erosion and alien plant species proliferation, which will affect faunal habitats adjacent to the development area, need to be strictly managed. This can be achieved through the chemically and mechanically removing alien invasive vegetation within the prospecting footprint. The removal of this vegetation will provide job opportunities for community members. - Any natural areas beyond the development footprint, which have been affected by the prospecting activities, must be rehabilitated using indigenous plant species afterwards. - The clearing of vegetation, during the phase of infrastructure establishment, must be kept to a minimum and must be within the project boundaries. - Harvesting and collection of any flora must be strictly prohibited.	X	Basic Assessment Report and EMPR Part B (EMPR)

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	- Erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, edges of slopes (including trenches cut for construction) etc. These measures include but are not limited to - the use of sand bags, hessian sheets, silt fences and retention or replacement of vegetation. - Avoid known areas of faunal and floral species of special concern as indicated on the relevant maps. - Avoidance of sensitive areas, as these areas are ecologically irreplaceable. - Maintain top soil biological activity by stockpiling soils without compacting them. This keeps the seed bank in the topsoil viable if the topsoil is replaced within a year. This viable seedbank will create an effective basis for rehabilitated areas where these soils are used. - Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors. - Disturbed areas must be rehabilitated immediately after prospecting has been completed in that area by planting appropriate indigenous plant species. - Any protected plants that are removed must be replaced at a ratio of 1:10 (10 plants must be planted for every 1 plant removed). - It is highly recommended that a speed limit of 30 km/h is implemented on all roads running through the proposed areas during all phases in order to minimise risk to fauna from vehicles and that signage is erected to this effect. Should an animal be killed by a vehicle, the incident must be reported immediately to the ECO and to the Endangered Wildlife Trust (www.ewt.org.za), to monitor road kills. EWT Wildlife and Roads project has been set up to monitor and investigate the effects of road kills in South Africa. - Any bird nests that are found must be reported to the Environmental Control Officer (ECO). - It is essential that as transformation takes place on site, a qualified herpetologist must be present on site to identify and safely remove all reptiles or other slow moving species, should they occur on the proposed development site. - No trapping or hunting of fauna is to take place. Access control must be implemented to ensure that no illegal trapping or poaching takes place. - Where possible, species should be left in their natural environment. - Should any Red Data faunal species be noted within the development footprint areas, these species must be relocated to similar habitat with the assistance of a suitably qualified ecologist. - Any species directly threatened by the activities must be removed to a safe location by the ECO or qualified Ecologist. Floral species of special concern must be relocated or placed in a nursery. - Avoidance of Witleegte channel as far as possible (100 m buffer), these areas are regarded as highly sensitive areas. - Search and rescue for reptiles and other vulnerable species, before areas are cleared. - Environmental induction for all staff and contractors on-site.		

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALIST REPORTS**	**SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)**	**REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.**
	- Any disturbed areas should be rehabilitated in line with the rehabilitation guidelines, this includes the clearing of alien vegetation, following the guidelines of a suitable alien invasive plant management plan. - The site must be regularly monitored for re-growth of alien invasive species, and any new seedlings etc. eradicated using methods appropriate for the particular species, whether mechanical, chemical or biological. - Protect as much indigenous vegetation as possible. - An alien invasive management programme must be incorporated into an Environmental Management Programme. - Ongoing alien plant control must be undertaken in the disturbed areas as these areas will quickly be colonised by invasive alien species, especially in the riparian zone, which is particularly sensitive to AIP infestation. - Herbicides must be carefully applied, in order to prevent any chemicals from entering the channel. Spraying of herbicides within or near to the channel and river areas is strictly forbidden. - Re-instate indigenous vegetation (grasses and indigenous trees) in disturbed areas directly after the activity ceases so as to stabilise against erosion and sedimentation.		
Socio-Economic Baseline Assessment	- Employ labour-intensive methods in construction where feasible. - Where possible, Local labour and sub-contracting to Local companies should be considered for employment to increase the positive impact on the Local economy. - Supplies to be bought locally as far as possible. - Ensure that no main roads are blocked due to construction vehicles. - Consideration and adherence to Traffic by-laws must be adhered. - Ensure that no main roads are blocked due to construction vehicles. - Consideration and adherence to Traffic by-laws must be adhered. - Enforce good driving standards. - Implement mitigation measures proposed by the Visual Impact Assessment Specialist. - Encourage procurement of required services, materials and other inputs from local communities. - Recruit local labour as far as feasible to increase the benefits to the local communities. - Devise skills development programmes as part of SLP and implement them. - Implement mitigation measures proposed by the Noise Impact Assessment Specialist.	X	Basic Assessment Report and EMPR Part B (EMPR)

Attach copies of Specialist Reports as appendices (Please refer to *Appendix 7*)

19. ENVIRONMENTAL IMPACT STATEMENT

19.1 Summary of the key findings of the environmental impact assessment

Table 18: Summary of the Possible Impacts Associated with the Proposed Prospecting

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
Planning Phase Data collection and assessment Compile high-level desktop study and potential desktop resource evaluation using sourced data	**ALL ASPECTS**	Inconsiderate planning of infrastructure placement and design, leading to the loss of intact (or sensitive) areas, as well as unnecessary edge effect impacts on areas outside of the proposed mining footprint (e.g., fragmentation of landscapes).	**X**				**-**	**3**	**2**	**1**	**2**	**8**	**5**	**40**	**Medium**	**20**	**Certain**	**Very Low**	**As per the EMPR (Part B)**
Construction and Operational Phase Clearing of vegetation and topsoil and excavation for the access. Soil disturbance and topsoil stockpiling resulting in soil compaction and erosion. Stockpiling of topsoil for rehabilitation purposes after trenching.	**GEOLOGY AND SOILS**	Minor loss and disturbance to topsoil as a result of clearing of vegetation and trenching. When vegetation is cleared and the topsoil is stripped, the soils natural structure is disturbed and as a result the natural cycle is broken exposing the bare soil to erosion. Vehicles driving on these soils causes compaction of soils and reduces the soils ability to be penetrated by root growth. Compaction also increases erosion potential.		**X**	**X**		**-**	**3**	**2**	**1**	**2**	**8**	**5**	**40**	**Medium**	**20**	**Certain**	**Very Low**	**As per the EMPR (Part B)**

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
Earthworks to excavate in preparation for trenches for the prospecting activity. Dust emission resulting from site clearing, soil stripping and construction activities (including vehicle entrained dust) **Closure Phase / Decommissioning and Rehabilitation Phase** Backfilling and landscaping. Topsoil placement and reseeding concurrent rehabilitation. Monitoring of rehabilitated areas		When soils are not stripped and stockpiled according to the soil stripping guidelines these soils would have lost their natural physical and chemical properties, reducing the topsoil's ability to be a plant growth medium. The above factors all contribute to a loss of the topsoil's ability to be a resource through alterations and removal.																	
		Hydrocarbon spills on soils can occur where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking.		**X**	**X**		**-**	**3**	**2**	**1**	**3**	**9**	**2**	**18**	**Medium**	**9**	**Sure**	**Very Low**	**As per the EMPR (Part B)**
	HYDROLOGY GROUNDWATER SURFACE WATER	Stormwater, erosion and siltation impacts due to a lack of implementing temporary measures to manage stormwater run-off quantity and quality.		**X**	**X**		**-**	**3**	**3**	**1**	**3**	**10**	**3**	**30**	**Medium**	**15**	**Sure**	**Very Low**	**As per the EMPR (Part B)**

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		Contamination of stormwater runoff and ground water, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.		X	X		-	3	2	1	3	9	2	18	Medium	9	Sure	Very Low	As per the EMPR (Part B)
	BIODIVERSITY	As the prospecting will result in the loss of the floral diversity- Loss of Species of Conservation Concern for both Floral and Faunal Species.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	As per the EMPR (Part B)
		The prospecting will result in the influx of alien invasive species.		X	X		-	3	3	1	3	10	4	40	Medium	20	Sure	Low	As per the EMPR (Part B)
		Loss of ecological connectivity through the clearing of vegetation.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	As per the EMPR (Part B)
		Loss of habitat and habitat fragmentation will disrupt ecological functioning.		X	X		-	4	4	1	3	12	4	44	Low	22	Sure	Low	As per the EMPR (Part B)
		Loss of indigenous vegetation, floral and faunal habitat and ecological structure of water resources and soil.		X	X		-	4	3	1	3	11	4	48	Low	22	Sure	Low	As per the EMPR (Part B)
		Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of alien invasive		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		species, a potential loss of red listed plant species, habitat fragmentation and an overall decrease in species richness in the area																	
		The results may be positive if rehabilitation has been done correctly and the site may be rehabilitated back to a natural landscape. Initial movement around the site to ensure rehabilitation will have similar results as may be expected during the Construction Phase.				X	+	3	3	1	3	10	3	30	Medium	15	Sure	Low	As per the EMPR (Part B)
	ARCHAEOLOGICAL/ HERITAGE RESOURCES	Alteration of archaeological, historical and palaeontological resources that may be discovered during earthworks.		X	X		-	3	1	5	5	14	3	42	Medium	21	Sure	Low	As per the EMPR (Part B)
	VISUAL AND SENSE OF PLACE	Reduction in visual resource value due to presence of prospecting equipment.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)
		Reduction in visual resource value due to presence of trenches.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)
		Formation of dust plumes as a result of construction activities.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		Light pollution at night due to safety lighting		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)
	NOISE AND VIBRATION	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and vibration impacts associated with the operation of vehicles, machinery and equipment.		X	X		-	4	3	1	2	10	3	30	Medium	15	Sure	Very Low	As per the EMPR (Part B)
	AIR QUALITY	Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and trenching.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)
		Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.		X	X		-	3	3	1	1	8	5	40	Medium	20	Sure	Very Low	As per the EMPR (Part B)
	WASTE	Generation of additional general waste, litter and building rubble and hazardous waste.		X	X		-	4	3	1	3	11	4	44	Low	22	Sure	Low	As per the EMPR (Part B)
	SERVICES	Minor impact caused by need for services i.e. water, electricity and sewerage systems during the prospecting phase causing additional strain on natural resources and service infrastructure.		X	X		-	2	2	1	3	8	5	40	Medium	20	Certain	Very Low	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
	TRAFFIC	Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.		X	X		-	2	3	1	1	7	5	35	High	11,66	Sure	Very Low	As per the EMPR (Part B)
		Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.		X	X		-	5	3	5	5	18	3	54	High	18	Sure	Very Low	As per the EMPR (Part B)
	HEALTH AND SAFETY	Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.		X	X		-	5	4	5	5	19	3	57	High	19	Sure	Very Low	As per the EMPR (Part B)
		Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.		X	X		-	5	3	5	5	18	3	54	High	18	Sure	Very Low	As per the EMPR (Part B)
	SOCIO-ECONOMIC	Capital investment into the establishment of the mine- Stimulation of employment due to investment		X	X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	As per the EMPR (Part B)
		Multiplier effects on local economy will be positive, but very limited in extent and only short term.		X	X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	As per the EMPR (Part B)
		Restricted access to land and other destinations (obstruction).		X			-	3	3	1	1	8	5	40	N/A	40	Certain	Low	As per the EMPR (Part B)

ACTIVITY	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				IMPACT STATUS	MAGNITUDE	EXTENT	DURATION	REVERSIBILITY	IRREPLACEABILITY	PROBABILITY	SIGNIFICANCE PRE-MITIGATION	MITIGATION POTENTIAL	SIGNIFICANCE POST-MITIGATION	CONFIDENCE RATING	CUMULATIVE IMPACTS	MITIGATION MEASURES
			P	C	O	CP													
		Increase in road safety risks due to increased road traffic.		X	X		-	2	3	1	1	7	5	35	Medium	17,5	Sure	Very Low	As per the EMPR (Part B)
		Skills development.			X		+	3	3	1	1	8	5	40	N/A	40	Certain	Low	As per the EMPR (Part B)
		Expenditure on decommissioning and closure of any temporary infrastructure.				X	-	2	3	1	1	7	5	35	N/A	35	Certain	Low	As per the EMPR (Part B)

19.2 Final Site Map

(Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as **Appendix 6**)

The specific locations of intrusive trenching activities will be determined during Phase 1 of the Prospecting Work Programme (*Appendix 4*). All infrastructure to be developed will be mobile and temporary. A Prospecting Plan will be developed during the phase 1 of the prospecting activities. The prospecting plan will include a detailed map that will show the following:

- Sensitive areas (No-Go) as determined by ecological and heritage studies where no prospecting will be allowed.

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

Please refer to
Table *18*. Section 11-18 of this report.

20. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

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

Refer to **Table 17** of this Report. All specialist recommendations have been included into the EMPR (**Part B** of this Report).

21. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

(Any aspects which must be made conditions of the Environmental Authorisation)

The following aspects are recommended to be included as conditions in the Environmental Authorisation:

- The EMPR is a contractual document and must be implemented at all times during the prospecting phase;
- An independent environmental control officer (ECO) must be appointed to monitor the implementation of the EMPR and audit reports to be kept by the applicant;
- All contractors and employees of Klei Minerale (Pty) Ltd must be made aware of the EMPR and its requirements as well as the impact of not implementing the measures of the EMPR;
- Copies of the EMPR, Integrated Environmental Authorisation and any emergency procedures and method statements, must be kept on site and be available on request of the Competent Authority.

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

(Which relate to the assessment and mitigation measures proposed)

- All information provided to the environmental team, by the applicant and I&APs was correct and valid at the time that it was provided;
- The investigations undertaken by specialists during the BA process, indicate the development site as suitable and technically acceptable, except for the northern portions, which are sensitive and recommended to be excluded from prospecting;
- It is not always possible to involve all I&APs individually, however, every effort has been made to involve as many affected stakeholders as possible;
- The information provided by the applicant and specialists was accurate and unbiased; and
- The scope of this investigation is limited to assessing the environmental impacts associated with the prospecting activity.

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

i) Reasons why the activity should be authorised or not

In general, it is recognised that the proposed prospecting activities have the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. However, based on the findings of this BA documented in this report, all impacts can be mitigated to insignificant levels.

This report shows that the proposed development has the potential to provide socio-economic benefits to the local and regional communities. The EAP therefore recommends that the proposed activities be approved on condition that the EMPR is strictly implemented and monitored for compliance and that the northern portions of the study area are excluded from prospecting.

Not implementing the prospecting activities will result in a loss of information of mineral reserves present on the study area. Should economically feasible reserves exist on the study area and the applicant cannot prospect, the opportunity to utilise the reserves for future mining and brickmaking will be lost, i.e. the minerals will be sterilised and resultant socio-economic benefits will be lost.

The proposed prospecting activities have the potential to have a negative impact on the ecological environment as well as the social environment of the area. These impacts, however, can potentially be prevented, minimised, mitigated and managed to low sensitivity levels, as shown through the impact assessment and as illustrated within the Terrestrial Biodiversity Impact Assessment (**Appendix 7.3**).

ii) Conditions that must be included in the authorisation

- The EMPR is a contractual document and must be implemented at all times during the prospecting phase;
- An independent environmental control officer (ECO) must be appointed to monitor the implementation of the EMPR and audit reports to be kept by the applicant;
- All contractors and employees of Klei Minerale must be made aware of the EMPR and its requirements as well as the impact of not implementing the measures of the EMPR;
- Copies of the EMPR, Environmental Authorisation and any emergency procedures and method statements, must be kept on site and be available on request of the Competent Authority.

24. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

This Environmental Authorisation is required for a period 5 years.

25. 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).

Please refer to the EMPR in **Part B** of this document.

26. FINANCIAL PROVISION

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

The closure cost assessment has been conducted, if required. The report will be submitted to the Department of Mineral Resources and Energy together with the Final Basic Impact Assessment report, if required.

The closure cost assessment has been developed based on the GNR 1147 regulations and is included as Appendix 10. The estimated financial provision required for the rehabilitation and closure for each of the prospecting rights are R 34 568.13 (Final Closure) excl. VAT. The calculation of the rehabilitation cost is included in Appendix 10.

i) Explain how the aforesaid amount was derived

The financial provision amount was calculated utilising the methodology as prescribed by the Financial Provision Assessment (Appendix 10) in accordance with GNR 1147 regulations.

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

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

The applicant submits that it is an operating clay mining company and is able to fund the planned prospecting from its operational budget. It is confirmed that the amount for financial provision is anticipated to be an operating cost and is provided for as such in the Prospecting Work Programme.

27. 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).

Potential impacts on landowners, land occupiers, communities or individuals or competing land uses in the area include:

- Potential soil pollution which may result from any hydrocarbon spills where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking;
- Contamination of stormwater runoff and ground water, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.
- Visual impacts: Visibility from sensitive receptors / visual scarring of the landscape as a result of the prospecting activities.
- Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and vibration impacts associated with the operation of vehicles, machinery and equipment.
- Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and trenching.
- Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.
- Generation of additional general waste, litter and building rubble and hazardous waste.
- Minor impact caused by need for services i.e. water, electricity and sewerage systems during the prospecting phase causing additional strain on natural resources and service infrastructure.
- Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.
- Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.
- Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.

- Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.
- Potential creation of very limited extent short term employment opportunities for the local community, during the prospecting phase.
- Multiplier effects on local economy will be positive, but very limited in extent and only short term.

Mitigation measures are included in this report, as well as the EMPR.

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

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

From this previous research records conducted in the area, the specialist concluded that the general region is significant from a heritage perspective. Heritage sites are likely to include graveyards, Iron Age/Farmer and Historical remains. Since heritage sites, e.g. graves, are not always clearly identifiable as it might consist of stone cairns, it is advised that a qualified archaeologist inspect the proposed prospecting sites prior to trenching to establish whether the sites might be sensitive from a heritage perspective.

The following recommendations are made in terms with the National Heritage Resources Act (25 of 1999) in order to avoid the destruction of heritage remains associated with the area demarcated for prospecting:

- Historical Sites B01, B09 & B10 used to be associated with buildings exceeding 60 years of age, but have been demolished. Even though surface structures are no longer present, subsurface cultural material might exist and care should therefore be exercised during the proposed prospecting. Should culturally significant material be unearthed during the prospecting process, it is advised that a qualified archaeologist be contacted.
- Sites B02, B03, B04, B08, B11, B12, B13 and B14 consist of building ruins and intact buildings located on the same premises as historically identified buildings. The possibility therefore exists that these buildings, or parts thereof, might exceed 60 years of age and should therefore be avoided by the proposed prospecting. Should this not be possible, a destruction permit from the provincial heritage authority will be required.
- Due to dense vegetation and poor representation on aerial imagery, the existence of Sites B05, B06, B07, B15 and B16 could not be determined. It is, however, likely that these sites are not associated with surface remains. If the demarcated areas cannot be avoided by the proposed prospecting, it is recommended that the vegetation be cleared in a manner that won't impact potential surface or subsurface features and that a qualified archaeologist be contacted should cultural material or structures be encountered.

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during the course of the project, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)). Should the need arise to expand the proposed project beyond the surveyed area outlined in this study, the following applies: A qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment on the sections beyond the demarcated area that will be affected by the development, in order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites.

From a heritage point of view, the proposed prospecting may proceed, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.

28. OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT

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

The EAP included all aspects as required by the EIA regulations, 2014 for the EIA and EMPR as described in the Executive Summary of this report.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

a) Details of the EAP

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

Herewith, it is confirmed that the requirement for the provision of the details and expertise of the EAP are already included in PART A, Section 1(a) of this report.

b) Description of the Aspects of the Activity

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

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

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).

Refer to **Appendix 6**.

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).

The prospecting activities is dependent on the preceding phase (non-invasive). Prospecting is conducted in phases, where the activities and location of trenching is dependent on the previous phase. Mapping of prospecting activities can also not be conducted.

The closure objectives include:

- Ensure that there are no safety risks associated with the clearance of vegetation, trenching and backfilling;
- Rehabilitate any pollution that occurred through hazardous spills or waste materials and remove the source of the pollution;
- Establish an area that is not susceptible to soil erosion;
- Re-vegetate disturbed areas with endemic plant species that occur naturally within the area.

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

Water will be received via the current infrastructure present as stated in the Basic Assessment Report.

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

It is not required from the applicant to apply for a water use license, due to the low volume of water required for prospecting.

iv) Impacts to be mitigated in their respective phases

e) Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Please refer to **Table 16** for the above requested information.					

f) Impact Management Outcomes

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

Table 19: Measures to rehabilitate the environment affected by the undertaking of any listed activity, impact management outcomes, and impact management actions for

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
Planning Phase Data collection and assessment Compile high-level desktop study and potential desktop resource evaluation using sourced data **Construction and Operational Phase** Clearing of vegetation and topsoil and excavation for the access. Soil disturbance and topsoil stockpiling resulting in soil compaction and erosion.	**ALL ASPECTS**	Inconsiderate planning of infrastructure placement and design, leading to the loss of intact (or sensitive) areas, as well as unnecessary edge effect impacts on areas outside of the proposed mining footprint (e.g., fragmentation of landscapes).	**X**				**Prevent and reduce through management measures:** • The planning phase is essential in ensuring that activities associated with all phases of the project have the lowest possible impact on the receiving environment. • As part of the pre-construction phase, of utmost importance will be to ensure adherence with the Environmental Authorisation and the EMPR.	• GN 598 of 2014-09-30: Alien and Invasive Species Regulations. • Protected Trees- GN 37037-Notice of the List of Protected Tree Species under the National Forest Act, 1998 (Act No.84 of 1998). • SANS 2001-BS1:2008 Construction works Part BS1: Site clearance. • GN 1003- Alien Invasives Species Lists, 2020.	• Mine Manager

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
Stockpiling of topsoil for rehabilitation purposes after trenching. Earthworks to excavate in preparation for trenches for the prospecting activity. Dust emission resulting from site clearing, soil stripping and construction activities (including vehicle entrained dust) **<u>Closure Phase / Decommissioning and Rehabilitation Phase</u>** Backfilling and landscaping. Topsoil placement and reseeding concurrent rehabilitation. Monitoring of rehabilitated areas	**GEOLOGY AND SOILS**	Minor loss and disturbance to topsoil as a result of clearing of vegetation and trenching. When vegetation is cleared and the topsoil is stripped, the soils natural structure is disturbed and as a result the natural cycle is broken exposing the bare soil to erosion. Vehicles driving on these soils causes compaction of soils and reduces the soils ability to be penetrated by root growth. Compaction also increases erosion potential. When soils are not stripped and stockpiled according to the soil stripping guidelines these soils would have lost their natural physical and chemical properties, reducing the topsoil's ability to be a plant growth medium. The above factors all contribute to a loss of the topsoil's ability to be a resource through alterations and removal.		**X**	**X**		**Prevent and reduce through management measures:** • Demarcation of prospecting areas: • Areas to be prospected must be clearly demarcated. • Sensitive areas to be avoided as prescribed by specialist studies must be avoided and prospecting may not take place in these demarcated sensitive areas. • A final prospecting plan must be compiled clearly showing areas to be surveyed and no-go areas. The plan must be approved by all specialists. • A final prospecting plan will be compiled and provided to all registered I&AP's 30 days before the commencement of the physical prospecting activities • Stripping of topsoil: - Clearing of areas to take place a maximum of one month prior to intended prospecting in the area;	• Manage soils in line with the requirements of the National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (GN 37603 No 331). • Manage soil erosion in line with the requirements of the National Norms and Standards under The Conservation of Agriculture Resources Act (Act no. 107 of 1998) (GN R 2687 of 1985-12-06 and GN R 280 of 2001-03-30). Requires the protection of land against soil erosion and the prevention of water logging and salinization of soils by means of suitable soil conservation works to be constructed and maintained. • Rehabilitation plans during all phases in line with GN R. 1147 of NEMA	• Site Manager/ SHEQ/ ECO

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
							- Stripping of topsoil will not take place during rain or excessive wind; and - The top 30 cm of vegetation and topsoil is to be stripped from the area to be prospected. • Storage of topsoil / overburden: - Topsoil (top 30cm) is to be stored in predetermined topsoil berms, (+/- 5m) outside the boundary of the specific area; and - Topsoil stockpiles will be restricted to 1.5 to 2m in height. • Maintenance and monitoring of topsoil stockpiles: - The stored topsoil should be used as soon as possible in concurrent rehabilitation; and - Weekly visual inspections to be conducted.		

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
		Hydrocarbon spills on soils can occur where heavy machinery and vehicles are parked such as the hard park area because they contain large volumes of lubricating oils, hydraulic oils, and diesel to run. There is always a chance of these breaking down and/or leaking.		X	X		**Prevent and reduce and remedy through management measures**: • All vehicles and machinery will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks; • All leaks will be cleaned up immediately using an absorbent material and spill kits, in the prescribed manner; • All hazardous waste generated shall be kept separate and shall not be mixed with general waste; and • All hazardous waste shall be stored within a sealed drum on an impermeable surfaced area within the central waste storage and transition area.	• GN704 Regulations in terms of the National Water Act, 1998 (Act No 36 of 1998). • Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended]. • Section 2 Declaration of grouped hazardous substances. • Section 9 (1) Storage and handling of hazardous chemical substances. • Section 18 Offences. • Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995). • Section 4 Duties of persons who may be exposed to hazardous chemical substances. • SANS 10234: 2008: Globally Harmonized. • System of classification and labelling of chemicals (GHS).	• Site Manager/ SHEQ/ ECO
	HYDROLOGY GROUNDWATER SURFACE WATER	Stormwater, erosion and siltation impacts due to a lack of implementing temporary measures to manage stormwater run-off quantity and quality.		X	X		**Prevent and reduce and remedy through management measures**: • Temporary stormwater management systems (such as sand bags) will be installed to prevent stormwater from entering	• GN704 Regulations in terms of the National Water Act, 1998 (Act No 36 of 1998).	• Site Manager/ SHEQ/ ECO

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							or exiting the area where prospecting will occur. • The slopes of the area where prospecting activities will occur, should be profiled to ensure that they are not subjected to excessive erosion but capable of drainage run-off with minimum.		
		Contamination of stormwater runoff and ground water, caused by chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy vehicles and machinery and fuel storage area.		X	X		**Prevent and reduce through management measures:** • In accordance with Government Notice 704 (GN 704), the onsite management should: • Keep clean and dirty water separated; • Contain any dirty water within a system; and • Prevent the contamination of clean water. In order to achieve these objectives, the following stormwater management measures must be implemented on the site to ensure that that potential stormwater impacts are kept to a minimum: • Clean and dirty stormwater needs to be separated. Dirty	• GN704 Regulations in terms of the National Water Act, 1998 (Act No 36 of 1998). • Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended]. • Section 2 Declaration of grouped hazardous substances. • Section 9 (1) Storage and handling of hazardous chemical substances. • Section 18 Offences. • Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995). • Section 4 Duties of persons who may be exposed to hazardous chemical substances. • SANS 10234: 2008: Globally Harmonized. • System of classification and labelling of chemicals (GHS).	

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							stormwater may not be released into the environment and should be contained and treated on site; • All temporary storm water infrastructure (if any) on-site shall be maintained and kept clean throughout the prospecting period; • Immediate reporting of any polluting or potentially polluting incidents so that appropriate measures can be implemented; • Fuel and oil spills shall be treated immediately by appropriate mop-up products. Hydrocarbon absorption/remediation products (i.e. Spill kits) must be placed at accessible areas on site; • Any contaminated material is disposed of in an appropriate manner and the potential risks associated with such spills are limited; • Stormwater leaving the site must in no way be contaminated; • Ensure good housekeeping practices;	• Spill Procedure.	

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							• Increased runoff should be managed using berms and other suitable structures as required to ensure flow velocities are reduced; and • Removal of spills, rainwater and waste produced during clean-up of the bunds – shall be done in accordance to relevant specifications.		
	BIODIVERSITY	As the prospecting will result in the loss of the floral diversity- Loss of Species of Conservation Concern for both Floral and Faunal Species.		**X**	**X**		**Prevent and reduce through management measures:** • The footprint should be kept as small and as linear as possible for the prospecting areas. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. No activities are to infringe upon any channels and/or rivers. • Any natural areas beyond the development footprint, which have been affected by the prospecting activities, must be	• GN 598 of 2014-09-30: Alien and Invasive Species Regulations. • Protected Trees- GN 37037-Notice of the List of Protected Tree Species under the National Forest Act, 1998 (Act No.84 of 1998). • SANS 2001-BS1:2008 Construction works Part BS1: Site clearance. • GN 1003- Alien Invasives Species Lists, 2020. • IUCN-Red List of Threatened Species	• SHEQ and ECO
		Loss of ecological connectivity through the clearing of vegetation.		**X**	**X**				
		Loss of habitat and habitat fragmentation will disrupt ecological functioning.		**X**	**X**				
		Loss of indigenous vegetation, floral and faunal habitat and ecological structure of water resources and soil.		**X**	**X**				
		Cumulative impacts include a decrease in floral habitat and ecological structure will lead to the proliferation of alien invasive species, a potential loss of red listed plant species, habitat fragmentation and an overall decrease in species richness in the area		**X**	**X**				

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							rehabilitated using indigenous plant species afterwards. • The clearing of vegetation, during the phase of infrastructure establishment, must be kept to a minimum and must be within the project boundaries. • Harvesting and collection of any flora must be strictly prohibited. • Erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, edges of slopes (including trenches cut for prospecting activities) etc. These measures include but are not limited to - the use of sand bags, hessian sheets, silt fences and retention or replacement of vegetation. • Avoid known areas of faunal and floral species of special concern as indicated on the relevant maps. • Avoidance of sensitive areas, as these areas are ecologically irreplaceable.		

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							• Maintain top soil biological activity by stockpiling soils without compacting them. This keeps the seed bank in the topsoil viable if the topsoil is replaced within a year. This viable seedbank will create an effective basis for rehabilitated areas where these soils are used. • Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors. • Any protected plants that are removed must be replaced at a ratio of 1:10 (10 plants must be planted for every 1 plant removed). • It is highly recommended that an appropriate speed limit (enforce a 50 km/h speed limit on-site for Light Duty Vehicles and a 40 km/h speed limit for large vehicles and machinery) is		

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							implemented on all roads running through the proposed areas during all phases in order to minimise risk to fauna from vehicles and that signage is erected to this effect. Should an animal be killed by a vehicle, the incident must be reported immediately to the ECO and to the Endangered Wildlife Trust (www.ewt.org.za), to monitor road kills. EWT Wildlife and Roads project has been set up to monitor and investigate the effects of road kills in South Africa. • Any bird nests that are found must be reported to the Environmental Control Officer (ECO). • It is essential that as transformation takes place on site, a qualified herpetologist must be present on site to identify and safely remove all reptiles or other slow moving species when required, when encountered on the proposed development site.		

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							• No trapping or hunting of fauna is to take place. Access control must be implemented to ensure that no illegal trapping or poaching takes place. • Where possible, species should be left in their natural environment. • Should any Red Data faunal species be noted within the development footprint areas, these species must be relocated to similar habitat with the assistance of a suitably qualified ecologist. • Any species directly threatened by the activities must be removed to a safe location by the ECO or qualified Ecologist. Floral species of special concern must be relocated or placed in a nursery. • Search and rescue for reptiles and other vulnerable species, before areas are cleared. • Environmental induction for all staff and contractors on-site. • Protect as much indigenous vegetation as possible.		

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							• Herbicides must be carefully applied, in order to prevent any chemicals from entering the channel. Spraying of herbicides within or near to the channel and river areas is strictly forbidden.		
		The prospecting will result in the influx of alien invasive species.		X	X		**Prevent and reduce through management measures:** • Edge effects of all phases, such as erosion and alien plant species proliferation, which will affect faunal habitats adjacent to the development area, need to be strictly managed. This can be achieved through the chemically and mechanically removing alien invasive vegetation within the prospecting footprint. The removal of this vegetation will provide job opportunities for community members. • The site must be regularly monitored for re-growth of alien invasive species, and any new seedlings etc. eradicated using methods appropriate for the particular species, whether		

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							mechanical, chemical or biological. • An alien invasive management programme must be incorporated into an Environmental Management Programme. • Ongoing alien plant control must be undertaken in the disturbed areas as these areas will quickly be colonised by invasive alien species, especially in the riparian zone, which is particularly sensitive to AIP infestation.		
		The results may be positive if rehabilitation has been done correctly and the site may be rehabilitated back to a natural landscape. Initial movement around the site to ensure rehabilitation will have similar results as may be expected during the Construction Phase.				X	**Prevent and reduce through management measures:** • Disturbed areas must be rehabilitated immediately after prospecting has been completed in that area by planting appropriate indigenous plant species. • Any disturbed areas should be rehabilitated in line with the rehabilitation guidelines, this includes the clearing of alien vegetation, following the guidelines of a suitable alien invasive plant management plan.		

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							• Re-instate indigenous vegetation (grasses and indigenous trees) in disturbed areas directly after the activity ceases so as to stabilise against erosion and sedimentation.		
	ARCHAEOLOGICAL/ HERITAGE RESOURCES	Alteration of archaeological, historical and palaeontological resources that may be discovered during earthworks.		**X**	**X**		**Protect heritage resources through developing and implementing procedures:** • Historical Sites B01, B09 & B10 used to be associated with buildings exceeding 60 years of age, but have been demolished. Even though surface structures are no longer present, subsurface cultural material might exist and care should therefore be exercised during the proposed prospecting. Should culturally significant material be unearthed during the prospecting process, it is advised that a qualified archaeologist be contacted. • Sites B02, B03, B04, B08, B11, B12, B13 and B14 consist of building ruins and intact buildings located on the same premises as historically identified buildings.	• Ordinance on Excavations (Ordinance no. 12 of 1980) (replacing the old Transvaal Ordinance no. 7 of 1925). • GNR 1485 of 1999-12-09: World Heritage Conversation Act No 49 of 1999	• SHEQ, ECO and Heritage Specialist.

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							The possibility therefore exists that these buildings, or parts thereof, might exceed 60 years age and should therefore be avoided by the proposed prospecting. Should this not be possible, a destruction permit from the provincial heritage authority will be required. • Due to dense vegetation and poor representation on aerial imagery, the existence of Sites B05, B06, B07, B15 and B16 could not be determined. It is, however, likely that these sites are not associated with surface remains. If the demarcated areas cannot be avoided by the proposed prospecting, it is recommended that the vegetation be cleared in a manner that won't impact potential surface or subsurface features and that a qualified archaeologist be contacted should cultural material or structures be encountered. • Because archaeological artefacts generally occur below surface,		

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							the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during the course of the project, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)). Should the need arise to expand the proposed project beyond the surveyed area outlined in this study, the following applies: A qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment on the sections beyond the demarcated area that will be affected by the development, in order to determine the occurrence and extent of any archaeological sites and		

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							the impact development might have on these sites.		
	VISUAL AND SENSE OF PLACE	Reduction in visual resource value due to presence of prospecting equipment.		**X**	**X**		**Prevent and reduce through management measures:** • General site management: - Maintain the site in a neat and orderly condition at all times; - Plan the placement of lay-down areas in order to minimise vegetation clearing; - Ensure that litter and disused materials are managed and removed regularly - Ensure that all infrastructure and the site and general surrounds are maintained in a neat and appealing way. • Dust Management: - Vegetation stripping and soil stripping should be minimised as far as possible; - Implement dust suppression using a watercart to minimise airborne dust; - • It is highly recommended that an appropriate speed limit (enforce a 50 km/h speed limit on-site for Light Duty Vehicles	• N/A	• SHEQ/ Contractor/Mine Manager/Specialist
		Reduction in visual resource value due to presence of trenches.		**X**	**X**			• N/A	
		Formation of dust plumes as a result of construction activities.		**X**	**X**			• South Africa National Standard 1929:2005: Ambient Air Quality: Limits for common pollution. • National Dust Control Regulations, 2013, as published in the Government Gazette (No. 36974) of 1 November 2013 (GNR 827 of 1 November 2013), in terms of the National Environmental Management: Air Quality Act 39 of 2004. • Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emitters. (GNR 1210 of 24 December 2009). (GNR 897 of November 2013). • SANS 1929: Ambient air quality - Limits for common pollutants • GN 1210 of 2009-12-24: National Ambient Air Quality Standards	

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		Light pollution at night due to safety lighting		X	X		and a 40 km/h speed limit for large vehicles and machinery) is implemented on all roads running through the proposed areas during all phases in order to minimise risk. • Existing lighting will be used. However the following light pollution management initiatives are indicated below should existing lights not be used: - Plan the lighting requirements of the facilities to ensure that lighting meets the need to keep the site secure and safe, without resulting in excessive illumination; - Avoid up-lighting of structures by rather directing lighting downwards and focussed on the area to be illuminated; and - Reduce the height and angle of illumination from which floodlights are fixed as much as possible while still maintaining the required levels of illumination.	• N/A	

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							- Lighting should be shielded in areas where specific objects are to be illuminated. - Minimise the use of lighting. - Lighting should exclude the blue-rich wavelengths and be closer to the red-rich wavelength spectrum. Globes used in lighting outside areas and should be warm white. This also applies to light spilling out from within buildings. A colour temperature of no more than 3000 Kelvins is recommended for lighting. - Light intensity of illuminating lights should be limited as far as possible, i.e., to limit lighting to areas required to serve operational functionality. - Illumination where not permanently required should be fitted with timers, motion activated sensors or be dimmable to reduce total light emitted.		
	NOISE AND VIBRATION	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise and		**X**	**X**		**Prevent and reduce through management measures:** • General:	• Compliance with SANS 10103 Acceptable Ambient Levels and SANS 10210 of 2004, the national	• SHEQ/ Contractor/Mine Manager/Specialist

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		vibration impacts associated with the operation of vehicles, machinery and equipment.					- Personal Protective Equipment must be provided to all persons working in areas where high levels of noise can be expected. An occupational health specialist can be consulted to determine the correct level of noise reducing PPE to be issued. - Placement of noise generating activities can be planned as far away as possible from affected areas and/or persons. - Installation of acoustic enclosures for equipment to stop noise at the source if especially noisy. - Ensure that all staff on the activity is provided with "noise sensitivity" training to ensure noise generation is limited. - The efficiency of noise mitigation measures should be assessed on a regular basis. - Good public relations are essential. The information provided to stakeholders should be factual and not set unrealistic expectations.	standard for the calculating and predicting of road traffic noise SANS 10328 of 2008. • GNR 154 of 1992-01-10: Noise Control Regulations • SANS 10181:2003 The measurement of noise emitted by road vehicles when stationary. • SANS 10205:2007 The measurement of noise emitted by motor vehicles in motion. • SANS 10210:2004 Calculating and predicting road traffic noise. • SANS 10328:2008 Methods for environmental noise impact assessments. • SANS 10103:2008. 'The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication. • SANS 10357: 2004. 'The calculation of sound propagation by the Concave method. • Meet the requirements of the National Dust Control regulations, 2013, as published in the Government Gazette (No. 36974) of	

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							- A clear line of communication should be in place where complaints can be lodged and response can be provided on. - A clear commitment should be made on accommodating the local communities in preventing noise as far as possible. - Should any complaints regarding noise be received from the adjacent community / staff, follow-up investigations should be conducted to determine and mitigate noise measured. • Vehicles and Vehicle Movement: - Limit vehicles speeds; - All vehicles must be fitted with low noise and frequency hooters; - Ensure that vehicles are fitted with noise reduction measured such as mufflers - Ensure that vehicles on the site are serviced on a regular basis to ensure that noise suppression mechanisms are effective; - Regular inspections and maintenance of equipment,	1 November 2013 (GNR 827 of 1 November 2013), in terms of the National Environmental Management: Air Quality Act 39 of 2004. South Africa National Standard 1929:2005: Ambient Air Quality: Limits for common pollution	

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							vehicles and machinery to prevent unnecessary noise; and - All vehicles should be switched off when not in use. • Prospecting Activities: - A noise prevention barrier should be erected in areas where noise can travel to sensitive receptors. This barrier should be placed as close to the noise generating activity as possible. - All equipment and machinery should be serviced on a regular basis or as per manufacturer requirements. - All equipment and machinery should be fitted with noise reduction technology to prevent noise generation as far as possible. - All activities should be limited to day-time hours as far as possible. Generally, work should not be allowed on Sundays and Public Holidays; - All equipment should be switched off when not in use.		

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							- No workers should be allowed to take residence on the site. - Site workers must comply with the Provincial Noise Regulations. - Appropriate directional and intensity settings are to be maintained on all hooters and sirens. - Excessively noisy machinery must only be used during regular operating hours and not after hours where possible.		
	AIR QUALITY	Increased dust pollution due to vegetation clearance and vehicles driving on gravel roads and trenching.		**X**	**X**		**Prevent and reduce through management measures:** • Implement a programme of stakeholder communication that includes community engagement should work be expected to result in extreme emissions. • Maintain a complaint register on site where complaints can be made. This register should enable effective communication of complaints where these are reasonably addressed. • Clearly display the contact details of the site manager.	• South Africa National Standard 1929:2005: Ambient Air Quality: Limits for common pollution. • National Dust Control Regulations, 2013, as published in the Government Gazette (No. 36974) of 1 November 2013 (GNR 827 of 1 November 2013), in terms of the National Environmental Management: Air Quality Act 39 of 2004. • SANS 1929: Ambient air quality - Limits for common pollutants • GN 1210 of 2009-12-24: National Ambient Air Quality Standards	• SHEQ/ Contractor/Mine Manager/Specialist

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		Gaseous emissions from vehicles and machinery may cause an impact on ambient air quality.		X	X		• Implement and maintain a Dust and Emission Management / Monitoring Plan which provides clear details on preventing, maintaining, and improving the air quality in terms of site-specific activities. • All complaints should be logged in the complaints register and should be available on the site at all times. All complaints regarding air quality should be adequately investigated and actions taken to reduce the impact in a timely manner should it be required. • Note must be taken of incidents that cause air emissions and this must be recorded to ensure that these are resolved and prevented from reoccurring. • In the event where frequent complaints about emission levels occur, monitoring should be initiated. • Should the conditions require it, erect screens, and barriers around the sensitive receptors.		

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							• Ensure that all areas, fencing, and barriers, is kept clear of debris and dust. • Remove any accumulating matter that could serve as emission generator from the site as soon as possible. • Minimise open / bare or unvegetated areas as far as possible. • Ensure that all vehicles are maintained in good working condition and that they are serviced on regular intervals. • Ensure that all vehicles are switched off when stationary – no vehicles should be idling for extended period. • Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. • • It is highly recommended that an appropriate speed limit (enforce a 50 km/h speed limit on-site for Light Duty Vehicles and a 40 km/h speed limit for		

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							large vehicles and machinery) is implemented on all roads running through the proposed areas during all phases in order to minimise risk. • Where applicable, only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible. • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. • Only use registered waste carriers to take waste off-site. • Avoid bonfires and burning of waste materials. No incineration to take place on site except if		

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							authorised by the relevant competent authority. • Re-vegetate exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in a small area during work and not all at once. • Ensure sand and other aggregates are stored in wind shielded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Where applicable, ensure cement and other fine powder materials are delivered in enclosed containers and stored in appropriate storage. • Where applicable, smaller supplies of fine powder materials ensure bags are sealed after use		

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							and stored appropriately to prevent dust. • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as soon as practicable any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas.		
	WASTE	Generation of additional general waste, litter and building rubble and hazardous waste.		**X**	**X**		**Control through management measures.** • An existing waste storage already exists within the site and will be utilised for disposal of wastes. • The central waste storage and transition area shall be surfaced and demarcated appropriately; • The waste shall be removed (within 30 days) by a licensed waste service provider as shall be disposed of at a licensed waste landfill site and records of safe disposal (as required for hazardous wastes) shall be supplied to the Contractor. These	• Waste management on site visible. • Waste Classification and Management Regulations and Norms and Standards for the assessment of for landfill disposal and for disposal of waste to landfill, 2013 (Government Notice 634 – 635 of 2013) promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended]. • Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or	• SHEQ/ Contractor/Mine Manager

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
							records shall be kept on site by the ESM; • Wherever possible and practical, waste materials generated on site must be recycled; and • Waste specific (hazardous, timber, steel etc.) mitigation measures to be implemented.	production operation (GN R. 632 of 2015). • SANS 10234: 2008: Globally Harmonized.	
		Minor impact caused by need for services i.e. water, electricity and sewerage systems during the prospecting phase causing additional strain on natural resources and service infrastructure.					**Reduce through controlling management measures.** • Energy savings measures to be implemented at the site e.g.: - No lights to be switched on unnecessarily; - Only security lights to be switched on at night; • Energy saving bulbs to be installed; and • Water should be recycled as far as possible to avoid any additional water usage.	• Impact avoided. • Recycling of used and contaminated water through wastewater and sewage treatment and reuse.	SHEQ/ Contractor/Mine Manager
	SERVICES			**X**	**X**				
	TRAFFIC	Minor change in traffic patterns as a result of traffic entering and exiting the site on the surrounding road infrastructure and existing traffic.		**X**	**X**		**Reduce through controlling management measures:**	• The South African Department of Transport (DoT) Manual for Traffic	SHEQ/ Mine Manager

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
		Nuisance, health and safety risks caused by increased traffic on and adjacent to the study area including cars, and heavy vehicles.		X	X		• Where feasible heavy vehicles should not operate on public roads during peak hours; and • Heavy vehicles should adhere to the speed limit of the road.	Impact Studies (RR 93/635, of 1995) • National Land Transport Act NLTA (Act No 5 of 2009) • Road Classification and Access Management (RCAM) guideline 2010: - Road Transport Act 2013. - Road Transport (General) Regulation 2013.	
	HEALTH AND SAFETY	Possibility of prospecting activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners, visitors and workers.		X	X		**Prevent and reduce through management measures:** • Develop, implement and monitor a Health and Safety Management System continuously during the life of the prospecting activity. • Training for all employees on health and safety in the workplace. • Record all training of employees. • Ensure compliance to the relevant Mine Health and Safety Act and Regulations. • Induction for all employees, sub-contractors and visitors entering site on health and safety measures and PPE requirements. • All incidents to be reported, recorded, investigated, and mitigated.	• Constitution of South Africa Act 108 of 1996 - Section 24 • National Environmental Management Act 107 of 1998 - Section 28 (Duty of Care) • Mine Health and safety Act of 1996	• SHEQ
		Increased risk to public and worker safety: If not fenced off, the public and workers may fall into excavated areas and trenches.		X	X				

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
							• Erection of safety signs/ notices for high-risk areas.		
	SOCIO-ECONOMIC	Capital investment into the establishment of the mine- Stimulation of employment due to investment		X	X		**Prevent and reduce through management measures:** • Employ labour-intensive methods where feasible. • Where possible, Local labour and sub-contracting to Local companies should be considered for employment to increase the positive impact on the Local economy.	• Constitution of South Africa Act 108 of 1996 - Section 24 • National Environmental Management Act 107 of 1998 - Section 28 (Duty of Care) • Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA). • Regulations GNR527/2004 (MPRDA Regulations). • Financial Provisioning Regulations, 2015 GNR 1147/2015.	• SHEQ/ Mine Manager
		Multiplier effects on local economy will be positive, but very limited in extent and only short term.		X	X		**Prevent and reduce through management measures:** • Supplies to be bought locally as far as possible.		
		Restricted access to land and other destinations (obstruction).		X			**Prevent and reduce through management measures:** • Ensure that no main roads are blocked due to prospecting activities vehicles. • Consideration and adherence to Traffic by-laws must be adhered.		
		Increase in road safety risks due to increased road traffic.		X	X		**Prevent and reduce through management measures:**		

ACTIVITY ICLUDING SIZE/ SCALE	ENVIRONMENTAL ASPECT	NATURE OF THE IMPACT	PHASES: Planning-P Construction- C Operational- O Closure Phase / Decommissioning & Rehabilitation Phase- CP				MITIGATION TYPE AND MEASURES	COMPLIANCE WITH STANDARDS POST-MITIGATION	Responsible Person
			P	C	O	CP			
							• Ensure that no main roads are blocked due to construction vehicles. • Consideration and adherence to Traffic by-laws must be adhered. • Enforce good driving standards.		
		Training to employees.			X		**Prevent and reduce through management measures:** • Devise training development programmes.		
		Expenditure on decommissioning and closure of any temporary infrastructure.				X	**Prevent and reduce through management measures:** • Encourage procurement of required services, materials and other inputs from Local communities.		

g) Impact Management Actions

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

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS

Please refer **Table 19** for the above requested information.

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

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

- The facilitation of the re-establishment of the land use and capability to as close as reasonable to the original conditions.
- Removal of all infrastructure and material introduced to site.
- Removal of all wastes and their disposal.
- Promotion of the rapid re-establishment of the natural vegetation and the restoration of the site ecology.

The disturbed areas shall be rehabilitated to ensure that:

- Eliminate any safety risk associated with clearance of vegetation, trenching and backfilling.
- Environment and resources are not subjected to physical and chemical deterioration,
- The site is reversed to almost its original state
- The after-use of the site is beneficial and sustainable in a long term
- All socio-economic benefits are maximized

The rehabilitation plan shall entail removal of all generated wastes, infrastructure and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages.

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

This Basic Assessment Report and Environmental Management Programme will be subjected to a public consultation period, whereby I&APs are given 30 days to comment.

(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 activities involved are for prospecting and will involve no permanent removal of soil and rock.

Should the prospecting yield negative results, then the end use for area will revert to its pre-prospecting land use. The end-use of the area will therefore not be changed by the prospecting operations.

However, should the prospecting operation yield positive results, then the farm could be subject to a mining rights application and another more comprehensive Public Participation, Scoping, EIA and EMP process.

If a mining right is granted after this prospecting right is approved, then the area will be rehabilitated according to the requirements of the approved Environmental Management Programme that would apply throughout the life of the mine

Removal of construction structures

It is recommended that all construction structures must be cleared and completely remove from site. All construction plant equipment, storage containers, signage, temporary fencing, temporary services, fixtures and any other temporary works (excluding those already on the site) must be decommissioned once construction is completed.

Additionally, the proponent must ensure that all access roads utilised during construction (which are not earmarked for closure and rehabilitation) are returned (as far as possible) to their state prior to construction.

Re- vegetation

It is recommended that a standard commercial fertilizer high in the standard elements is added to the soil before re vegetation, at a rate of 10 -20k g/ha (application rate to be confirmed based on input from a suitably qualified specialist). The fertilizer should be added to the soil in a slow-release granular form. A suitably qualified ecologist will be appointed to determine the appropriate veld grass mix for hand seeding.

Re-vegetation efforts will be monitored every second month for a period of six months after initial seeding. An effective vegetation cover of 45% must be achieved. Re-seeding will be undertaken if this cover has not been achieved after six months.

Topsoil Replacement

Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the prospecting site, including temporary access routes and roads. Replace topsoil to the original depth (i.e. as much as was removed prior to construction).

Any topsoil that is suspected to be contaminated with the seed of alien vegetation must not be used. Alternatively, the soil is to be sprayed with specified herbicides.

Additionally, backfill planting holes with excavated material / approved topsoil, thoroughly mixed with weed free manure or compost (per volume about one quarter of the plant hole), one cup of 2:3:2 fertiliser and an approved ant and termite poison.

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

Due to the small extent and fairly short-term period of the prospecting activities and as shown in the Environmental Impact Assessment, the impacts will be of a **low** or **very low** significance. Rehabilitation will be conducted concurrently and will include borehole capping and re-vegetation. Detailed mitigation measures are provided in the EMPR to ensure the closure objectives are met.

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

The closure cost assessment has been conducted, if required. The report will be submitted to the Department of Mineral Resources and Energy together with the Final Basic Impact Assessment report, if required.

The closure cost assessment has been developed based on the GNR 1147 regulations and is included as Appendix 10. The estimated financial provision required for the rehabilitation and closure for each of the prospecting rights are R 34 568.13 (Final Closure) excl. VAT. The calculation of the rehabilitation cost is included in Appendix 10.

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

The financial provision will be provided as determined.

The applicant submits that it is an operating clay mining company and is able to fund the planned prospecting and rehabilitation thereof from its operational budget. It is confirmed that the amount for financial provision is anticipated to be an operating cost and is provided for as such in the Prospecting Work Programme.

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

h) Monitoring of Impact Management Actions

i) Monitoring and reporting frequency

j) Responsible persons

k) Time period for implementing impact management actions

l) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
PROSPECTING PHASE				
• Compile detailed Prospecting Map	• Surface water • Heritage • Biodiversity	• Compile prospecting map showing clearly: • Sensitive areas as identified by the specialists • Areas to be trenched for prospecting • Access roads to be used	• Biodiversity Specialist • Applicant • ECO	• Initial start of the desktop assessment phase for prospecting.
• Clearing of vegetation and topsoil and excavation for the access.	Surface Water	• A Stormwater Management Plan (SMP) to be developed for the collective area where prospecting will occur, (or the existing SMP updated, where applicable for present and future activities) and should include the management of stormwater during excavation, as well as the installation of temporary	• Applicant • Engineer	After rain / storm events; and Weekly

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
• Soil disturbance and topsoil stockpiling resulting in soil compaction and erosion. • • Stockpiling of topsoil for rehabilitation purposes after trenching. • Earthworks to excavate in preparation for trenches for the prospecting activity. • Dust emission resulting from site		stormwater and erosion control measures during prospecting, followed up by rehabilitation of the area. This Stormwater Management Plan to be monitored for implementation; • Visual inspections shall be done on a weekly basis with regard to the stability of the temporary water control structures, erosion and siltation.		
	Dust and air quality pollution	• Dust shall be controlled in accordance with the requirements of the National Dust Control Regulations (GN 827, November 2013). This shall include compliance with regards to: A: Dust fall out standards- (b) 1200 mg/m2/day averaged over 30 days in areas other than residential and light commercial areas measured using reference method ASTM 01739. • A Gravimetric Dust Monitoring program must be implemented on the site as stipulated in section 4 of GN 827 – National Dust Control Regulations, in terms of section 53(o), read with section 32 of the National	Applicant Environmental Specialist	Monthly

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
• clearing, soil stripping and construction activities (including • vehicle entrained dust)		Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).		
	Ecological Monitoring and management	• Specialist monitoring on Faunal and Floral aspects include the monitoring of effects operational processes have on vegetation and accompanied animal life within the immediate or surrounding areas of the operations. • Alien vegetation control and management. • Habitat and vegetation management. • Rehabilitation services include the rehabilitation of operational disturbed areas and hydrocarbon spill areas. • Sloping and re-vegetation of disturbed area to surrounding landscape; and • Remediation of soil at spill sites	Environmental Specialist	Visual inspections during all phases of the activities.

m) Indicate the frequency of the submission of the performance assessment/ environmental audit report.

A Performance Assessment Review of the EMPR should be conducted annually and the environmental audit report will be submitted annually.

n) Environmental Awareness Plan

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

The environmental awareness plan will include the following:

- Induction of all staff and workers;
- Monthly 'toolbox' talks (awareness talks);
- Risk assessments for specific tasks with supervisors and staff involved in the task on a daily basis, or as often as the task is taking place.

The following principles and training will apply to the Environmental Awareness Plan (safety, health and environmental (SHE) training:

- All personnel, including contactors will as a minimum undergo general SHE induction and awareness training;
- The Safety, Health, Environmental and Quality (SHEQ) Manager will identify the SHE training requirements for all personnel and contractors. The training requirements will be recorded in a training needs matrix indicating particular training that must be undertaken by identified personnel and contractors. The training matrix will be administered by the Training Department; and Development of the Training Programme, which will include:
    - Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts;
    - Assessment of extent to which personnel are equipped to manage environmental impacts;
    - Basic environmental training;
    - Comprehensive training – on emergency response, spill management, etc;
    - Specialised skills;
    - Training verification and record keeping; and
    - Periodic re-assessment of training needs, with specific reference to new developments, newly identified issues and impacts and associated mitigation measures.

General Awareness Training

- The HR Manager, together with the SHEQ Manager, will be responsible for the development of, or facilitating the development of, the required general SHE induction and awareness training. A general environmental awareness training module will be developed and integrated into the general induction programme. The general awareness training must include the Environmental Policy, a description of the environmental impacts and aspects and the

importance of conformance to requirements, general responsibilities of personnel and contractors with regard to the environmental requirements and a review of the emergency procedures and corrective actions; and

- A Training Practitioner will conduct the general awareness training. The training presenter will keep a record of the details of all persons attending general awareness training. Such attendance registers shall indicate the names of attendants and their organisations, the date and the type of training received.

Specific Environmental Training

- Specific environmental training will be in line with the requirements identified in the training matrix; and
- Personnel whose work tasks can impact on the environment will be made aware of the requirements of appropriate procedures/work instructions. The SHEQ Manager will communicate training requirements to responsible supervisors to ensure that personnel and contractors are trained accordingly.

Training Evaluation and Re-training

- Effectiveness of the environmental training will be reflected by the degree of conformance to EMPR requirements, the result of internal audits and the general environmental performance achieved;
- Incidents and non-conformances will be assessed through the Internal Incident Investigation and Reporting System, to determine the root cause, including the possible lack of awareness/training;
- Should it be evident that re-training is required, the SHEQ Manager will inform the managers of the need and take the appropriate actions;
- General awareness training of all personnel shall be repeated every year; and
- The re-induction shall take into consideration changes made in the EMPR, changes in legislation, current levels of environmental performance and areas of improvement.

Emergency Procedures

- Emergency procedures, as relevant to this project, shall be implemented;
- The SHEQ Manager shall define emergency reporting procedures for the project;
- All personnel shall be made aware of emergency reporting procedures and their responsibilities;
- Any spills will be cleaned up immediately in accordance with relevant legislation; and
- Telephone numbers of emergency services, including the local firefighting service, shall be conspicuously displayed.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

The procedure for dealing with environmental risk including the objectives, identification and calculation of environmental risks is described in the existing approved EMPR. A spill procedure should be developed and implemented by the applicant.

o) Specific information required by the Competent Authority

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

No specific information has been required by the Competent Authority at this point in time.

2) UNDERTAKING

The EAP herewith confirms

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

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

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

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

Signature of the environmental assessment practitioner:

Environmental Assurance (Pty) Ltd.

Name of company:

23 October 2022

Date:

-END-

Appendix 1 : The qualifications of the EAP

Appendix 2 : EAP's curriculum vitae

Appendix 3 : Locality Map

Appendix 4 : Site Plan and Prospecting Work Programme

Appendix 5 : Public Participation

Appendix 6 : Current environmental land use and Sensitivity Maps

Appendix 7.1 : Desktop Agricultural Assessment

Appendix 7.2 : Heritage Impact Assessment

Appendix 7.3 : Terrestrial Biodiversity Impact Assessment

Appendix 7.4 : Desktop Palaeontological Impact Assessment

Appendix 7.5 : Baseline Noise Impact Assessment

Appendix 7.6 : Baseline Visual Impact Assessment

Appendix 7.7 : Baseline Air Quality Impact Assessment

Appendix 7.8 : Baseline Socio-Economic Impact Assessment

Appendix 8 : Screening Report

Appendix 9 : IAM

Appendix 10: Financial Provision