ANALIZA BOERDERY (PTY) LTD

DRAFT BASIC ASSESSMENT REPORT

DRAFT BASIC ASSESSMENT REPORT (BAR) FOR THE MINING PERMIT APPLICATION OF AGGREGATE, DIMENSION STONE AND SAND (GENERAL) FOR ANALIZA BOERDERY (PTY) LTD IN RESPECT OF PORTION OF PORTION 30 OF THE FARM BOSCHOEK 385 IR IN THE MAGISTERRIAL DISTRICT OF HEIDELBURG.

FILE REFERENCE NUMBER SAMRAD: GP30/5/1/1/2 (10488) MP

NAME OF APPLICANT: Analiza Boerdery (Pty) Ltd

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PHYSICAL ADDRESS: Portion 30 of the Farm Boschoek 385 IR, 1441

FILE REFERENCE NUMBER SAMRAD: GP30/5/1/1/2 (10488) MP

August 2023

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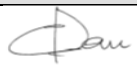
Prepared for:

Analiza Boerdery (Pty) Ltd

Name	Responsibility	Signature	Date
Cecil Dau	Report Compiler		August 2023
Sunday Mabaso	Project Manager/Reviewer		August 2023

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1. IMPORTANT NOTICE

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc)can be managed, avoided, or mitigated;

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

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

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

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

LIST OF ABBREVIATIONS

BID	Background Information Document
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
CRR	Comments and Responses Report
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GNR	Government Notice Regulation
Ha	Hectares
I&APs	Interested and Affected Parties
Km	Kilometer's
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NAAQS	National Ambient Air Quality Standards
NBA	National Biodiversity Assessment
NCR	Noise Control Regulations Act, 1989 (Act 73 of 1989)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM: BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

EXECUTIVE SUMMARY

Introduction

Analiza Boedrey (Pty) Ltd has appointed Vahlengwe Mining Advisory and Consulting as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Authorisation process for the proposed mining permit application of of aggregate, dimension stone and sand (general) in respect of Portion of Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Heidelberg, Gauteng Province. The site is situated approximately 11km Southwest of Heidelberg town and access is gained through the R42 road. The area is regarded as the agricultural theme with the current practices of crop farming taking place in the neighboring farms.

Analiza Boedrey (Pty) Ltd is applying for a mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA), and therefore, required to undertake an Environmental Impact Assessment process to acquire an Environmental Authorization in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA). The competent authority for the environmental authorisation process is the Department of Mineral Resources and Energy (DMRE), Gauteng Province.

The proposed mining project triggers activities listed in Listing Notice 1, Activity No. 21 of the NEMA, and will require a Basic EIA authorisation process in terms of NEMA Government Notice Regulation GNR. 327 (as amended, 7 April 2017). The environmental impacts of the proposed project activities were determined by first identifying the environmental aspects and then conducting an environmental risk assessment to identify the significant environmental aspects. The environmental impact assessment considered all phases of the project and the rating system used is applied to the potential impact on the receiving environment.

Details of The Applicant

Table 1: Details of the Applicant

Name of Applicant:	Analiza Boerdery (Pty) Ltd		
Registration number (if any):	2020/788091/07		
Trading name (if any):	Analiza Boerdery (Pty) Ltd		
Responsible person: (E.g., CEO, Director, etc.)	David Nortjie		
Contact person:	David Nortjie		
Physical address:	Portion 30 of the Farm Boschoek 385 IR		
Postal address:	30 HF Verwoerd Street, Heidelberg		
Postal code:	1441	**Cellphone:**	+27 73 874 2599
Email:	david@analizaboerdery.co.za		

Environmental Consultants

Vahlengwe Mining Advisory and Consulting is the appointed Independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment Process for the environmental authorisation application for the proposed mining project of aggregate, dimension stone and sand (general) in respect of Portion of Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Heidelberg, Gauteng Province.

Table 2: Details of the EAPs

Company name:	Vahlengwe Mining Advisory and Consulting Cc
Contact person:	Sunday Mabaso
Physical address:	133 Bellairs Drive, Glenvista Extension 5, Glenvista, 2058
Telephone:	+2711 432 0062
Email:	info@vahlengweadvisory.co.za

Public Participation Process Methodology

A Public Participation Process (PPP) is undertaken as required in terms of Chapter 6 of the EIA Regulations, 2014 (as amended), promulgated under NEMA. During the undertakings of the PPP, the environmental and social impacts are being investigated, and any stakeholder who is affected by the project is given an opportunity to comment, raise concerns and contribute to the assessment to ensure that local knowledge, needs, and values are understood and taken into consideration throughout the process.

This Draft Basic Assessment Report is available for public comment for a period of 30 days and all comments or concerns raised will be recorded and responded to in the Comments and Responses Report (CRR) to be incorporated in the Final BAR and EMPr. The 30-day comment period will commence from **(23 August 2023 - 21 September 2023)**

The following activities were undertaken to announce the project and initiate the Basic Assessment process:

- A Background Information Document (BID) including an Interested and Affected Parties (I&APs) Registration form handed and distributed via email on **24th August 2023**;
- Newspaper advertisement was placed in the **Heidelberg Herald** on the **23rd August 2023;**
- Site notices were erected at various places within the vicinity of the on the **24th August 2023;** and
- An electronic copy can be accessed and downloaded from the www.vahlengweadvisory.co.za from the **24th August 2023**.

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SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

1. Introduction

Analiza Boedrey (Pty) Ltd proposes to undertake mining activities for the extraction of aggregate, dimension stone and sand (general) in respect of Portion of Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Heidelberg, Gauteng Province.

Analiza is currently operating in the proposed area under the mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act (MPRDA) 2002 (Act No. 28 of 2002), with DMRE reference number GP 30/5/1/3/2 (10050) MP. The site is situated approximately 11km Southwest of Heidelberg town and access is gained through the R42 road. The area is regarded as the agricultural theme with the current practices of crop farming taking place in the neighboring farms.

The planned invasive mining activities will cover an area of about 5 hectares. The mine is currently mining a sandstone from an open pit operation which is processed through the crushing and sieving plant that produces various sizes of stone dimensions and sand. The project entails the clearing of vegetation, topsoil removal, occasional drilling and blasting, excavation, and material handling whereby material are stockpiled and sold to the market. The mining activities may have minimal surface disturbance since the mining area is limited to 5ha, hence the application is for a mining permit in terms of Section 27 of the MPRDA.

The area is currently well established with the existing infrastructure that is being utilized for the mining operations. The mining activities will be conducted for a period of two (2) and subjected to the renewal of another year should the resources not be depleted within the two-year period.

2. Contact Person and correspondence address.

2.1. Details of the EAP

Table 3: Details of the EAP

Company name:	Vahlengwe Mining Advisory and Consulting (Pty) Ltd
Contact person:	Sunday Mabaso
Physical address:	238 Voster Ave, Glenvista Extension 3, Johannesburg South, 2058
Telephone:	+27 11 432 0062
Email:	info@vahlengweadvisory.co.za

2.2. Expertise of the EAP

The qualifications of the EAP (with evidence as **Appendix 1**)

This section describes the EAP's qualifications and experience for the proposed Project. Appendix A contains the EAPs' curriculum vitae and degrees.

Table 4: Expertise of the EAP

NAME	Sunday Mabaso
QAULIFICATIONS	MBA, Postgrad Certificate: Climate Change and Energy Law, Certificate: Mine Closure and Rehabilitation
RESPONSIBILITY ON PROJECT	Project Leader and Reviewer
PROFESSIONAL REGISTRATION	EAPASA (Reg. No. 2022/4485)
EXPERIENCE	Sunday M. Mabaso is the Principal Consultant with more than 20 years of service at the Department of Mineral Resources and Energy of which he served seven (7) years as a Regional Manager (3 years in Northern Cape and 4 years in Gauteng). He has acquired various qualifications in mining. and in 2021 completed an MBA with Milpark Business School and a Post Graduate Certificate in Climate Change and Energy Law with the University of the Witwatersrand, Mine Closure and Rehabilitation with the University of Pretoria. His experience includes monitoring and enforcing compliance with Social and Labour Plan and Mine Economics in terms of the MPRDA and the Mining Charter, Environmental Management and Waste Management in terms of NEMA and NEM: Waste Act. Sunday has recently published a paper "Legacy Gold Mine Sites & Dumps in the Witwatersrand: Challenges and Required Action" in the Journal of Natural Resources, Vol 14, 2023. https://doi.org/10.4236/nr.2023.145005
NAME	Cecil Dau
QUALIFICATIONS	Bachelor of Earth Sciences in Mining and Environmental Geology
RESPONSIBILITY ON PROJECT	Report Compiler
PROFESSIONAL REGISTRATION	EAPASA Candidate (Reg. No. 2021/4434) SACNASP Candidate (154069)
EXPERIENCE	Cecil Dau is an environmental professional who has more than three (3) years of experience working in the Environmental Management field. He has

	more than nine (9) months working as an Environmental Assessment Practitioner (EAP), two (2) years working as an Environmental Officer (Intern) at Gauteng Department of Agriculture and Rural Development, where he was processing applications received in terms of Section 24G of NEMA. He also worked as a Research Assistant Graduate for Water Research Commission. He is a seasoned Environmental Assessment Practitioner with a thorough understanding of the potential environmental and social impacts of mining activities in a variety of environmental settings. In the mining and environmental sectors, he has performed environmental assessments (BAR and S&EIR), Water Use Licence Application (WULA), and environmental compliance auditing. His core competencies include research and report writing, specialist report review and environmental impact assessment.

3. Location of the overall Activity

Table 5: Details of the overall activity location

Farm Name:	Portion of Portion 30 of the Farm Boschhoek 385 IR
Application area (Ha)	5 ha
Magisterial district:	Heidelberg
Distance and direction from nearest town	The site is situated approximately 11km Southwest of Heidelberg town with access gained through the R42 road.
21-digit Surveyor General Code for each farm portion	T0IR00000000038500030

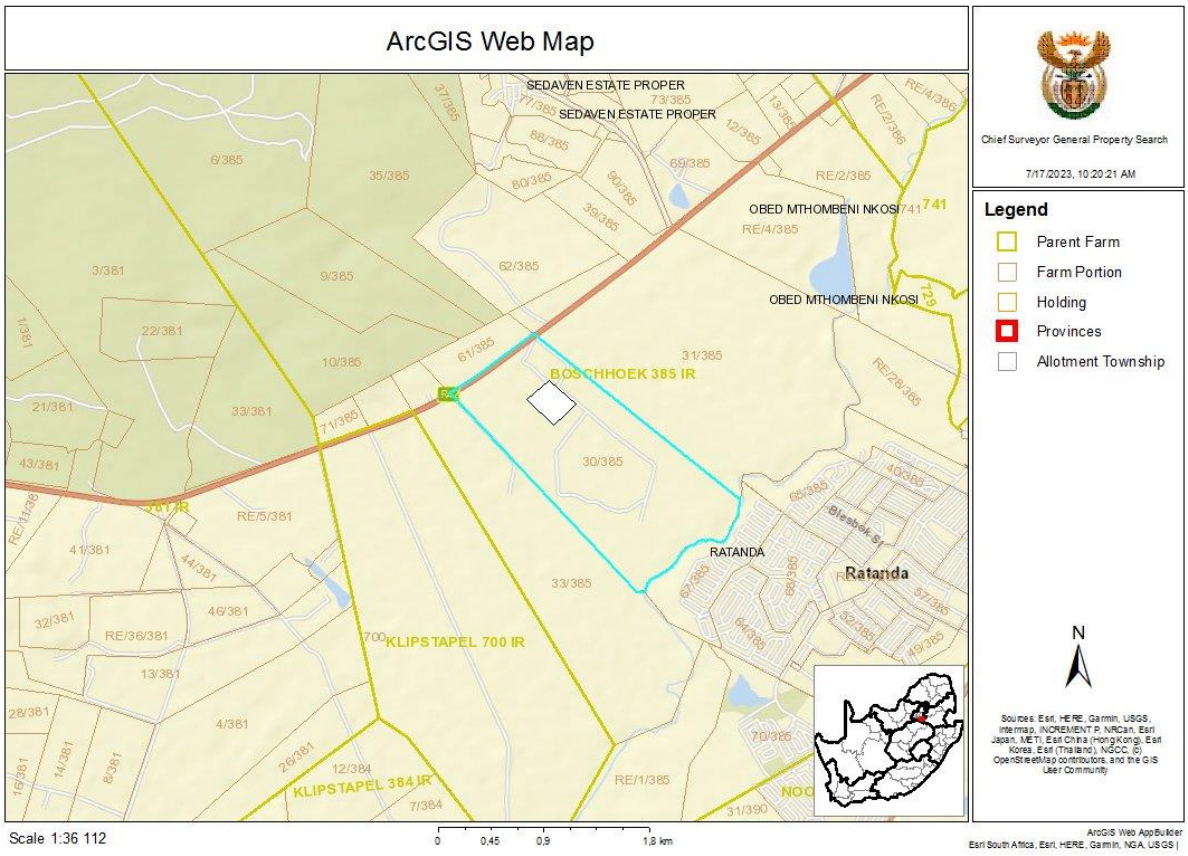

Figure 1: Cadastral Map (Chief Surveyor-General Property Search, 2023)

4. Locality map

Attach a locality map at a scale not smaller than 1:250000 showing the nearest town and attach as **Appendix 2.**

Figure 2: Locality map of the proposed area.

5. Description of the scope of the proposed overall activity

Attach 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

Analiza Boedrey (Pty) proposes to conduct the mining activities for the extraction of aggregate, dimension stone and sand (general) in respect of Portion of Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Heidelberg, Gauteng Province. The planned mining activities will cover an area of about 5 hectares. The proposed mine area is located adjacent to the existing mining operation which is operated under the mining permit (GP 30/5/1/3/2 (10050) MP where there is existing infrastructure. Access to the mining area will be through existing roads.

The mining area is an existing mining operation with the following activities:

- Occasional drilling and blasting;
- Vegetation clearance;
- Topsoil and overburden removal, and stockpiling;
- Excavation, loading and hauling of the material; and
- Rehabilitation

The mine utilizes the following infrastructure on site:

- Access roads;
- Boreholes for office and domestic use of water
- Site offices and ablutions;
- Mining equipment such as TLB and haul trucks;
- Processing plant (crushing, washing, and screening);
- Weigh bridge;
- Storage facilities for oils and other hazardous materials;
- storage facilities (fuel and oils, and water);
- Spare parts storage containers;
- Settling ponds; and
- Municipality services,

Operating Method

Analiza utilizes the conventional mining method drilling and blasting, loading, and hauling the material to the processing plant and production of various sizes of dimension stone and sand that is sold to the market. The company conducts occasional drilling and blasting by a contractor, utilizes an excavator to load the run of mine into the tipper truck which is then transport to the processing plant for crushing, sieving and screening. The area to be mined will have to be cleared off vegetation and topsoil removed to expose the bedrock for extraction.

- **Drilling and blasting**

Analiza employs a contractor to conduct the drilling and blasting. This activity is occasionally conducted to loosen the hard bedrock. The last drilling and blasting were conducted in 2019 and to date there has not been any drilling and blasting and is not planned to be conducted any time soon. The company requires drilling and blasting when they reach the hardest surface of the rock being mined.

- **Power supply**

The operation is currently connected to the municipality electricity grid. The company has low-capacity back-up generators for when there is load shedding or any electricity breakdowns.

- **Water Supply**

The water for the operation is supplied from the boreholes on site. The operation has four boreholes dug and only one of the four boreholes is functional for domestic and office use. The operation also draws water from the operating mining pit that is being recharged by an

aquifer hit during the operations. The water from the pit is used for the daily operation of the processing plant and dust suppression on the dusty haul roads.

- **Waste management**

The waste will be generated from the operation include the general, scrap and hazardous waste. The waste is intended to be handled, separated, stored and disposed of accordingly. The following waste types are generated at the operation:

General waste will include;

Domestic Waste;

- Paper;
- Plastic;
- Cardboards;
- Tins; and
- Glass.

Hazardous Waste include oil storages and spillages from vehicles and equipment that requires a proper clean up and disposal. All hazardous waste will be removed offsite by a hazardous waste contractor who will issue a safe disposal certificate for the removal of hazardous waste as proof of safe disposal. The scrap waste produced consist of scrap metals, vehicle old parts and plant part generated during the fixing and maintenance. The scrap waste will also be collected by a contractor who dispose the waste at the appropriate scrap waste facilities and provides certificate of collection and disposal. The general waste is collected by the municipality and disposed the municipality landfill site.

Project Activities

Construction Phase

The mining operation has existing and well-established infrastructure with no period that will be required to develop the mine to commence with the production. The construction phase will involve the preparation of the area to be excavated which will include clearing the vegetation and removal of the topsoil which will be stockpiled and later used for rehabilitation and/or concurrent rehabilitation where possible.

Operational Phase

A 50cm topsoil layer will be removed to access the desired rock material to processed and sold to the market. Depending on the customer specification according to the uses of the products required, the run-of mine material will be taken through the crushing, sieving and screening plant and the sediments settling ponds which are already in place, and loaded onto

the haul trucks to be transported from the mine site to the market locations. In the event of the need for the other sands (building sand) in terms of the customer specifications, the sand will be excavated from the in situ, stockpiled, loaded and sold to the market.

Rehabilitation

The concurrent rehabilitation will be conducted as far as possible at areas where the extraction is complete and where the economic resources are no longer available. The final rehabilitation operation will include the following:

- Revegetation of the disturbed vegetation;
- Contouring the land to restore the natural drainage system;
- Rehabilitation of access roads;
- Rehabilitation of overburden and spoils;
- Rehabilitation of settling ponds; and
- General surface rehabilitation.

Decommissioning.

The decommissioning phase will involve the following:

- Removal of infrastructure that can be used elsewhere
- Dismantling of processing plant and related structures
- Removal of the mobile containers;
- Demolition of housing and/or administration facilities
- Final rehabilitation of the mining area footprint and all disturbed areas; and
- The general clean-up of all the redundant infrastructure.

Figure 3: Site plan map of the proposed area

5.1. Listed and specified activities

Table 6: Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY (HA OR M²)	LISTED ACTIVITY	APPLICABLE LISTING NOTICE *GNR 983, GNR 984 or GNR 985*	WASTE MANAGEMENT AUTHORISATION
Mining Permit Application	5.0 ha	☒	GNR 327, 17 April 2017	☐
Vegetation Clearance	5.0 ha	☒	GNR 327, 17 April 2017	☐
Site Offices	105.93 m^2	☐	Not listed	☐
Stockpiling	0.94 ha	☐	Not listed	☐
Haul roads	160 m^2	☐	Not listed	☐
Processing plant	0.015 ha	☐	Not listed	☐
Fuel storage	36.93m^2	☐	Not listed	☐
Settling dams	1.5 ha	☐	Not listed	☐

6. Policy and Legislative Context

Table 7: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	Reference where applied
The Constitution of the Republic of South Africa, 1996 Under Section 24 of the Constitution of the Republic of South Africa, 1996 (the Constitution) it is clearly stated that: Everyone has the right to a) an environment that is not harmful to their health or well-being; and b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - (i) Prevent pollution and ecological degradation; (ii) Promote conservation; and (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	Vahlengwe Mining Advisory and Consulting is undertaking an EIA process to identify and determine the potential impacts associated with the proposed mining activities. Mitigation measures recommended will aim to ensure that the potential impacts are managed to acceptable levels to support the rights as enshrined in the Constitution.
National Environmental Management Act, 1998 (Act No 107 of 1998) and EIA Regulations (as amended in 2021) The Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA), as amended was set in place in accordance with Section 24 of the Constitution. Certain environmental principles under NEMA must be adhered to, to inform decision making for issues affecting the environment.	Activities associated with the proposed mining activities are identified as in the Listed Activities in the Listing Notice 1, Activity No. 21 (as amended) which states that: Any activity including the operation of that activity

Section 24 (1)(a) and (b) of NEMA state that: The potential impact on the environment and socio-economic conditions of activities that require authorization or permission by law and which may significantly affect the environment, must be considered, investigated, and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity. The EIA Regulation, 2014 was published under GN R 326 on 07 2017 (EIA Regulations) and came into operation on 07 April 2017. Together with the EIA Regulations, the Minister also published GN R 327 (Listing Notice No. 1), GN 325 (Listing Notice No. 2) and GN R 324 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended.	which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including: — (a) associated infrastructure, structures, and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening, or washing.
<u>Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002)</u> The Act make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources; and provide for matters connected therewith. 2. The objects of this Act are to: — (a) recognize the internationally accepted right of the State to exercise sovereignty over all the mineral and petroleum resources within the Republic; (b) give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources; (c) promote equitable access to the nation's mineral and petroleum resources to all the people of	The proposed projected is applied in terms of Section 27 of the MPRDA, 2002 (Act No. 28 of 2002) and the planned activities are according to the scope of the Financial and Technical Competence Report in terms of the Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002): Mineral and Petroleum Resource Development Regulations GNR 527 of 2004. The application was lodged at the Department of

South Africa; (d) substantially and meaningfully expand opportunities for historically disadvantaged persons, including women, to enter the mineral and petroleum industries and to benefit from the exploitation of the nation's mineral and petroleum resources; (e) promote economic growth and mineral and petroleum resources development in the Republic; (f) promote employment and advance the social and economic welfare of all South Africans; (g) provide for security of tenure in respect of prospecting, exploration, mining, and production operations; (h) give effect to section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and Regulation 2(1) if the Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002): Mineral and Petroleum Resource Development Regulations GNR 527 of 2004; clearly states that: An application for any permission, right or permit is made in terms of the Act and must be lodged by submitting an appropriate form contained in annexure I by hand or registered post to the Regional Manager in whose region the land is situated or to the designated agency at the relevant address specified in the appropriate form	Mineral Resources and Energy in the Gauteng Region since the proposed project is situated on Portion of Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Heidelberg, Gauteng Province.

7. 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).

- Need

There is an absolute demand of aggregate, dimension stone and sand (general) in the construction industries with various target markets. The mining of these minerals provides a reasonable revenue that contributes to the country's economy and somewhat has a positive impact on the socio-economy of the local communities through job opportunities that are created for the local community members to uplift their livelihoods.

- Desirability

Since the start of this mining operation, the operation has had several positive effects on the surrounding community, such as the creation of employment opportunities for local community members, contribution to the economy, and transfer of skills, training, and opportunities. Locals benefit from the operation because they are given employment opportunities to support their families, and there is a transfer of skills for skilled, semi-skilled, and unskilled workers, which will gradually continue as a result of a new mining permit,

The operation has established a market dependency of customers who rely on the operation's products for their development projects. The procurement of goods and services improves and uplifts the local SMME's.

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

- **Preferred site**

Based on the geology of the area, the minerals of interest occur from a weathered quartzite rock. The aggregate, dimension stone and sand (general) occur in a vast area extent in the area, however, most of that area is either on other properties owned by other individuals, covered with other economic activities or are sensitive areas which need not to be disturbed by mining activities. Therefore, there is no preferred alternative site in this regard.

- **Activities**

The mineral of interest occurs within the applicant's property and in limited quantity, hence they have applied for a mining permit since the availability of the aggregate, dimension stone and sand (general) are not economical viable for the application of a mining right. The layout plan of the infrastructure has been planned to avoid sensitive areas as far as possible. The intended method of vegetation clearance will have minimal environmental impacts. The applicant intends to utilize the pre-existing infrastructure that is currently used for the mining

activities including the conventional mining method of extracting the minerals. There are no alternative technologies identified for the proposed mining activities in this regard.

9. 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.

9.1. Details of the development footprint alternatives considered.

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

Alternatives are different ways of meeting the overall goal and requirement of a proposed activity. Alternatives aid in determining the best way to develop the Project, taking into account location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives, and the no-go alternative. Alternatives also aid in determining which activity has the least environmental impact.

9.1.1. The property on which or location where the activity is proposed to be undertaken;

The property on which the activity is proposed to be undertaken belongs to the owner of the company, 'the applicant'. The mining area is covering an extent of 5ha, Portion of Portion 30 of the Farm Boschoek 385 IR within which the Farm can have two or more area location alternatives considered for the proposed area. The location alternatives were opted for based on several criteria, including environmental considerations with regards to how sensitive the area is in terms of soils, wetlands, groundwater, and so on; sensitive receptors with regards to the proximity of the mining operations to the communities and farmsteads; and the area's dependence on the necessary infrastructure.

There was no alternative property on which or location where the activity will be undertaken considered since the landowner is the company owner applying for the mining permit, and therefore, will not have landowners' issues and other matters pertaining the access to the property. There is pre-existing infrastructure on the property that will be able to sustain the mining operations. The property may have more strategic alternatives to be considered in terms of the mining area depending on the minerals of interest and environmental sensitivity.

9.1.2. The type of activity to be undertaken;

The mining method is a surface open pit since the weathered quartzite rock is occurring on the subsurface which will be mined to a maximum depth of approximately 10 meters. Vegetation clearance will be conducted, and topsoil removed to access the desired bedrock. There is existing infrastructure such as access roads, electricity power, water and other auxiliary infrastructure required for the mining operation, and

therefore, no infrastructure establishment will be required. The use of existing roads was most preferred because of the impact on vegetation and potential erosion that the construction of new roads might have.

9.1.3. The design or layout of the activity;

The operation will be utilizing the existing servitudes. The area has a well-established infrastructure to be utilized for the mining operations, therefore, there are no alternatives in terms of the design or layout of the activity

9.1.4. The technology to be used in the activity;

The mineral to be mined is sub-surface in occurrence which will require excavation of approximately 50 centimetres in depth to access the desired bedrock; therefore, the mining method is a surface open pit operation which will reach a depth of 10 m. An excavator will be utilized to extract the rock material from the in-situ.

The rock material will be processed through the crushing, sieving and screening plant with some sand material from the processing plant will be taken to the settling ponds then loaded onto the haul truck by a front-end loader and transported to the market. The processing of the sand will depend on the customer specification. No alternatives were considered in this regard.

9.1.5. The operational aspects of the activity; and

The applicant intends to utilize a bulldozer to clear vegetation for site establishment of the mining. There is existing infrastructure that will be utilized as far as possible to carry out the mining operations, and therefore, no construction and establishment of new infrastructure will be required in this regard. Analiza utilizes the conventional surface mining method of the extraction of the rock material by the drilling, blasting, excavation, loading of the material onto the haul truck and transportation of the material to the processing plant. Concurrent rehabilitation will be implemented at the edges of the open pit.

9.1.6. The option of not implementing the activity.

The "No-Go" alternative, which is the option of not proceeding with the Project, is one of the alternatives considered. These will also be evaluated further during the Project's Impact Assessment.

The negative implications of not going ahead with the proposed project are as follows:

- the additional economic activity, skills development and available jobs would not be created,

- Prevention of any socio-economic benefits associated with the continuation of the mining activities; and
- Lost economic opportunities.

9.2. 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 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.

- **Public Participation Materials**

Following the legislative requirements and best practices, it is important to develop documentation, which will be easily accessible to all stakeholders who would be affected or interested in the project. The following documents have been developed and distributed to all stakeholders listed in the stakeholder database. The public participation materials used as part of the Environmental Impact Assessment (EIA) process are included as appendices to this report.

Background Information Document (BID):

The BID aims to provide important information regarding the following:

- Project description of the proposed mining activities;
- The Environmental Impact Assessment and the Public Participation Process to be undertaken in support of the Project process and relevant contact details;
- Details about how stakeholders can register as an Interested and Affected Party (I&AP) and be kept informed about the Project developments;
- The public review and comment period for the draft Basic Assessment Report; and
- The BIDs were hand delivered to the affected and surrounding landowners.

I&AP Registration Form:

A registration form was distributed to the community attached to the BID for the registration of the Interested and Affected Parties (I&AP).

Site notice:

A3 sized site notices informing the I&APs about the project information as per the published newspaper advert, were developed, laminated, and erected at the boundary of the proposed site as required by Section 24J of NEMA read with EIA regulation Section 41 on **24 August 2023.** Further notices were placed within the vicinity of the proposed project

site at strategic locations where it was deemed to be visible to community.

Newspaper advertisements:

A newspaper advertisement, informing all Interested & Affected Parties (I&APs) residing in surrounding communities in close proximity to the proposed area within the jurisdiction of Lesedi Municipality was published and included information about Analiza intention to apply for a mining permit for the mining of sand (general), silica sand and dimension stone in respect of the Portion 30 of the Farm Boschhoek 385 IR in the Magisterial District of Sedibeng, Gauteng Province. The newspaper publication was conducted through **Heidelburg Herald** dated **23rd August 2023.**

Public meeting:

A public meeting with the interested and affected parties will be held at the nearby location accessible to every individual provided that several I&APs have registered to participate on the PPP to raise their comments, issues and concerns.

I&APs were informed to register any comments or concerns that they might have, regarding the proposed project by contacting the Environmental Assessment Practitioner (EAP), via email through the provided comments request form or request additional information via the telephone. The EAP details were included in the newspaper advert, Background information (BID) and site notice.

9.3. Summary of issues raised by I&APs

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

Table 8: Summary of issues raised by I&APs

INTERESTED AND AFFECTED PARTIES		DATE COMMENTS RECEIVED	ISSUES RAISED	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES					
Landowner/s					
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor (if more than one, attach list as an Annexure)					
Municipality (if more than one, attach list as an Annexure)					
Communities					
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

TO BE COMPLETED AFTER THE DRAFT BAR REVIEW PERIOD

9.4. The Environmental attributes associated with the alternatives.

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

9.4.1. Baseline Environment

9.4.1.1. Type of environment affected by the proposed activity.

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

- **Climate**

Heidelberg's climate is classified as warm and temperate. When compared with winter, the summers have much more rainfall. This location is classified as Cwb by Köppen and Geiger. The average annual temperature is 16.0 °C in Heidelberg. Precipitation here is about 764 mm inch per year. Summer starts end of January and ends in December. The months of summer include December, January, February, March. The month with the highest relative humidity is January with a humidity of 68.72 %. The month with the lowest relative humidity is September with a humidity of 34.10 % of. The month with the highest number of rainy days is December with 16.90 days. The month with the lowest number of rainy days is July (0.87 days).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	19.7 °C	19.6 °C	18.3 °C	15.6 °C	12.6 °C	9.7 °C	9.4 °C	12.9 °C	16.7 °C	18.5 °C	18.9 °C	19.7 °C
Min. Temperature °C	14.8 °C	14.6 °C	13 °C	10 °C	6.3 °C	3.2 °C	2.4 °C	5.4 °C	8.9 °C	11.5 °C	12.9 °C	14.5 °C
Max. Temperature °C	25 °C	24.9 °C	23.9 °C	21.5 °C	19.4 °C	17.2 °C	17.2 °C	20.8 °C	24.5 °C	25.7 °C	25.3 °C	25.3 °C
Precipitation / Rainfall mm	134	106	90	42	17	7	4	12	23	80	103	146
Humidity (%)	69%	66%	65%	61%	52%	50%	44%	37%	34%	45%	56%	64%
Rainy days (d)	12	10	9	5	2	1	1	2	3	8	10	13
avg. Sun hours (hours)	9.2	9.1	8.7	8.3	8.8	8.7	8.9	9.4	9.8	10.0	9.9	9.8

Figure 4: Average monthly rainfall in Heidelberg; https://weather-and-climate.com/average-monthly-Precipitation-perc,heidelberg-gauteng-za,South-Africa

The least amount of rainfall occurs in July. The average in this month is 4 mm. In December, the precipitation reaches its peak, with an average of 146 mm.

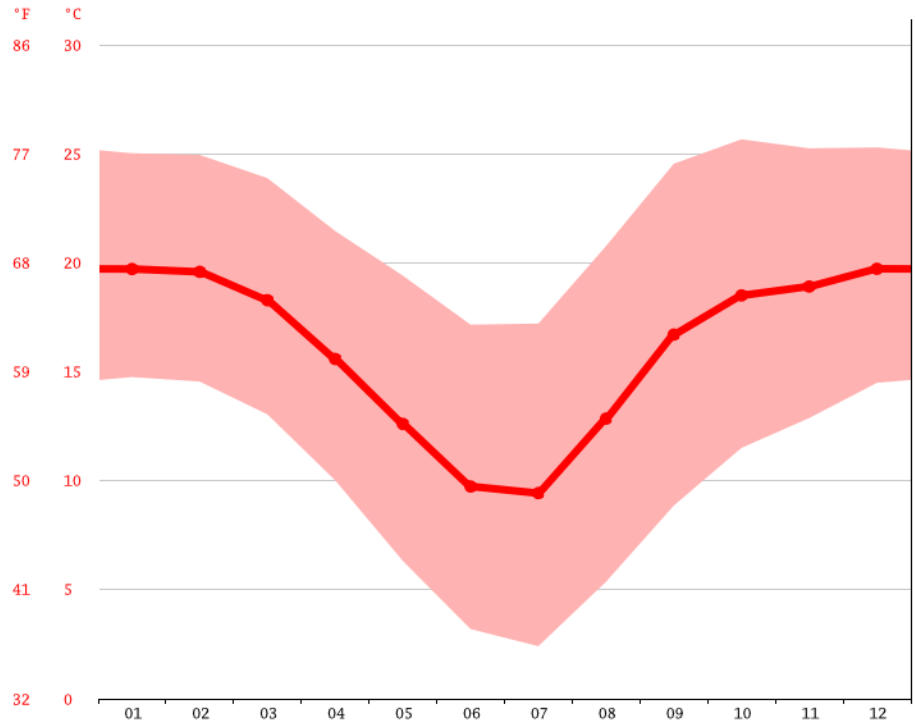

Figure 5: Average monthly temperature in Heidelberg; https://weather-and-climate.com/average-monthly-Temperature-perc,heidelberg-gauteng-za,South-Africa

The temperatures are highest on average in December, at around 19.7 °C. At 9.4 °C on average, July is the coldest month of the year. On average, February is the most humid and August is the least humid month.

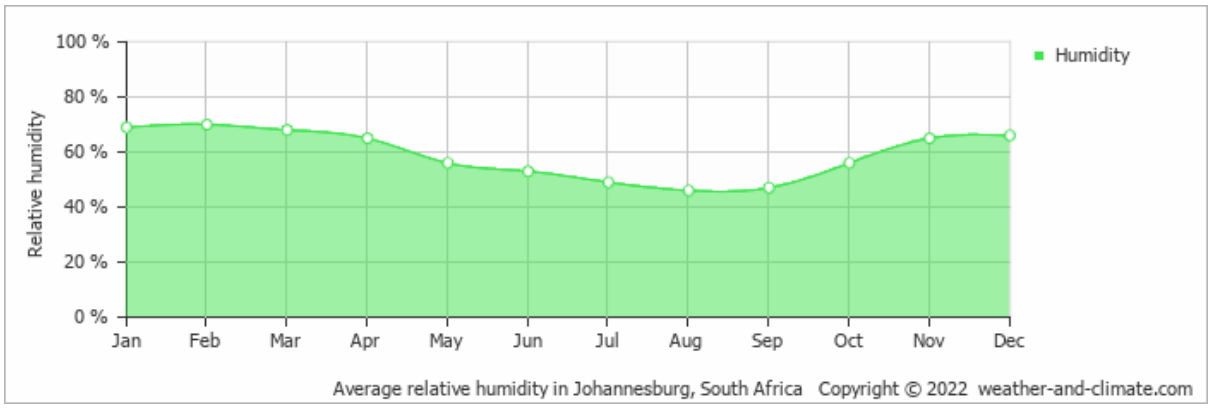

Figure 6: Average relative humidity in Heidelberg; https://weather-and-climate.com/average-monthly-Humidity-perc,heidelberg-gauteng-za,South-Africa

- **Geology and Soils**

The Turffontein Subgroup's quartzite and minor conglomerate and sandy shale underpin the northern portion of the property (Central Rand Group). The Vryheid Formation sandstone, carbonaceous shale, and coal beds underpin the central portion of the property, which begins 300m south of the existing quarry and extends up to the 100m buffer zone from the petroleum pipeline (ECCA Group). The Turffontein quartzite, sandy shale, and conglomerate underpin the area between the 100m buffer zone and the Blesbokspruit. The above-mentioned formations have a strike direction of north-east to southwest and a dip direction of approximately 20 degrees in a north-westerly direction. There are no major geological lineaments on the property.

The soils are mostly silty, sandy, gravelly, and have a high clay content. A clay loamy soil was identified on the site. The soil media and texture can be described as sandy-clay-loam derived from the parent rock's weathering. The soil zone's water drainage rate index is slow, implying 30- 50% excess surface water drainage per day. Because it swells when wet, this soil type can be difficult to work with when wet. The soil has poor drainage, which can stifle plant growth.

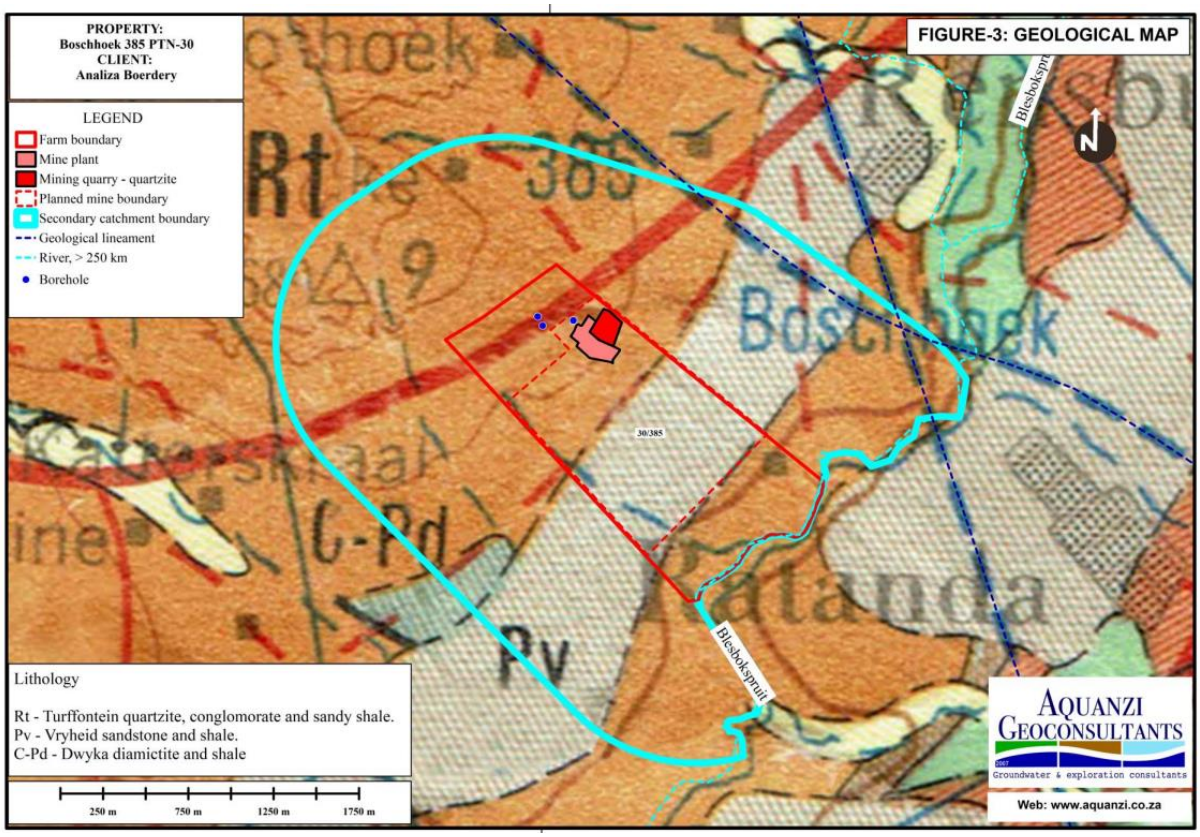

Figure 7: Geology of the proposed area (Aquanzi Geoconsultants, 2020)

- **Topography**

The proposed area can generally be regarded as flat with a few outstanding topographical features around it. The topography will be highly altered by the operation due to the open pit operation.

- **Vegetation**

The entire proposed area falls within the Soweto Grassland Biome in which grass dominates and geophytes occurs abundantly. Trees are usually absent, except along river courses and on koppies. Establishment of trees is curtailed by frost, veld fires and grazing. The severe transformation that has taken place has left only few areas of high-quality grassland. The dominant grass is red grass (Themeda triandra) which grows on sandstones and shales with deep sandy loam soils. According to the SANBI 2004 Vegetation Map of South Africa, Lesotho and Swaziland (VEGMAP), the following sub-types of vegetation occur in the area:

Soweto Highveld Grassland is mostly confined to Mpumalanga and Gauteng Provinces. It is the dominant vegetation type within south-western Mpumalanga, occurring south of the Ermelo – Johannesburg highway (N17) and west of the Ermelo – Volksrust highway (N11). 51% has been transformed, mostly through cultivation, mining and urbanisation. The vegetation in the area has not been formally protected and therefore considered endangered. (Warren 2009).

The Soweto Highveld Grassland consist of a gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by Themeda triandra and accompanied by a variety of other grasses such as Elionurus muticus, Eragrostis racemosa, Heteropogon contortus and Tristachya leucothrix. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover.

Important taxa:
Graminoids: Andropogon appendiculatus (d), Brachiaria serrata (d), Cymbopogon pospischillii (d), Cynodon dactylon (d), Elionurus muticus (d), Eragrostis capensis (d), E. chloromelas (d), E. curvula (d), E. plana (d), E. planiculmis (d), E. racemosa (d), Heteropogon contortus (d), Hyparrhenia hirta (d), Setaria nigrirostris (d), S. sphacelata (d), Themeda triandra (d), Tristachya leucothrix (d), Andropogon schirensis, Aristida adscensionis, A. bipartita, A.

- congesta, A. junciformis subsp. galpinii, Cymbopogon caesius, Digitaria diagonalis, Diheteropogon amplectens, Eragrostis micrantha, E. superba, Harpochloa falx, Microchloa caffra, Paspalum dilatatum;

- herbs: Hermannia depressa (d), Acalypha angustata, Berkheya setifera, Dicoma anomala, Euryops gilfillanii, Geigeria aspera var. aspera, Graderia subintergra, Haplocarpha scaposa, Helichrysum miconiifolium, H. nudifolium var. nudifolium, H. rugulosum, Hibuscus pusillus, Justicia anagalloides, Lippia scaberrima, Rhynchosia effusa, Schistostephiumcrataegifolium, Selago densiflora, Senecio coronatus, Vernonia oligocephala, Wahlenbergia undulata;
- geophytic herbs: Haemanthus humillis subsp. hirsutus, H. montanus;
- herbaceous climber: Rhynchosia totta; and
- low shrubs: Anthospermum hispidulum, A. rigidum subsp. pumilum, Berkheya annectens, Felicia muricata, Ziziphus zeyheriana.

- **Animal life**

The animal life in Heideberg area include the following:
Reptiles: Striped Harlequin snake (Homoroselaps dorsalis),
Mammals: Rough-haired golden mole (Amblysomus hottentotus)
Invertebrates: Lepidoptera (butterflies), Arachnida (spiders and scorpions) and Coleoptera (beetles). Two butterfly species are categorised as threatened (Hills and koppies)
Amphibians: Giant Bullfrog (Pyxicephalus adspersus)

Animal life will be affected in the immediate vicinity of the mining site. It is anticipated that the noise and general activities will keep the animal life away from the site while the mining operation is ongoing.

- **Socio-economic characteristics**

The proposed area is in the Sedibeng Magisterial District and falls under Lesedi Local Municipality which is situated along the N3 freeway at its intersection with Provincial Route R42, east of the Suikerbosrand Nature Reserve. Devon/Impumelelo, which is situated on the eastern edge of the Municipal area, abutting the N17 freeway on the north is a significant rural settlement, while Vischkuil/ Endicott east of Springs abutting Provincial Route R29 is a smaller rural centre.

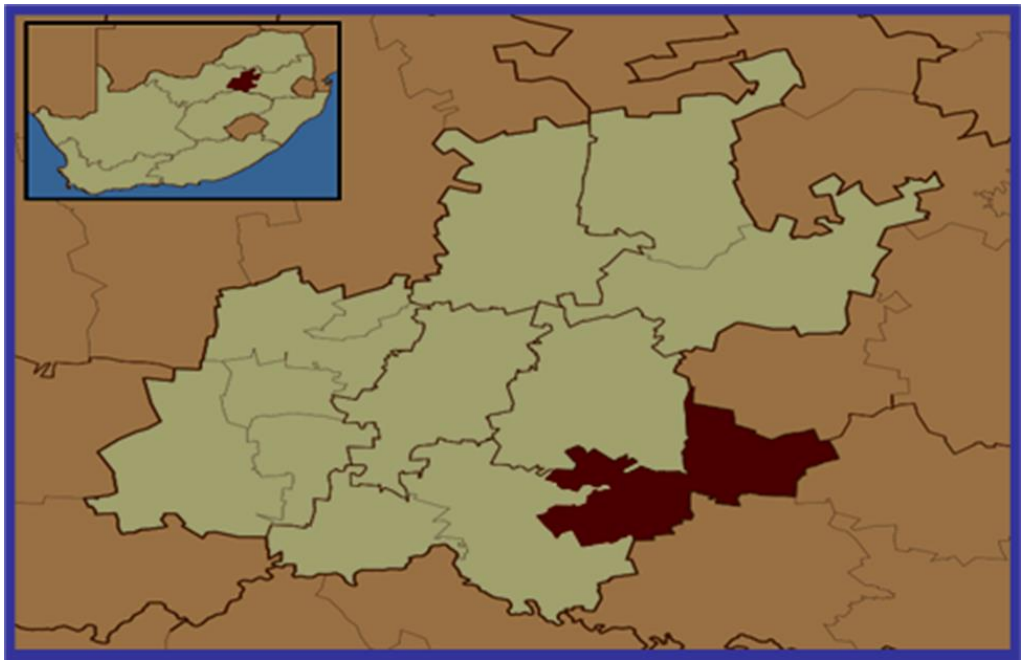

Figure 8: Locality of the Lesedi Local Municipality. (LLM 2022)

The current population of Lesedi is estimated at 116 992, which reflects a population increase of about 24 109 since 2010. Therefore, the total population of Lesedi accounts foronly 10.9% of the total population of the district. Approximately 74.9% of the total population of Lesedi resides in the urban areas of Heidelberg/Ratanda and Devon/Impumelelo, while the rest 25.1% is categorized as rural. In terms the racial composition of Lesedi, most of the African population is concentrated in areas such as Impumelelo and Ratanda.

Table 9: Table of population by race in LLM. (LLM 2022)

Population Group	Total Population 2011	Total Population 2016	Total Population 2017 (IHS)	Total Population 2018 (Quantek)
Black Africans	76 919	88 177	91 936	94 316
Whites	19 562	22 375	19 149	19 308
Coloureds	1 156	898	1 694	1 739
Indians or Asians	1 313	1 022	1508	1 559
Other	570			
Total	**99 520**	**122 472**	**114 287**	**116 922**

The population of Lesedi LM (as depicted in table and population pyramid below) shows larger numbers in the younger age groups, this indicates rapid growth. 34% of the population is below the age of 20.

Table 10: Table of the population dynamic in by gender LLM. (LLM 2022)

Age Group (years)	Male	Female	Total	Age Group (Male and Female) (IHS 2017)	Age Group (Male and female) (Quantek 2018)
0-4	5 019	4 943	9 962	11 055	11 051
5-9	4 245	4 048	8 293	11 272	11 465
10-14	3 904	3 723	7 626	9 934	10 410
15-19	4 173	4 105	8 278	7 975	8 204
20-24	5 247	4 601	9 848	7 653	7 563
25-29	5 817	4 617	10 434	9 737	9 563
30-34	4 740	3 824	8 563	10 365	10 498
35-39	4 010	3 447	7 457	9 681	10 040
40-44	3 325	3 142	6 467	7 866	8 299
45-49	2 854	2 775	5 628	6 704	6 944
50-54	2 278	2 433	4 711	5 392	5 555
55-59	1 929	1 990	3 919	4 792	4 916
60-64	1 449	1 501	2 949	4 072	4 239
65-69	951	1 101	2 052	3 180	3 321
70-74	688	864	1 552	2 460	2 607
75- 79	348	566	914	2 127	2 247
80+	343	524	867		
Total Pop	**51 317**	**48 203**	**99 520**	**114 287**	**116 922**

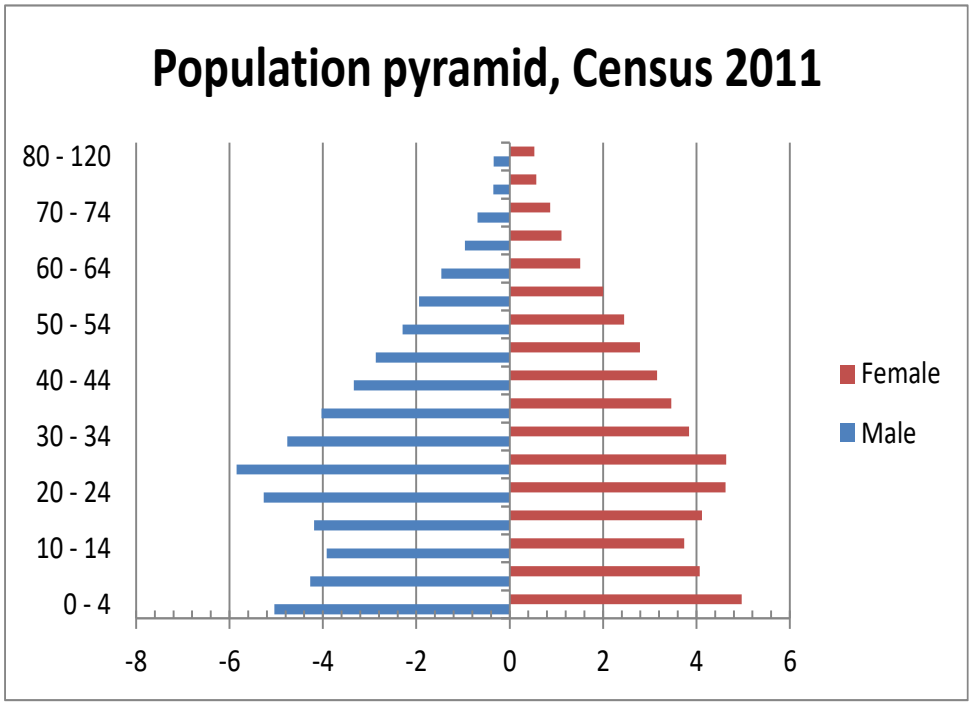

Figure 9: The graph of the population by gender at Lesedi Local Municipality. (LLM 2022)

The number of formal and informal dwellings within the municipality and their percentage distribution are indicated in the figure below were about 88.25 % of the households in LLM are formal in nature and 8.62% are informal households.

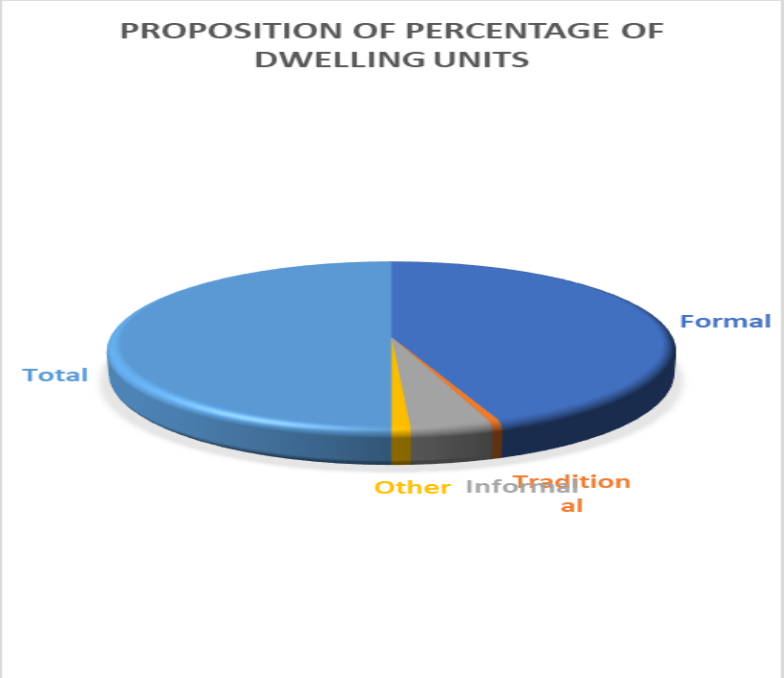

Figure 10: Pie Chart of the percentage dwellings. (LLM 2022)

Table 11: Table of the employment in the LLM. (LLM 2022)

Type of sector	Employed	Un-employed	Discouraged work-seekers	Not economically active	Age less than 15yrs	N/A	Total
Formal sector	22 671	-	-	-	-	429	23 100
Informal sector	3 360	_	_	_	_	55	3 415
Private household	4 270	_	_	_	_	101	4 371
Unknown	1 218	_	_	_	_	24	1 242
unspecified	-	_	_	_	_		-
N/A	-	11 042	2 889	22 805	_	30 656	67 393
Total	**31 518**	**11 042**	**2 889**	**22 805**	_	**31 266**	**99 520**

- **Cultural Heritage**

There were no elements of archaeological features noticed around the entire site. The proposed area does not include any world heritage sites or national heritage sites as recognised by the Provincial heritage sites as recognised by SAHRA that area located in the vicinity. The presence of any other heritage sites / resources (e.g., artefacts, tools, graves etc.) will be determined during the onsite investigations undertaken during the impact assessment.

- **Hydrology: Groundwater and Surface Water Resources**

The presence of various geological structures, such as faults, fissures, and fracture zones, as well as contact zones of intrusions such as dykes and sills, dictate the occurrence of groundwater.

Ground water quality in the Heidelberg area is generally acceptable for any use. In some area's contamination with chlorides, sulphates and nitrates has been recorded and care should be taken with groundwater used for human consumption. Groundwater from the Dwyka Group is generally suitable for any use. Groundwater yield from aquifers in this formation is, however, low.

Mitigation measures should concentrate on reducing the possibility of subsurface and surface water contamination, as well as changes in the characteristics of surface water flow into drainage channels and wetlands, which could lead to water pollution and contamination. In terms of surface water and groundwater pollution, the areas along the Blesbokspruit and wetland are considered sensitive.

A number of dams occur in the area for agricultural purposes that are currently taking place in the area. The current mining area is located in a considerable distance away (approximately 1.3 km) from the closest surface water resources and therefore, the activities that is currently being undertaken will not have a negative impact on the surface resources.

- **Agriculture**

The area falls under the area with high agricultural potential and is surrounded by areas where they are practicing crop farming.

9.4.1.2. Description of the current land uses.

The land falls within the agricultural theme sensitivity with the crop farming currently taking place. There are two community in vicinity of the mining area with one called Ratanda located southerly of the immediate mining area boundary, and another one called Sedavan located approximately 840 m on the north-easterly side of the mining area boundary. There are no known tourist facilities located within the proposed project Area, only lodges and conference and events venues.

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

The northern mining area boundary is located close to the R42 road which is used to gain access to the mining site. There are dwellings within the vicinity mining permit area, however not within the mining operation area. The houses are connected to the municipality electricity power grid. There are also boreholes that are used for office and domestic use.

9.4.1.4 Environmental and current land use map.

(Show all environmental, and current land use features)

The environmental and current land use of the proposed area is shown on the map (Appendix 4). There were no cultural or heritage sites identified on site.

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

Project activities

During the site establishment phase the following activities will take place on site:

- Occasional drilling and blasting;
- Vegetation clearance;
- Topsoil and overburden removal, and stockpiling;
- Excavation, loading and hauling of the material;
- Processing (crushing, sieving and screening); and
- Rehabilitation

Various phases of the mining related activities from the site establishment, decommission and rehabilitation are associated with environmental impacts that may be major positive, negative and cumulative. The potential impacts are discussed per environmental features/ aspect below.

- **Visual**

Dust generation and creation of visual disturbance may occur from site clearance and establishment of the infrastructure.

- **Vegetation clearance**

The vegetation clearance due to the associated mining operations will allow for increased surface water runoff, which may lead to soil erosion and loss of topsoil.

- **Soils**

The removal of the topsoil may result in topsoil life and nutrition and may disturb the natural sequence of soil layers thereby changing the soil and land capability. A change in soil capability will in consequently affect the end land use if not properly mitigated. The movement of heavy vehicles in the construction area will result in soil compaction, water runoff and soil erosion especially during the rainy season. Temporary storage of hazardous products may result in soil contamination through hydrocarbon spillages.

- **Land use and Land Capability**

The land use prior to the mining activities was farming. The mining operation has severely changed the farming practices on the land. Due to the mining operation, crop farming may not be implemented due to the mining operation.

- **Surface Water**

There are no surface water resources on site, however a stream is located 1.3 km from the current mining operation. There is a river that flows from the Northeast of the mining permit area, then flows towards the southern boundary and to the south westerly of the mining permit area. However, the mining area boundary anticipates a 100 m buffer from the river along the southern boundaries of the mining area and is considered a safe buffer zone to operate and would not have any impacts on the surface water resources.

- **Groundwater**

The drilling and blasting can result in groundwater contamination due to the chemicals from the explosives used for blasting. The mining operation may reach or hit an aquifer which may affect the groundwater quantity and quality. Groundwater may also be subjected to contamination due to hydrocarbons spillages and seepage into the ground.

- **Socio-Economic**

This project will create job opportunities for the local community members which will alleviate unemployment within the host community. Local businesses will also benefit from the procurement of goods and services that will sustain the project for the proposed period of the project. Project related employment has the potential to considerably improve the livelihoods and income stability of employees and their dependents.

- **Safety**

The mining equipment such as the copper cables, dust control equipment, sprayers, equipment and vehicles, processing plant parts and pumps will be subjected to theft. These issues pose safety risks for law enforcement, affected landowners and adjacent communities. The mining property may be subjected to vandalism due to criminals seeking valuable items from the mining operation. Workers may sustain injuries related to the operation and material handling.

- **Health**

The proposed project is associated with the dust generation that contains fine particulate matter of which if inhaled may cause respiratory diseases to the workers. Exposure to silica material for an extended time may cause silicosis to workers.

- **Noise**

Noise disturbance to surrounding communities are expected to occur during mining operations due to the operating equipment and vehicles, and the processing plant.

9.4.3. Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

Criteria to Consider when Determining Severity of impacts:

The ranking of impacts/determination of significance is estimated using two criteria, namely Consequence and Probability. These consider the contributing factors / criteria listed in the legislation. The definitions of each are provided below.

The **Consequence** of an impact resulting from an aspect is expressed as a combination of:

- **Nature** of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).
- **Extent** of impact: A spatial indication of the area impacted (i.e., how far from activity the impact is realised).
- **Duration** of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period.
- **Frequency** of the impact occurring: An indication of how often an aspect, because of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs. It applies only to the aspect. For example, driving takes place daily whilst other activities take place monthly while the resultant frequency of the impacts occurring will vary based on several factors.

Magnitude/Severity of an impact determines to what extent will the environment be destroyed or is functions be altered by the activity.

Significance of the impact is an indication of the importance of the impact in terms of both the physical extent and the time scale. It indicates the level of mitigation required.

Table 12: Consequence and significant rating

CONSEQUENCE	**Nature of Impact:**		
	Low	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are not affected.	**1**
	Low-Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are affected insignificantly.	**2**
	Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are altered.	**3**
	Medium-High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered.	**4**
	High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will temporarily or permanently cease.	**5**
	Scale/Extent of Impact:		
	Local	The impacted area will only extend as far as the activity being conducted, e.g., the activity footprint	**1**
	site	Impact occurs within a 20km radius of the site.	**2**
	Regional	Impact occurs within a 100km radius of the site.	**3**
	National	Impact occurs within South Africa.	**4**
	Duration of Impact:		
	Short-term	The impact will either disappear with mitigation or will be mitigated through the natural processes in shorter time span.	**1**
	Medium-term	The impact will last up to the end of the project phases, where after it will be negated. The impact will cease within 5 years if the activity is stopped.	**3**
	Long-term	The impact will last for the entire operational phase and after the operational life of the operation but will be mitigated by direct human action or by natural processes thereafter.	**4**
	Permanent	Intervention will not occur in such a way or in such a time span that the impact can be considered transient.	**5**
	Frequency of the Occurrence of the Impact:		
	Annually or less	Impact occurs at least once in a year or less frequently.	**1**
	6 months	Impact occurs at least once in 6 months.	**2**
	Monthly	Impact occurs at least once a month.	**3**
	Weekly	Impact occurs at least once a week.	**4**
	Daily	Impact occurs daily.	**5**
PROBABILITY	**Probability of the Occurrence of the impact:**		
	Improbable	The possibility of the impact materializing is very low either because of design or historic experience.	**1**
	Probable	The possibility of the impact materializing will occur to the extent that provision must be made thereof.	**2**
	Highly Probable	It is most	**4**
	Definite	The impact will occur regardless of any prevention measures.	**5**
	Magnitude of the impacts:		
	Low	The impact alters the affected environment in such a way that the natural processes are not affected.	**2**
	Medium	The affected environment is altered; however, the functions and	**6**

		processes continue in a modified way.	
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	**8**
SIGNIFICANCE	**Significance of the impact: Sum (Duration, Extent, Magnitude) x Probability**		
	Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	**< 20**
	Low	The impact is limited in extent, with low to medium intensity and whatever the probability of the occurrence may be, the impact will not have a material effect on the decision and is likely to require the management intervention with increased costs.	**< 40**
	Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	**< 60**
	High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation	**> 60**

This rating system is weighted in such a way as to set impacts that are very likely to occur, but have very little consequence, as Low significance. Similarly, impacts with serious consequences but that are unlikely to occur are rated lower, than impacts with serious consequences that are likely to occur.

Table 13: Impacts and their significance

Aspect	Impacts	Extent	Duration	Magnitude	Probability	Significance	Reversibility	Replaceability
Soils and Land Capability	There will be disturbance on the soil and erosion at the proposed mining area due to the vegetation clearance and the removal of the topsoil.	Local	Medium - term	Medium	Probable	Moderate	Irreversible	Irreplaceable
Vegetation	The potential impact of the proposed mining on the vegetation would occur at the mining area which result in loss of diversity, habitat, and indigenous vegetation.	Local	Medium - term	Definite	Probable	Low	Irreversible	Replaceable
Animal life	• Animal life will be affected in the immediate vicinity of the operation. • It is anticipated that the noise and general activity will keep the animal life away from the site while the mining is ongoing.	Site	Short - term	Low	Probable	Low	Irreversible	Irreplaceable
Surface Water	Impact on the water quality and quantity due to siltation and contamination.	Local	Short - term	Medium	Probable	Low	Reversible	Irreplaceable
Ground water	Groundwater contamination due to hydrocarbons seepages, and ground water quantity due to unregulated extraction of groundwater.	Site	Short - term	Low	Probable	Low	Irreversible	irreplaceable
Air Quality/ Dust	Dust generation by vehicle movement on dust roads, processing of the material and during the drilling and blasting operations.	Site	Short - term	Medium	Probable	Low	Reversible	Replaceable
Noise	Noise nuisance will be created by the drilling and blasting, operating processing plant and vehicle movement.	Site	Short - term	Low	Probable	Low	Reversible	Replaceable
Cultural Heritage	Impacts on cultural and heritage resources, if encountered.	Local	Short - term	Low	Improbable	Low	Reversible	Replaceable
Visual	The mining activities will change the visual character of the property.	Site	Short - term	High	Probable	Low	Reversible	Replaceable
Socio-economic	The effect of this mining activity for employment and socio-economic regime would be positive.	Regional	Short - term	Medium	Probable	Low (positive)	Reversible	Replaceable
Safety	Equipment theft and property vandalism	Local	Short - term	Medium	Probable	Low	Reversible	Replaceable

Health	Health impact due to dust inhalation, occupational injuries.	Local	Short - term	Medium	Probable	Low	Reversible	Replaceable
Waste Generation	Waste nuisance and littering	Site	Short - term	Medium	Probable	Low	Reversible	Replaceable
Traffic and access	Mining activities generates additional traffic on the existing number of the moving vehicle going in and out of the mining site using the existing regional roads.	Regional	Short - term	Low	Probable	Low	Reversible	Replaceable

9.4.4. The positive and negative impacts that the proposed activity and alternatives will have on the environment and the community that may be affected

The impacts assessed has highlighted potential risks, important management strategies and control measures associated with the Project. It is considered that there are opportunities to substantially enhance and improve the current and on-going impacts by undertaking a well-planned and effective mining operation. The project has associated positive and negative impacts. Such impacts are described in Table 12-3

Table 14: Positive and negative impacts of the proposed activity.

Proposed Activity	Aspects
Positive	
Consultation, employment, and procurement	Potential for neighbouring communities to benefit from assistance with shared land management responsibilities.
	The opportunity of implementing processes around feral animal control.
	• Opportunities for employment and economic development; • Requirement for the supply of the goods and services from the local businesses; and • Requirement for short-term accommodation and thus benefiting the house rental and accommodation sector.
	• Supporting local recycling centre and local scrap metal merchant. Metals such as steel and copper wire will be collected in designated areas prior to removal from site for recycling.
	Negative
Excavations, material handling and decommissioning	• Soil compaction and soil erosion due to the movement of heavy vehicles in the on-site; and • Soil contamination due to hydrocarbon spillages from the fuel storages and vehicles.
	• Introduction of alien vegetation; and • Loss of flora and fauna and habitat destruction.
	Erosion and sedimentation leading to soil scouring and increased turbidity of water courses and drainage lines downstream.
	Contamination of groundwater due to chemicals and hydrocarbons seepage.
	Noise nuisance due to moving vehicles and equipment.
	Dust creation during clearance and excavations during the mining operations.
	Increased visual intrusion due to operation infrastructure and the movement of the operating equipment and vehicles.
	Project is unsustainable in terms of job security due to the life of project.
	Indigenous resources, values, and aspirational impacts.
	Waste generation including the domestic, scrap and hazardous waste.
	Inheritance of occupational health problems and exposure to occupational hazards.
	Addition to the existing traffic of the movement of vehicles

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

As part of the EIA process, all potential mitigation measures for risks related to site layout will be discussed and considered. This will also consider the comments made by I&APs during the public participation process. During the EIA process, the proposed mitigation measures for the assumed risks will be confirmed.

9.4.6. Motivation where no alternative sites were considered.

The prospecting activities are intended to extract mineral resources from the ground which will be then processed to produce products that can be sold to the market. This is an existing mining operation with existing servitudes that will be utilized as far as possible through the operation of the mining project and minimal or no infrastructure will be established due the site location.

9.4.7. Statement motivating the alternative development location within the overall site.

The area has the potential availability of the mineral of interest at a considerable quantity based on the previous mining operations, and therefore, there has not been alternative development locations identified within the overall site.

9.4.8. Description of aspects to be assessed as part of the EIA process

The EIA Phase will assess the overall environmental aspects affected by the proposed project in relation to listed project activities. The identified listed and specified activities for the project are the mining activities which include the following:

- Drilling and blasting;
- Vegetation clearance;
- Topsoil and overburden removal, and stockpiling;
- Excavation, loading and hauling of the material; and
- Rehabilitation

9.5. Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

Environmental Impact Assessment (EIA):

The purpose of the EIA Phase is to investigate the potential negative and positive impacts of a proposed project activities on the environment. The potential impacts will then be quantified

to assess the significance that an impact may pose on the receiving environment. The objectives of the EIA process are to:

- The EIA Phase investigates the potential negative and positive environmental impacts of proposed project activities. The potential impacts will then be quantified to determine the significance of an impact on the receiving environment. The goals of the EIA process are to:
- Ensure that the potential biophysical and socioeconomic impacts of the proposed Project are considered during the decision-making process;
- Ensure that the project activities will not have a significant negative impact on the environment by presenting management and mitigation measures that will avoid and/or reduce those impacts;
- Ensure that I&APs, including the landowner, are informed about the project;
- Ensure that I&APs are given an opportunity to raise concerns, and make input to understand their needs and expectations; and
- Establish a process to enable authorities to make informed decisions, particularly considering their obligation to consider environmental and social factors when making those decisions.

The EIA process will evaluate the overall aspects of the proposed project in relation to the activities to be carried out. A sensitivity report was created to determine the sensitivity of the proposed area to make informed decisions about the consideration and implementation of mitigation measures for the impacts posed by the proposed activity.

- **Extreme**

These are unacceptable risks primarily critical in nature in terms of consequences in terms of the extensiveness and long-term environmental harm, permanent sacred site damage, fatality, and massive economic impacts that are effectively considered a possibility to almost certain to occur. Such risks significantly exceed the risk acceptance threshold and require comprehensive control measures, and additional urgent and immediate attention towards the identification and implementation of measures necessary to reduce the level of risk.

- **High**

Typically relate to significant to critical consequences including a major amount of environmental or heritage damage, and considerable safety, social or economic impacts that are inclined to cut across the possible to almost certain likelihood ratings. These are also likely to exceed the risk acceptance threshold and although proactive control measures have been planned or implemented, a very close monitoring regime and additional actions towards achieving further risk reduction is required.

- **Medium**

As suggested by the classification, medium level risks span a group of risk combinations varying from relatively low consequence / high likelihood to mid-level consequence / likelihood to relatively high consequence / low likelihood scenarios across environmental, social, and economic areas. These risks are likely to require active monitoring as they are effectively positioned on the risk acceptance threshold.

- **Low**

These risks are below the risk acceptance threshold and although they may require additional monitoring in certain cases are not considered to require active management. In general, such risks represent relatively low likelihood and low to mid-level consequence scenarios.

- **Very Low**

Impacts risks that are below the risk acceptance threshold and would at the most require additional monitoring and in many cases would not require active management. These risks can include unlikely to rare events with minor consequences and in essence relate to situations around very low probabilities of relatively minor impacts occurring.

Likelihoods have been categorised around the probability of occurrence, within the context of reasonable timeframes and frequencies given the nature of the anticipated project life. Levels of likelihood and the severity for the types of consequences that make up the risk rating determination are defined in the Table below:

Table 15: Likelihood rating system.

Rating	Likelihood	Definitions
5	Almost Certain	The event is expected to occur in most circumstances (The event is likely to occur once per year).
4	Likely	The event will probably occur in most circumstances (The event is likely to occur once every 1 – 2 years).
3	Possible	The event might occur at some time (The event is likely to occur once every 2 – 5 years).
2	Unlikely	The event could occur at some time (The event is likely to occur once every 5 – 10 years).
1	Rare	The event may occur only in exceptional circumstances (The event is unlikely to occur in any 10-year period).

Risk Analysis Matrix

The risk controls are linked to the level of risk and opportunity for reduction to meet the project rehabilitation objectives and goals linked to an environmentally and socially responsible operation, and those requirements are part of the regulatory obligations and impact

assessment guidelines. The table below provides a summary of the qualitative risk matrix adopted and the levels of risk for the various consequence and likelihood combinations.

Table 16: Risk Analysis Matrix.

		Severity of Consequence				
Likelihood of Consequence		Critical (5)	Major (4)	Significant (3)	Moderate (2)	Minor (1)
	Almost Certain (5)	Extreme	Extreme	High	High	Medium
	Likely (4)	Extreme	High	High	Medium	Medium
	Possible (3)	Extreme	High	Medium	Medium	Low
	Unlikely (2)	High	Medium	Medium	Low	Very Low
	Rare (1)	Medium	Medium	Low	Low	Very Low

The impact assessment will focus on the invasive activities of the project since they will have the potential to impact on the biophysical and the social environment of the proposed area. These activities include:

- Drilling and blasting;
- Vegetation clearance;
- Topsoil and overburden removal, and stockpiling;
- Excavation, loading and hauling of the material; and
- Rehabilitation.

Table 17: Identified and assessed impacts and risks the activity will impose on the preferred site

Aspect	Impact	Mitigation Measures	*C	*L	*R
Vegetation	• Disturbance of sites and species of ecological importance; • Loss of migration corridors, and access to nesting and refuge areas; and • Displacement of animal habitat by clearing the vegetation.	• excavated areas must be clearly demarcated to control movement of personnel and vehicles, providing clear boundaries for the operational sites to limit the spread of impacts. • Removal of vegetation must be undertaken in a phased approach to limit the number of plain areas at a time. • Temporary erosion control measures such as runoff berms that reduce flow velocity should be implemented around construction areas.	Pre – Mitigation		
			3	3	M
			Post – Mitigation		
			1	3	L
Animal Life	• Animal life will be affected in the immediate vicinity of the operation. • It is anticipated that the noise and general activity will keep the animal life away from the site while the operation is ongoing.	• Environmental awareness and training for workers about the animal life on site. • Killing of animals on site will be strictly prohibited and animal is found must be safely removed from the operation.	Pre – Mitigation		
			3	3	M
			Post – Mitigation		
			1	3	L
Soils and Land Capability	• The removal of vegetation associated with the mining activities will allow for increased surface water runoff, which may lead to change in topographical characteristics of the area. • Land clearance during the mining operations the natural sequence of soil layers thereby changing the soil and land capability. • The movement of heavy vehicles in the operation area will result in compaction of soil, water runoff and soil erosion especially during the rainy season. • The equipment and vehicles may contaminate the soil due to oil spillages.	Removal of vegetation must be undertaken in a phased approach to limit the number of exposed areas at a time. Regular roads maintenance of eroded shoulders. A cleaned-up of any hydro-carbon spills on soil must be undertaken by trained personnel using commercially available emergency clean-up kits.	Pre – Mitigation		
			2	3	M
			Post – Mitigation		
			1	3	L
Surface water resources	• Contamination of water resources and deterioration of water quality; and • Disturbance of free drainage and runoff.	• Remediate using commercially available emergency clean up kits; and • Re-profiling and rehabilitation of the disturbed landscapes.	Pre – Mitigation		
			2	2	L
			Post – Mitigation		

			1	2	VL
Groundwater resources	• Groundwater contamination due to chemicals and hydrocarbons seepage.	• Remediate using commercially available emergency clean up kits.	2	2	L
Noise	• Increase in ambient noise levels during the operational phase; • Disturbances to faunal species during the operational phase.	• Limiting the operation activities working hours to daylight hours (07h00 to 17h00) and not undertaking such activities at all on Sundays and public holidays. • Applying an operating buffer of a minimum 500m, but preferably 1000m between mining operation and any dwellings. • It must be noted that the speed limit for driving within a community and mining permit site shall be limited to 40Km/h on exposed surfaces.	Pre – Mitigation 3 Post – Mitigation 2	 3 3	 M M
Air Quality/Dust	• Possible dust generation in some areas including the during the mining operations; • Heavy dust deposition can have detrimental effects on plants if the leaves are smothered to the extent where transpiration and photosynthesis are affected. • Health impacts on livestock and people in proximity to the project site due to fine particulate emissions during construction and operational phases.	• Conduct dust fall-out monitoring • Enforcing the speed limits to reduce dust created by moving vehicles; • Haul roads in use will be subjected to dust suppression management measures; and • Implement concurrent rehabilitation activities to minimise the number of exposed surfaces that would result in dust generation.	Pre – Mitigation 2 Post – Mitigation 1	 3 3	 M L
Visual	• Visual disturbance due to site clearance. • Dust generated during the mining operations. • View disturbance due to the placement of the equipment and • offices used on site.	• Ensure that all exposed surfaces are subjected to dust suppression. • Clearing of vegetation must be undertaken within the demarcated boundaries of the designated area only.	Pre – Mitigation 3 Post – Mitigation 2	 3 2	 M M
Socio-economic	The effect of this mining activity for employment and socio-economic regime would be positive, but very limited in extent and duration.	• Skill development and transfer. • Maximise procurement of goods and services from local providers.	1	3	L
Cultural and Heritage Resources	There are no known important heritage resources on the site.	If any heritage resources, including fossils, graves, or human remains, are encountered these must be reported to the authorities.	2	1	VL
Waste	• Waste Generation including general, scrap and hazardous waste		Pre – Mitigation 2	 3	 M

	• If this waste is not stored correctly, can lead to environmental pollution including soil and water resources.	• Classification and separation of the waste into general or hazardous must be implemented onsite into different coloured and labelled bins. • Uncontrolled disposal of waste must strictly be prohibited on site	Post – Mitigation		
			1	3	L
Safety	Theft of equipment and the damage of infrastructure. Injuries to workers that may occur during the mining operations.	• Ensure that there is a controlled access to the site by deploying security personnel who would also conduct security patrols to monitor the perimeters of the project site thereby providing an increased security presence. • Consult with the local police branch to establish standard operating procedures for the control and/or removal of loiterers • All project infrastructure should be contained in a fenced and secured area to prevent unauthorized access and potential health and safety risks.	Pre – Mitigation		
			2	3	M
			Post – Mitigation		
			1	3	L
Health	The dust generation with potentially particulate matter, which can be inhaled, causing respiratory diseases.	• All area that are sources of dust must be subjected to dust suppression. • Continuous dust monitoring should be carried out throughout the project undertakings. • All employees will be issued with and instructed to wear the appropriated personal protective equipment (PPE).	Pre – Mitigation		
			2	3	M
			Post – Mitigation		
			1	3	L
*C – Consequences *L – Likelihood of consequences *R – Residual Risks VL – Very Low L – Low M – Medium H – High					

- **Public Participation Process followed:**

The public participation process will be undertaken in accordance with the NEMA and aligned with the regulatory requirements in terms of Chapter 6, Regulation 40 - 43 of the EIA Regulations, 2014 (as amended). Below is the summarised public participation process.

Table 18: Summary of the PPP followed

Activity	**Details**
Identification of stakeholders	Lodgment of the stakeholder database which represents various sectors of society, including directly affected and adjacent landowners, in and around the proposed project area.
Distribution of BID and the I&AP registration form	Handing of BID with the I&AP registration and some emailed to stakeholders on 24 August 2023.
Placing of newspaper advertisement	A newspaper advertisement in the **Heidelberg Herald** on the 23rd of August 2023.
Putting up of site notices	Placing of site notices at the proposed project site on 24 August 2023. A site notice placement report and map were developed to indicate the locations of site notices in and around the project area.
Announcement of Draft BAR	The Draft Basic Assessment Report will be released electronically, and copies are available to stakeholders on the Vahlengwe Mining Advisory and Consulting website (www.vahlengweadvisory.co.za) on 24 August 2023.
Consultation with Stakeholders	Group meeting which will include all the relevant I&APs will be undertaken on the as part of the public review period.
Obtaining comments from stakeholders	Comments, issues of concern and suggestions received from stakeholders will be captured in the Comment and Response Report (CRR). The CRR will be included in the updated Basic Assessment Report, which will be submitted to the DMRE and simultaneously made available to I&APs.
Announcement of Final Basic Assessment Report	The final BAR will be made available (www.vahlengweadvisory.co.za).

10. Assessment of each identified potentially significant impact and risk

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

Table 19: Assessment of the potentially significant impact and risk

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASES	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
Vegetation Clearance	**Vegetation** Destruction if natural vegetation Invasion of alien and invasive vegetation Exposure to erosion	Vegetation (flora) Animal life (fauna) Soil and land capability	Operational and decommissioning	Low	Minimise site clearance to areas as per the approved site layout plan; Avoid and protect sensitive or protected flora; Implementation of the alien species eradication plan; and Avoid loss of Fauna through conservation.	Low
Excavations, material handling and rehabilitation	**Noise** Noise Generation	Noise pollution	Operational and decommissioning	Low	Conducting regular equipment maintenance to minimise noise generated by the operating equipment; Limiting the operation times to daylight hours (07h00 to 17h00) on Mondays to Fridays, Saturdays (07h00 to 14h00) and no activities to be conducted on Sundays and public holidays; and Maintaining a buffer of 500m between the operation area and dwellings.	Low
Excavations, material handling and rehabilitation	**Visual** Visual impact of project activities Visual impact on observers travelling along the roads and residents	Topography and Visual Environment	Operational and decommissioning	Low	Minimise unvegetated areas as far as possible; Conduct concurrent rehabilitation of all disturbed areas.	Low

Excavations, material handling and rehabilitation	**Air Quality** Dust generation	Dust fall & nuisance from activities	Operational and decommissioning	Low	Implementation of the dust suppression system; Dust monitoring should be implemented; Low vehicle speeds enforcement on unpaved surfaces; and Maintain a buffer of 500m- 1000m between operational site and dwellings.	Low
Excavations, material handling and rehabilitation	**Soils and land Capability** Soil Compaction leading to erosion and sedimentation	Soil and vegetation disturbance	Operational and decommissioning	Moderate	No informal soil, additional or random routes should be developed in vicinity of the mining area; Overburden material may not be dumped in a random manner. Specific sites must be agreed upon and adhered to allow the use of the overburden in landscaping or fill where required; All vehicles should be inspected for leaks to prevent unnecessary spillages of diesel and oil on site that may lead to soil contamination. Provide adequate erosion control measures where required; No mixing of fertile soils with sub soils during the operation; and Implement concurrent and re-vegetate all disturbed with locally indigenous species as soon as possible.	Low

Excavations and concurrent rehabilitation	**Surface water and groundwater resources** Sedimentation and siltation of water courses Alteration of natural drainage patterns Contamination of water resources Degradation of surface and groundwater quality	Surface water quality Groundwater quality	Operational and decommissioning	Low	Remedy the possible effects of alteration to natural drainage lines; Implementing the hydrocarbon spillages management plan; Ensure that wastewater is appropriately managed; and Implement the erosion control measures.	Low
Excavations, material handling and rehabilitation	**Health and Safety** Health and safety of employees and surrounding communities	Human health and safe working environment	Operational and decommissioning	Low	All employees or sub-contractors entering site must be inducted to ensure the awareness of the developed health and safety plan; Appoint a health and safety representatives to be appointed during operations; Conduct daily inspections and observations of on-site activities shall take place; All incidents to be reported, recorded, investigated, and mitigated. Employees or sub-contractors must be informed as to what required PPE is applicable in working sections, and must always be equipped with appropriate PPE; Safety signs to be provided in areas considered as high-risk areas; Provided adequate first aid services on site; and	Low

					Promote ongoing health and safety awareness campaigns.	
Employment and procurement	**Socio-economic** Employment opportunities Local economic development	Socio-economic conditions		Moderate	Conduct consultation with local communities through the appropriate channels to ensure the use of local skills and businesses where possible; Ensure local employment and local services providers are appointed where possible from the local area; and ensure that goods and services are procured from within the local area as far as possible.	Medium
Excavation	**Heritage** Degradation of cultural significance heritage site	Loss of heritage & palaeontological resources		Low	Conduct Identification of all possible sites of archaeological value prior to the commencement of authorised work; and Identified sites must be clearly demarcated as no-go areas.	Low
Transportation of the material	**Traffic Management** Operating vehicles and access roads	Pressure on public transport infrastructure Socio-economic conditions		Low	The surface quality of the road is not negatively impacted resulting from vehicle movement; Sections of existing road surfaces which have been impacted on by the vehicle movement and Existing road surfaces must be utilised and maintained within baseline levels.	Low

Vehicle and equipment maintenance	**Waste Management** General waste generation and hazardous waste generation	Soil contamination Contamination of water resources Impacts on human health		Moderate	Waste skips should be provided on site and must be removed from the site once their full capacity has been reached. The waste skips will typically contain domestic waste. No liquid waste will be placed in these skips; Promoting the reduction, re-use, or recycle of waste where prevention is not possible; Disposal of waste to local waste disposal sites. There must be a service agreement for disposal of waste from the municipality for disposal of domestic waste; Littering should be strictly prohibited, and waste generated by the workers that reside on site must be properly stored awaiting collection and proper disposal; and Implement waste classification and separation system.	Low

11. 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):

There are intended specialists' studies to be conducted in this regard.

Table 20: 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.
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	

Attach copies of Specialist Reports as **Appendices**

12. Environmental impact statement

12.1. Summary of the key findings of the environmental impact assessment;

The assessed impact ratings after implementation of the mitigation measures described above are as follows:

Table 21: Summary of the Environmental Impact Assessment

Impacts	Activity Phases	Significance	
		Pre – Mitigation	Post – Mitigation
Flora and Fauna	Operational, and Decommission	Low	Low
Noise	Operational, and Decommission	Low	Low
Visual	Operational, and Decommission	Low	Low
Air Quality/Dust	Operational, and Decommission	Moderate	Low
Soils and Land Capability	Operational, and Decommission	Moderate	Low
Surface	Operational, and Decommission	Moderate	Low
Groundwater Resources	Operational, and Decommission	Low	Low
Health and Safety	Operational, and Decommission	Moderate	Low
Socio – Economic	Operational, and Decommission	Low	Low
Cultural and Heritage Resources	Operational, and Decommission	Low	Low
Traffic	Operational, and Decommission	Low	Low
Waste	Operational, and Decommission	Moderate	Low

Most of the identified impacts will occur for a limited period and the extent of the impacts will be localised. All the identified impacts can be suitably mitigated with the residual impact ratings being of **low** significance. After the mining activities have been completed and the land will be rehabilitated with an intent to returned to its pre-mining impacts state.

12.2. 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 3.**

Figure 11 : Site plan

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

Table 22: Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

Impact	Rating Pre-Mitigation	Operation	Decommission	Rating Post-Mitigation
Positive (+)	**Low**	Employment opportunities and job security Support to local businesses and SMME's Income generation for accommodation business sector Supporting local recycling centre and local scrap metal merchant.	Employment opportunities Land and soils capability restoration Re-vegetation and regeneration of the indigenous vegetation Shared land management responsibilities.	**Low**
Negative (-)	**Low**	Habitat disturbance Vegetation disturbances due to vegetation clearance Alien vegetation species invasion Soil erosion	Visual nuisance Health and Safety impacts Surface and groundwater contamination Impacts on traffic	**Low**

		Impacts on groundwater quality Waste generation Visual nuisance to moving equipment and vehicles	Unsustainable employment and Job losses	

12.4. Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

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

The objectives of the EMPr will be to:

- Provide sufficient information to strategically plan the mining activities as to avoid unnecessary social and environmental impacts;
- Ensure that the mining activities are conducted in a sustainable manner;
- Develop an approach that will ensure compliance with relevant legislations; and
- Provide a management plan that is effective and practical for implementation.

Through the implementation of the proposed mitigation measures it is anticipated that the identified environmental impact s can be managed and mitigated effectively.

- Heritage/cultural resources can be managed by avoidance of known resources and though consultation with landowners/stakeholders;
- Noise generation can be managed through consultation with the neighbouring landowners and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary;
- Visual intrusion can be managed through consultation with landowners/stakeholders;
- Dust generation can be managed by limiting as far as possible the exposure of surfaces, application of dust suppression methods on exposed surfaces;
- Soil disturbance and clearance of vegetation can be managed by limiting to the absolute minimum disturbance required and re-vegetation with the locally indigenous species as soon as possible;
- Manage as far as possible the soil, surface water and groundwater contamination by hydrocarbons by conducting proper vehicle maintenance, refuelling with care to minimise the chance of spillages and by having a spill kit available on each site;
- Conduct an appropriate public consultation and conflict resolution during stakeholder consultation phases. All working personnel will be made aware of the local conditions and sensitivities in the mining area and that they always treat residents with respect and courtesy

12.5. Aspects for inclusion as conditions of Authorisation.

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

It is the opinion of the EAP that the following conditions should form part of the authorisation:

- Maintain a buffer of 100m from a water course;
- Maintain a minimum 100m buffer from any infrastructure or dwelling; and
- I&APs should be engaged on a regular basis to address any complaints brought about the mining activities.

12.6. Description of any assumptions, uncertainties, and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The specific focus will be given to wetlands on the mining site to ensure that valued surface water resources are not threatened or inadvertently damaged. In addition, landowners will be engaged with to address their concerns, if any exists, regarding the impacts of dust generation and noise nuisance.

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

12.7.1. Reasons why the activity should be authorized or not.

The applicant is committed to conduct the mining activities in a sustainable manner and to comply with the prescribed environmental legislations to protect the environment and manage as far as possible the impacts associated with the project. Therefore, the applicant will ensure that:

- the environmental impacts associated with the mining activities are deemed to be minimal provided that the proposed mitigation is implemented;
- the availability of the financial provision for the final rehabilitation and any other unforeseen impacts during the decommissioning phase of the projects;
- with appropriate care and consideration, the impacts resulting from the mining activities can be suitably avoided, minimised, or mitigated;
- with implementing the appropriate rehabilitation activities, the impacts associated with the mining activities can be reversed; and
- Without the implementation of the mining project jobs will not be created and no contribution to the GDP.

12.7.2. Conditions that must be included in the authorisation

The following conditions could form part of the authorisation:

- Maintain a buffer of 100m from a water course;
- Maintain a minimum 100m buffer from any infrastructure or dwelling; and
- I&APs should be engaged on a regular basis to address any complaints brought about the mining activities.

12.8. Period for which the Environmental Authorisation is required.

The authorisation is required for the duration of the mining permit which is an initial two (2) years plus a potential to extend by an additional three (3) years, renewal for each year. Therefore, a total period of five (5) years is required.

12.9. Undertaking:

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

- The undertaking is provided at the end of the EMPr.

12.10. Financial Provision:

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

A financial provision of approximately **R 764 438.00** has been budgeted for the mining activities over 5 years, for the rehabilitation activities.

12.10.1. Explain how the aforesaid amount was derived.

The financial provision calculations were undertaken in terms of the guidelines provided within the “DMR Guideline Document for The Evaluation of The Quantum of Closure-Related Financial Provision Provided by a Mine” (DMR, 2005). The closure components for the mining activities are summarised on the table below:

Table 23: Closure components to the mining activities

Components	Extent	Description
1.Dismantling of processing plant and related structures	140m^3	The processing plant that would require removal include: • Primary Crusher/feeder • Conveyor belts • Secondary crushers and screeners

2(A). Demolition of steel buildings and structures	0m^2	There are no steel structures
2(B). Demolition of reinforced concrete buildings and structures	0m^2	No concrete buildings will be required to be demolished
3. Rehabilitation of access roads	60m^2	There are temporary haul roads that will require rehabilitation
4(A). Demolition and rehabilitation of electrified railway lines	0m	There are no electrified railway lines
4(B). Demolition and rehabilitation of non-electrified railway lines	0m	There are no non-electrified railway lines
5. Demolition of housing and/or administration facilities	128m^2	There is damaged housing that will require demolition
6. Opencast rehabilitation including final voids and ramps	5ha	The excavated area will be required to be backfilled with the overburden
7. Sealing of shafts adits and inclines	0m^3	There are no adits
8(A). Rehabilitation of overburden and spoils	0,07	The overburden will be used to backfill the pits.
8(B). Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	0ha	There are no processing waste deposits and evaporation ponds
8(C). Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	0ha	There is no wastewater being generated on site
9. Rehabilitation of subsided areas	0ha	The mining activities are not associated with subsidence
10. General surface rehabilitation	0.05ha	The area that will require rehabilitation will include the stockpile area, processing area and haul roads.
11. River diversions	0m	The mining area is not associated with river diversions
12.Fencing	0m	No fencing would be required to be removed or demolished.
13. Water management	0.5ha	There are water circulation dams that needs to be rehabilitated

14. 2 to 3 years of maintenance and aftercare	0.09ha	All disturbances will be subjected to rehabilitation

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

The above-mentioned amount has been provided.

12.11. Specific Information required by the competent Authority

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

12.11.1.1. Impact on the socio-economic conditions of any directly affected person.

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

A full consultation process with the I&APs will be implemented during the environmental authorisation process. The purpose of the consultation will provide affected persons the opportunity to raise any potential concerns. Concerns will be captured and addressed within the public participation section of the Final BAR to inform the decision-making process.

12.11.1.2. 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).

There are no known heritage resources on the proposed site, hence, mitigation measures are proposed in this report in case when any heritage resources are discovered during the mining operations.

13. Undertaking

The EAP herewith confirms

- the correctness of the information provided in the reports; ☒
- the inclusion of comments and inputs from stakeholders and I&APs; ☒
- the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and
- 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:

Vahlengwe Mining Advisory and Consulting
Name of company:

23 August 2023
Date:

Appendix 1:

CV of the EAP

Appendix 2: MAPS

Appendix 2A: Locality map and Regulation 2 (2)

Appendix 2B:

Site Plan Map

Appendix 3:

Public Participation Process

A – Background Information Document

B – I&APs Registration Forms

C – Newspaper Advertisement

Appendix 4:

Land Use Map

Appendix 5:

Environmental Sensitivity Screening Tool