DRAFT SCOPING REPORT

FOR

ANALIZA BOERDERY (PTY) LTD

SCOPING REPORT FOR THE MINING OF SAND (GENERAL), SILICA SAND, AND DIMENSION STONE IN RESPECT OF PORTION 30 OF THE FARM BOSCHOEK 385 IR IN THE MAGISTERIAL DISTRICT OF SEDIBENG, GAUTENG PROVINCE.

NAME OF APPLICANT: Analiza Boerdery (Pty) Ltd

CONTACT NUMBER: +27 73 874 2599

POSTAL ADDRESS: Portion 30 of the Farm Boschoek 385 IR

PHYSICAL ADDRESS: Same as above.

FILE REFERENCE NUMBER SAMRAD: GP 30/5/1/1/2/2/1 (10111) MR

AS REQUIRED IN TERMS OF REGULATION 49 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (ACT 28 of 2002), AND IN ACCORDANCE WITH THE STANDARD DIRECTIVE FOR THE COMPILATION THEREOF AS PUBLISHED ON THE OFFICIAL WEBSITE OF THE DEPARTMENT OF MINERAL RESOURCES.

OCTOBER 2022

This document has been prepared by:

Vahlengwe Mining Advisory and Consulting
133 Bellairs Drive, Glenvista Extension 5,
Glenvista, 2058
+27 11 432 0062 | +27 81 895 1540
info@vahlengweadvisory.co.za
www.vahlengwe.co.za

Prepared for:

Analiza Boerdery (Pty) Ltd

Name	Responsibility	Signature	Date
Londolani Sitsula	Report Compiler		October 2022
Sunday Mabaso	Project Manager/Reviewer		October 2022

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE SCOPING PROCESS

1) The objective of the scoping process is to, through a consultative process—

(a) identify the relevant policies and legislation relevant to the activity;

(b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;

(c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;

(d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;

(e) identify the key issues to be addressed in the assessment phase;

(f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

(g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine

EXECUTIVE SUMMARY

Introduction

Analiza Boerdery (Pty) Ltd, hereafter referred as 'Analiza', has appointed Vahlengwe Mining Advisory and Consulting, hereafter referred as 'Vahlengwe', to undertake the Environmental Authorization application processes and associated specialist studies for the application of a mining right in terms of Section 22 of the Mineral and Petroleum Resources Development Act (MPRDA) 2002 (Act No. 28 of 2002) for Sand (general), Silica Sand, Quartzite and Dimension Stone in respect the Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Sedibeng, Gauteng Province. The area covers an area extent of 190.243 Ha.

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 area is currently well established with the existing infrastructure that is being utilized for the mining operations under a mining permit. Analiza has identified the potential of an economically viable mining which may carry for years and that is supported by the identified mineral resources and the extent of the reserves has proven the mining operation feasible. With all the evidence being put on a table for a progressing mining operation, Analiza has applied for a mining right for the extended years for the life of the operation. Therefore, Vahlengwe will be conducting the Environmental Impact Assessment processes to acquire the Environmental Authorization for Analiza.

Project Applicant

The details of the Project Applicant are included in the Table 1.1 below.

Table 1.1: Contact 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		
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
Telephone:	+27 73 874 2599	**Fax:**	0
Email:	david@analizaboerdery.co.za		

Project Overview

The open cast/pit operation is 10 m deep, and the excavated area is 2.2 ha. The mine produces approximately 5000 tons of sand and stone material per month and the material has been sold to the customers across all disciplines in the construction and hardware industries. The operation utilizes the traditional mining method of the occasional drilling and blasting, processing of the rock material from the mining pit through the crushing and sieving plant to produce various sizes of sand and aggregate material.

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

- Occasional drilling and blasting (last dated 3 years ago);
- Vegetation clearance;
- Topsoil and overburden removal, and stockpiling;
- Excavation, loading and hauling of the material; and
- Concurrent rehabilitation.

The mine has the following existing 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;
- Crushing, washing and screening plant;
- Weigh bridge;
- Storage facilities for oils and other hazardous materials;

- storage facilities (fuel and oils, and water);
- Spare parts storage containers;
- Water circulation dams; and
- Municipality services (waste removal, electricity, and sewage).

Purpose of this Report

A review of relevant background literature and the baseline environmental of the area is used to support the Scoping Process as part of the Environmental Impact Assessment (EIA) process. The biophysical and socioeconomic issues that require assessment are identified during this process, and project alternatives are provided where possible. During this process, key stakeholders (including affected state organs) and interested and affected parties are given the opportunity to express their concerns and comment on the proposed activities, allowing for the identification of additional issues that may require assessment. The issues raised in response to this Draft Scoping Report will be documented in a Comments and Responses Report, which will be attached as an appendix to the Final Scoping Report and submitted to the DMRE for decision-making in accordance with Regulation 21 (1) of GN R326.

Therefore, the purpose of this Draft Scoping Report is:

- To provide a description of the scope of the proposed project to be covered;
- To provide a description of the baseline environment;
- Provide the description of the process of the identification of areas requiring assessment;
- Provide a description of the level of assessment to be undertaken during the impact assessment;
- To provide details of how the stakeholder and the interested and affected parties' engagements will be conducted;
- Provide the details of the processes to be followed to inform the stakeholders and the interested and affected parties of the project activities and associated impacts; and
- Provide details of how the issues raised will be addressed.

Environmental Consultants

In order to comply with the NEMA Regulations, Vahlengwe Mining Advisory has been appointed as the Independent Environmental Assessment Practitioner (EAP) to carry out the EIA Process, Water Use License Application (IWULA) Process, associated specialist studies, and the required Public Participation Process (PPP) for the proposed mining operation.

The details of the EAP are contained in Table 1.2 below.

Table 1-3: Details of the EAP

Company name:	Vahlengwe Mining Advisory and Consulting (Pty) Ltd
Contact person:	Sunday Mabaso
Physical address:	133 Bellairs Drive, Glenvista, 2058
Telephone:	+27 11 432 0062
Email:	info@vahlengweadvisory.co.za

Approach and Methodology for the Public Participation Process

A public participation process has been conducted in terms of the EIA Regulations, 2014 (as amended). The objective of the PPP is to open a platform of engagements and consultation with the stakeholders including the organs of the state, and the directly or indirectly interested and affected parties of the projects. This process affords the stakeholders and the I&APs an opportunity to contribute to the assessment by raising comments and concerns regarding the project activities. The PPP is also conducted to ensure that local knowledge, needs and values are understood and taken into consideration throughout the process.

This Draft Scoping Report is open for public comment for 30 days, and all comments or concerns expressed will be recorded and addressed in the Comments and Responses Report (CRR). The 30-day comment period will begin on (11 October 2022- 09 November 2022). The following activities were undertaken to announce the Project and initiate the Scoping Phase:

- A Background Information Document (BID) was hand distributed and via email on **10 October 2022**;
- Newspaper advertisement was placed in the Mapepeza newspaper on the **13 October 2022;**
- A BID including a registration form was hand delivered to identified I&APs on **10 October 2022**;
- Site notices were placed around the site on **10 October 2022**; and
- An electronic copy can be accessed and downloaded from the Vahlengwe website www.vahlengweadvisory.com (Public Documents), and the data-free service portal.

Table of Content

1 Introduction 1
1.1 Project Background 1
2 Project Applicant 2
2.1 Details of the Applicant 2
2.2 Details of EAP 2
2.3 Expertise of the EAP 3
3 Description of the property 4
4 Locality map 5
5 Description of the proposed activity to be undertaken 7
5.1 Operating Method 7
5.2 Project Activity 9
5.3 Listed and specified activity 10
6 Policy and legislative context 11
7 Need and desirability of the proposed activities 17
8 Period for which the environmental authorisation is required 17
9 Description of the process followed to reach the proposed preferred site 18
9.1 Details of all alternatives considered 18
9.2 Details of the Public Participation Process followed 20
9.3 Summary of issues raised by I&APs 21
10 The environmental attributes associated with the sites 21
10.1 Baseline Environment 21
10.2 Description of the current land use 30
10.3 Description of specific environmental features and infrastructure on the site 31
10.4 Environmental and current land use map 31
1 1 Impacts identified 31
1 2 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks 34
12.1 Criteria to Consider when Determining Severity of impacts 34
12.2 The positive and negative impacts that the proposed activity and alternatives will have on the environment and the community that may be affected 39

12.3 The possible mitigation measures that could be applied and the level of risk 41
12.4 Motivation where no alternatives sites were considered 41
12.5 Statement motivating the preferred alternatives and site 41
12.6 Description of aspects to be assessed as part of the EIA process 41
12.7 Aspects to be assessed by specialists 41
12.8 Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site 42
12.9 Description of proposed method of assessing duration and significance 44
12.10 An indication of the stages at which the competent authority will be consulted 46
12.11 Details of the Public Participation Process to be followed during the EIA process 46
12.12 EIA process 47
12.13 Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored 47
13 Other information required by the competent authority 52
13.1 Impact on the socio-economic conditions of any directly affected person 52
13.2 Impact on any National Estate referred to in Section 3(2) of the National Heritage Resources Act 52
14 Undertaking regarding level of agreement..... ..53
References..... ..54

List of Tables

Table 1-1.: summary of the products supplied by the mine to the market……..… 1
Table 2.1: Contact Details of the Applicant……,……..…2
Table 2.2: Contact details of the EAP……...…2
Table 2.3: Expertise of the EAP…….... 3
Table 3-1: Property Description…….... 4
Table 5-1: Listed Activities……..11
Table 6-1: Policy and Legislative Context……....12
Table 9-1: Average monthly weather conditions in Heidelberg…… 24
Table 9-2: Table of population by race in LLM…….…. 28
Table 9-3: Table of the population dynamic in by gender LLM……..…29
Table 9-4: Table of the employment in the LLM……..… 30
Table 12-1: Consequence and significance rating……..… 37
Table 12-2: Impacts and their significance…….. 38

Table 12-3: Positive and negative impacts of the proposed activity…… 41
Table 12-4: Likelihood rating system…… 45
Table 15: Risk Analysis Matrix……..45
Table 12-6: Management and Monitoring of the residual risks……..49

List of Figures

Figure 3-1: Orthophoto locality map……..…5
Figure 3-2: Topographical locality map……...…… 6
Figure 9-1: Average monthly rainfall in Heidelberg……...…… 23
Figure 9-2: Average monthly temperature in Heidelberg……..…… 23
Figure 9-3: Average relative humidity in Heidelberg……..…. 24
Figure 9-4: Geology of the proposed area……..…..25
Figure 9-5: Locality of the Lesedi Local Municipality……...28
Figure 9-6: The graph of the population by gender at Lesedi Local Municipality……..… 29
Figure 9-7: Pie Chart of the percentage dwellings……..… 30
Figure 9-8: Environmental and current land use map……...…..32

LIST OF ABBREVIATIONS

AIPs	Alien Invasive Plants
BID	Background Information Document
CMA	Catchment Management Area
CRR	Comments and Response Report
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GNR	Government Notice Regulation
GPS	Global Positioning System
Ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IBAs	Important Bird Areas
IHI	Index for Habitat integrity
WULA	Integrated Water Use Licence Application
Km	kilometers
LLM	Lesedi Local Municipality
LoM	Life of Mine
M	meters
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MP	Mining Permit
MR	Mining right
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)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PHRA-G	Provincial Heritage Resources Authority of Gauteng
PIA	Palaeontological Impact Assessment
ROM	Run of Mine
SAHRA	South African Heritage Resources Agency
SAIAB	South African Institute of Aquatic Biodiversity
SANBI	South African National Biodiversity Index
SANS	South African National Standards
SAWS	South African Weather Service
SCC	Species of Conservation Concern
SIA	Social Impact Assessment
SMD	Sedibeng Magisterial District
SMME	Small Medium Enterprises
SWMP	Stormwater Management Plan
TDS	Total Dissolved Solids
WMA	Water Management Area
WML	Waste Management Licence

1. Introduction

Analiza Boerdery (Pty) Ltd, hereafter referred as 'Analiza', has appointed Vahlengwe Mining Advisory and Consulting, hereafter referred as 'Vahlengwe', to undertake the Environmental Authorization application processes and associated specialist studies for the application of a mining right in terms of Section 22 of the Mineral and Petroleum Resources Development Act (MPRDA) 2002 (Act No. 28 of 2002) for Sand (general), Silica Sand, and Dimension Stone in respect the Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Sedibeng, Gauteng Province. The area covers an area extent of 190.243 Ha.

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 area is currently well established with the existing infrastructure that is being utilized for the mining operations under a mining permit. Analiza has identified the potential of an economically viable mining which may carry for years and that is supported by the identified mineral resources and the extent of the reserves has proven the mining operation feasible. With all the evidence being put on a table for a progressing mining operation, Analiza has applied for a mining right for the extended years for the life of the operation. Therefore, Vahlengwe will be conducting the Environmental Impact Assessment processes to acquire the Environmental Authorization for Analiza.

1.1 Project Background

Analiza is currently operating under a mining permit with DMRE Reference Number GP30/5/1/3/2 (10050) MP which was granted on the 06th May 2014. 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 mining is currently producing and selling approximately 7 000 tons of the sand and stone dimension per month. The products that the mine is supplying to the market are as follows:

Table 1-1.: summary of the products supplied by the mine to the market

Sands – • Yellow sand, • Red sand, and • River sand	Stones – • 19 mm, • 13 mm, • 6 mm and • 9 mm.	Mixture- • G5 material

2. CONTACT PERSON AND CORRESPONDENCE ADDRESS

This section provides the details of the Project applicant as well as the EAP.

2.1. Details of the Applicant

The table below provides the contact details of the Applicant.

Table 2.1: Contact 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		
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
Telephone:	+27 73 874 2599	**Fax:**	0
Email:	david@analizaboerdery.co.za		

2.2. Details of EAP

Analiza has appointed Vahlengwe Mining Advisory and Consulting to undertake the environmental applications for the mining of sand (general), silica sand and dimension stones in respect of portion 30 of the Boschhoek 385 IR, in Sedibeng.

Table 2.2: Contact details of the EAP

Company name:	Vahlengwe Mining Advisory and Consulting (Pty) Ltd
Contact person:	Sunday Mabaso
Physical address:	133 Bellairs Drive, Glenvista, 2058
Telephone:	+27 11 432 0062
Email:	info@vahlengweadvisory.co.za

2.3. Expertise of the EAP

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

Table 2.3: Expertise of the EAP

NAME	Sunday Mabaso
QAULIFICATIONS	MBA: Climate Change and Energy Law
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 has recently completed an MBA with Milpark Business School and a post Graduate Certificate in Climate Change and Energy Law with the University of the Witwatersrand. His experience includes monitoring and enforcing compliance with Social and Labour Plan and Mine Economics in terms of the MPRDA and the Mining Charter, Water Use Licence Applications in terms of the National Water Act and Environmental Management and Waste Management in terms of NEMA and NEM: Waste Act.

NAME	Londolani Sitsula
QAULIFICATIONS	Bachelor of Earth Sciences in Mining and Environmental Geology
RESPONSIBILITY ON PROJECT	Project Leader and Report Compiler
EXPERIENCE	Londolani Sitsula is an environmental professional and has been in the mining and environmental field since 2017. She is an experienced environmental consultant with a detailed understanding of the potential environmental and social impacts associated with mining activities in a variety of environments. Her experience includes Environmental Assessments (BAR and S&EIR), WULA, Environmental Compliance Auditing, in the mining and environmental sectors. Her technical skills lie in report writing, specialist report review, environmental impact assessments, research on the mining and prospecting methods, and public participation.

3. Description of the property

The proposed mining right area is located on Portion 30 of the Farm Boschoek 385 IR in the Magisterial District of Sedibeng, Gauteng Province, covering an area extent of 190.243 Ha. The area is located approximately 11km South westerly of Heidelberg town and accessed through R42 road. The site is located in the catchment of the Suikerbosrand, quaternary catchment C21F, which forms part of the Upper Vaal River Water Management Area (WMA) within the Vaal Catchment Management Agency (CMA).

Table 3-1: Property Description

Farm Name:	Portion 30 of the Farm Boschhoek 385 IR
Application area (Ha)	190.243 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

4. Locality map

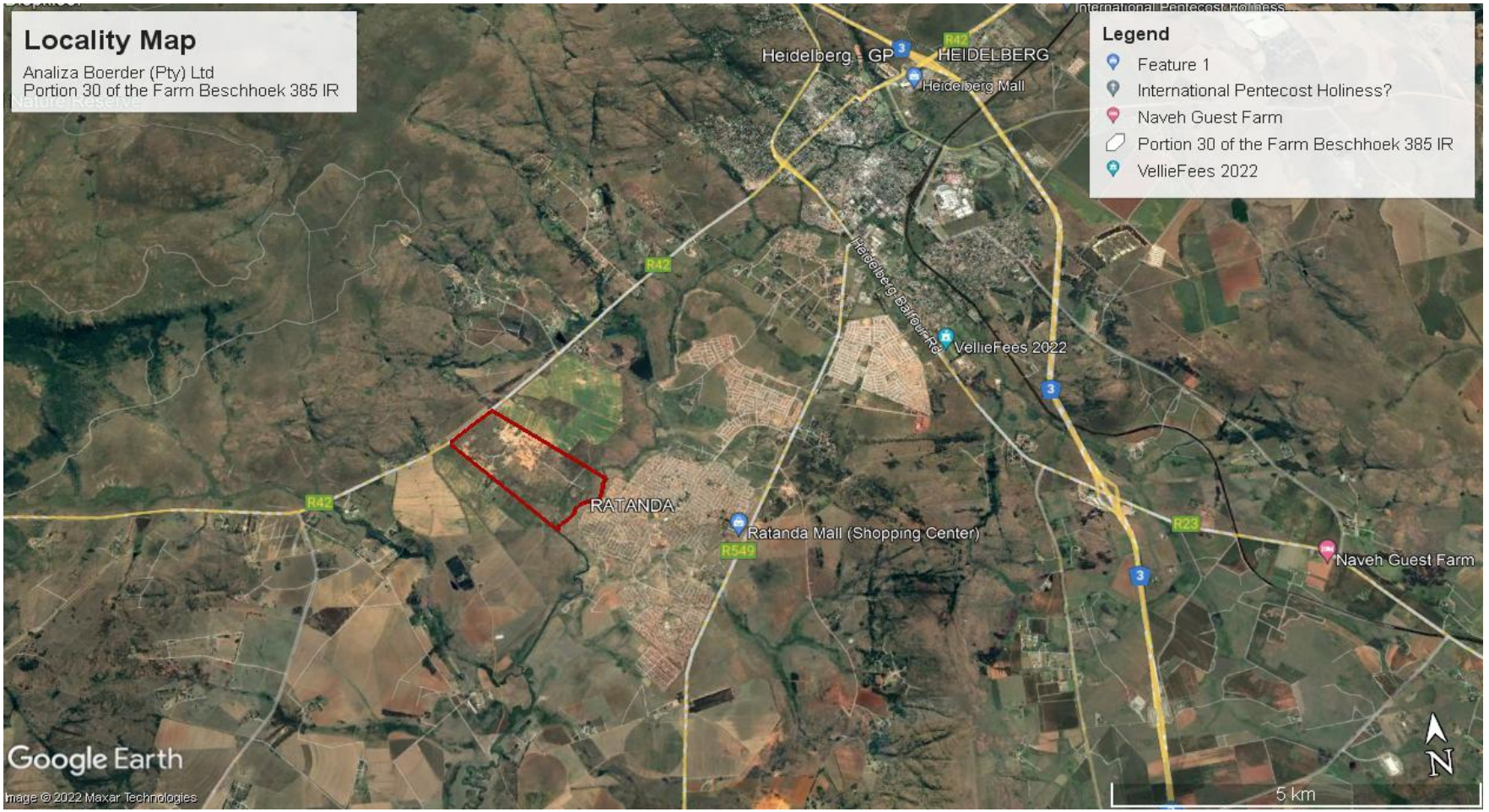

Figure 3-1: Orthophoto locality map

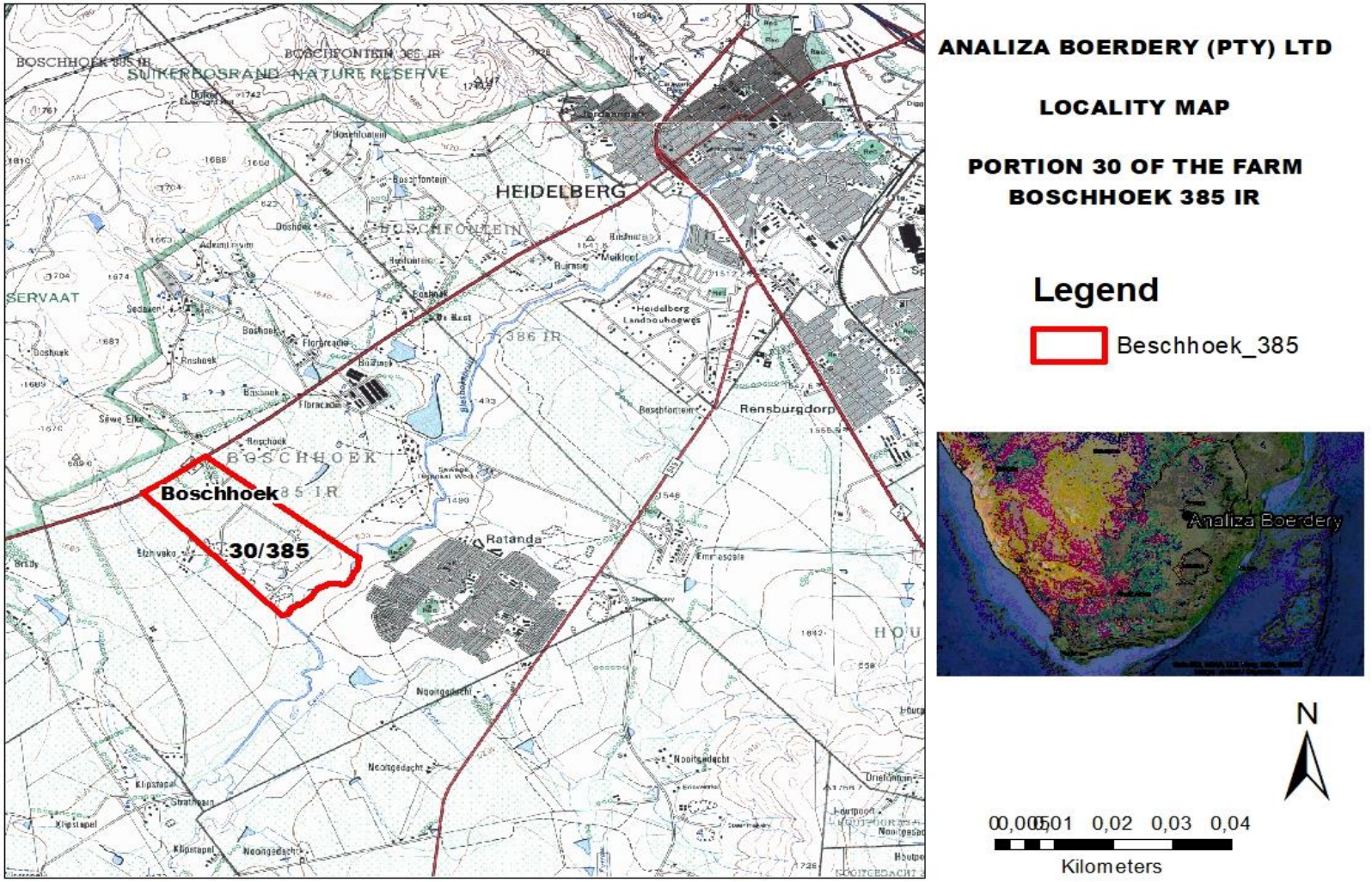

Figure 3-2: Topographical locality map

5. Description of proposed activities to be undertaken

The proposed mining right application is for the mining of sand (general), silica sand and dimension stones in respect of Portion 30 of the Farm Boschhoek 385 IR. The mining operations would entail the surface mining method of the open pit. The planned mining operations would have a total footprint of approximately 105.4713 ha and would be undertaken over the duration of the 30-year mining right period. There is one pit where the operation is currently being undertaken which will be expanded over the mining area footprint.

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,

5.1. 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.

5.2. Project Activities

Construction Phase

The mining operation has existing and well-established infrastructure with no period that will be required to develop the mine in order 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.

5.3. Listed and Specified Activities

Activities associated with the proposed mining activities are identified as in the Listed Activities in the Listing Notice 2, Activity No. 17 of the NEMA Regulations GN R325 (as amended), which states that:

Any activity including the operation of that activity which requires a mining right as contemplated in section 22 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) [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;

but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.

Table 5-1: Listed Activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY (HA OR M²)	APPLICABLE LISTING NOTICE *GN R 327, GN R 325 or GN R 324 (as amended 7 April 2017)*
Mining area	105.4713ha	GNR 325
Vegetation clearance	105.4713ha	GNR 325
Site Offices	105.93 m^2	Not Listed
Other buildings	0.3 ha	Not Listed
Stockpiling	0.94ha	Not Listed
Haul roads	160 m^2	Not Listed
Processing plant	0.015ha	Not Listed
Fuel storage	36.93 m^2	Not Listed
Settling dams	1.5 ha	Not Listed

6. Policy and Legislative Context

Table 6-1: 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 2017) 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 have to be adhered to, to inform decision making for issues affecting the environment. Section 24 (1)(a) and (b) of NEMA state that: The potential impact on the environment and socio-economic conditions of activities that require	Activities associated with the proposed mining activities are identified as in the Listed Activities in the Listing Notice 2, Activity No. 17 of the NEMA Regulations GN R325 (as amended).

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.	
Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002) A Mining Right is required by the Mineral and Petroleum Resources Development Act (MPRDA) before any mining activities can begin. An applicant must submit an application to the Regional Manager in accordance with Section 22(1) of the MPRDA, who must accept the application within 14 days if, among other things, no other person holds a right or permit for the same mineral and land. If the Prospecting Right application is accepted, the Regional Manager must request that the applicant comply with Chapter 5 of NEMA in terms of consultation and reporting. **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, as the case may be, at the relevant address specified in the appropriate form	Analiza has in terms of Section 22 of the MPRDA lodged an application with the DMRE for the mining of sand (general), silica sand and dimension stone in respect of Portion 30 of the Farm Boschhoek 385 IR in the Magisterial District of Sedibeng. Given the foregoing, the mining right application contemplated by Section 22 of the MPRDA constitutes listed activity 17 of Listing Notice 2. (GN R325 of the 7th April; 2022, (as amended).

National Environmental Management: Air Quality Act, 2004 (Act 39 Of 2004) The National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004) (NEM: AQA) governs all aspects of air quality, including pollution prevention, national norms and standards, and the requirement for an Atmospheric Emissions Licence (AEL) for listed activities that emit pollutants into the atmosphere and have or may have a significant negative impact on the environment. Activities requiring an AEL are listed in GN No. 893 (22 November 2013), which was published in accordance with Section 21(1) ((b) of the NEM: AQA. According to Section 22 of NEM: AQA, no one may engage in a listed activity without an AEL.	The mining operation will not be conducting activities that may require the application for an AEL. Regulation 2 of NEMAQA: National Dust Control Regulations GN R827 (01 November 2013) indicates that the purpose of the Act is to prescribe general measures to for the control of dust in all areas. Therefore, Analiza will be required in terms of Regulation 6 and 7 of the Act to implement measures for controlling dust and conducting an Ambient Air Quality Monitoring PM_{10} respectively. As part of the EIA Phase, an Air Quality Impact Assessment will be conducted, and the Project's activities will be guided by the NEM: AQA and the NAAQ standards. The required mitigation will be included in the EMPr.
National Water Act, 1998 (Act No. 36 of 1998) (NWA) The NWA ensures that water resources are used and protected in a sustainable and equitable manner. It is based on the principle that the National Government has overall responsibility and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, and that a person can only be entitled to use water if the use is permitted by the NWA. GN R 704 was published in June 1999 and aims to regulate the use of water for mining and related	The proposed mining project requires a WULA in terms of Section 21 of the NWA. All water management infrastructure will be designed to withstand a 24-hour rainfall event that occurs once every 1,000 years. A WULA will be compiled and submitted to the DWS

activities for the protection of water resources and states the following: • Regulation 4: No residue deposit, reservoir or dam may be located within the 1:100-year flood line, or less than a horizontal distance of 100 m from the nearest watercourse. Furthermore, person(s) may not dispose of any substance that may cause water pollution; • Regulation 5: No person(s) may use substances for the construction of a dam or impoundment if that substance will cause water pollution; • Regulation 6 is concerned with the capacity requirements of clean and dirty water systems, and • Regulation 7 details the requirements necessary for the protection of water resources.	as the decision-making authority in accordance with Section 21 of the NWA. The EIA process will assess the potential impacts of mining activities on groundwater resources.
National Environmental Management: Waste Act, 2008 The National Environmental Management: Waste Act of 2008 (No. 59 of 2008) (NEM: WA) governs all aspects of waste management, with a focus on waste avoidance and minimization. NEM: WA developed a system for categorizing and licensing waste management activities. Listed waste management activities that exceed certain thresholds are subject to an impact assessment and licensing process. Activities in Category A necessitate a Basic Assessment, whereas activities in Category B necessitate a Scoping and EIA process.	The mining operation activities will not be generating waste that will trigger or require for the application of the Waste Management License in terms of the NEMWA. However, Analiza must ensure that the waste generated must be properly managed through a Waste Management Programme (WMP).
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA) The NEM:BA governs the management and conservation of South Africa's biodiversity within the framework established by NEMA. This Act also governs the protection of species and ecosystems that require national protection, as well as the management of invasive and alien species. The following regulations have been promulgated in accordance with the NEM:BA and are also relevant: • Alien and Invasive Species Lists, 2014 published (GN R.599 in GG 37886 of 1 August 2014); • National Environmental Management: Biodiversity Act, 2004: Threatened and Protected Species Regulations; and	A Fauna and Flora Impact Assessment will be conducted as part of the EIA Phase.

National Noise Control Regulations, R.154 of 1992 (the Noise Regulations) promulgated in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989) The National Noise-Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCRs) form part of the Environmental Conservation Act and these Regulations apply to external noise. The NCRs differentiates between Disturbing Noise levels (which is objective and scientifically measurable which are generally compared to existing ambient noise level) and Noise Nuisance (which is a subjective measure and is defined as noise that "*disturbs or impairs or may disturb or impair the convenience or peace of any person*"). Local Authorities use Controlled Areas to identify areas with high noise levels. Restrictions have been set out for development that occurs in these Controlled Areas. These regulations make provision for guidelines pertaining to noise control and measurements. The regulations make reference to the use of the South African National Standards 10103:2008 (SANS) guidelines for the Measurement and Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication. As such, a Noise Impact Assessment in accordance with the NCRs must be undertaken for submission to determine the potential disturbing and nuisance noise levels associated with a particular development.	A Noise Impact Assessment, including modelling, impacts and proposed mitigation measures will be undertaken for the EIA Phase.
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is the main piece of legislation in South Africa that protects and regulates the management of heritage resources. The Act requires Heritage Resources Agencies, in this case the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority of Gauteng (PHRA-G), to be notified of any developments that may exceed certain minimum thresholds as soon as possible.	A Heritage Impact Assessment will form part of the EIA Phase.

7. Need And Desirability of the Proposed Project

Need

The project is currently operational under a mining permit of which will be lapsing very soon. Analiza had identified valuable mineral resources that will allow them to mine for over thirty years, and therefore, requires a mining right in terms of the MPRDA in order to operate, hence an environmental is also required in terms of NEMA. The need for the mining right and an environmental authorization is to continue contributing to the country's economy and in the pursuance of the sustainable development of the nation's mineral resources. The intent of the Minerals and Mining Policy of South Africa (1998) is to ensure security of tenure of the mining rights, and further states that:

- "The South African mining industry, one of the country's few world-class industries, has the capacity to continue to generate wealth and employment opportunities on a large scale;
- Mining is an international business and South Africa has to compete against developed and developing countries to attract both foreign and local investment. Many mining projects in South Africa have tended to be unusually large and long term, requiring massive capital and entailing a high degree of risk; and
- South Africa has an exceptional minerals endowment, and in several major commodities has the potential to supply far more than the world markets can consume."

Desirability

Since the start of this mining operation, the operation has had a number of 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 for the duration of the LoM.

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. Period for which the Environmental Authorization is Required

- The Environmental Authorization for the proposed project for the Project will be required for a period of 30 years.

9. Description of the process followed to reach the preferred site alternatives

This section is about determining the specific site layout and the location of infrastructure and activities on site after taking into account the issues raised by interested and affected parties, as well as considering alternatives to the initially proposed site layout.

9.1. Details of all alternatives considered

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;

There is no alternative property on which or location where the activity will be undertaken considered since the mining activities are currently being undertaken under a mining permit. A mining right is therefore required to continue with the mining operations since the mining permit is only valid for a short period of time. There is pre-existing infrastructure on the property required to sustain the mining operations.

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

- **Public Participation Materials**

Following legislative requirements and best practices, it is critical to create documentation that is easily accessible to all stakeholders affected or interested in the project. The documents listed below have been created and distributed to all stakeholders listed in the stakeholder database. The materials used for public participation 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; and
- The public review and comment period for the Draft Scoping Report.

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:

Laminated A3 sized site notices informing the I&APs about the proposed project at the boundary of the proposed site as required by Section 24J of NEMA read with EIA regulation Section 41 on **11 October 2022**. 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 right 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 **Mapepeza Newspaper** dated **13th October 2022.**

Public meeting:

A public meeting with the interested and affected parties will be held at the nearby location accessible to every individual provided that a number of 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

Once the public's comments and responses have been received, this section will be included in the Final Scoping Report. All comments and responses received during the 30-day public comment period, as well as comments received prior to the Final Scoping Report's completion, will be included in this document.

10. The Environmental attributes associated with the alternatives.

10.1. Baseline Environment

10.1.1. Type of environment affected by the proposed activity.

- **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).

Figure 9-1: 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.

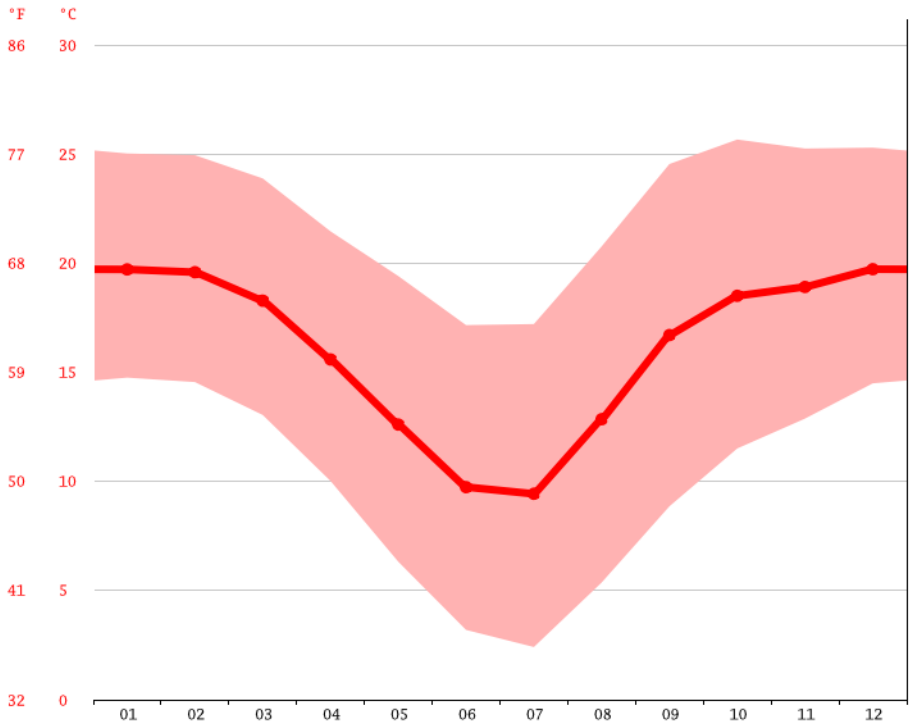

Figure 9-2: Average monthly temperature in Heidelberg; https://weather-and-climate.com/average-monthly-Temperature-perc,heidelberg-gauteng-za,South-Africa

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.

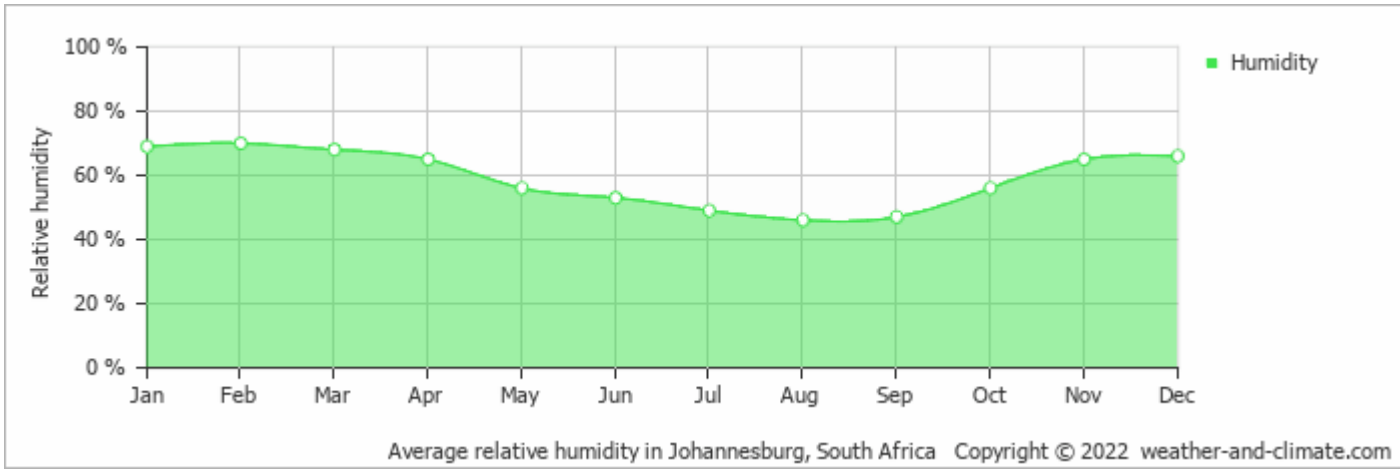

Figure 9-3: Average relative humidity in Heidelberg; https://weather-and-climate.com/average-monthly-Humidity-perc,heidelberg-gauteng-za,South-Africa

	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

Table 9-1: Average monthly weather conditions 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.

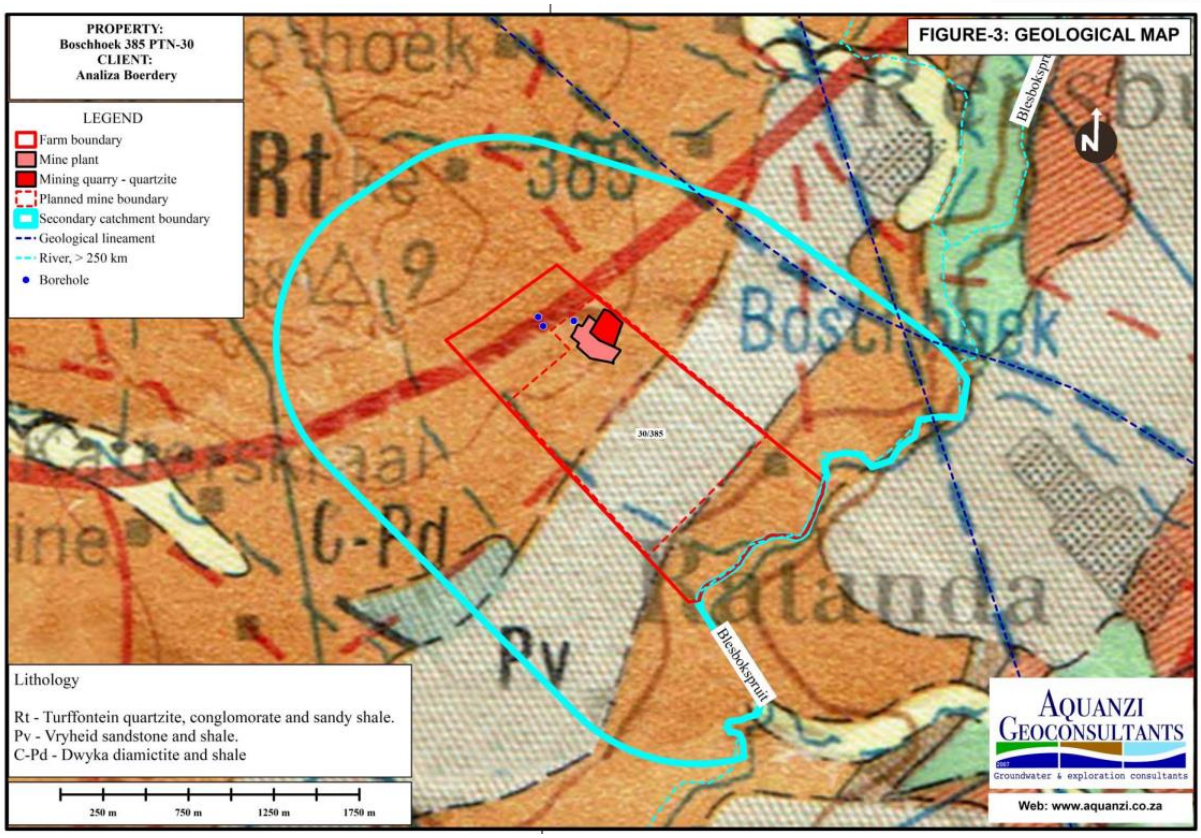

Figure 9-4: Geology of the proposed area (Aquanzi Geoconsultants, 2020)

- **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 located 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.

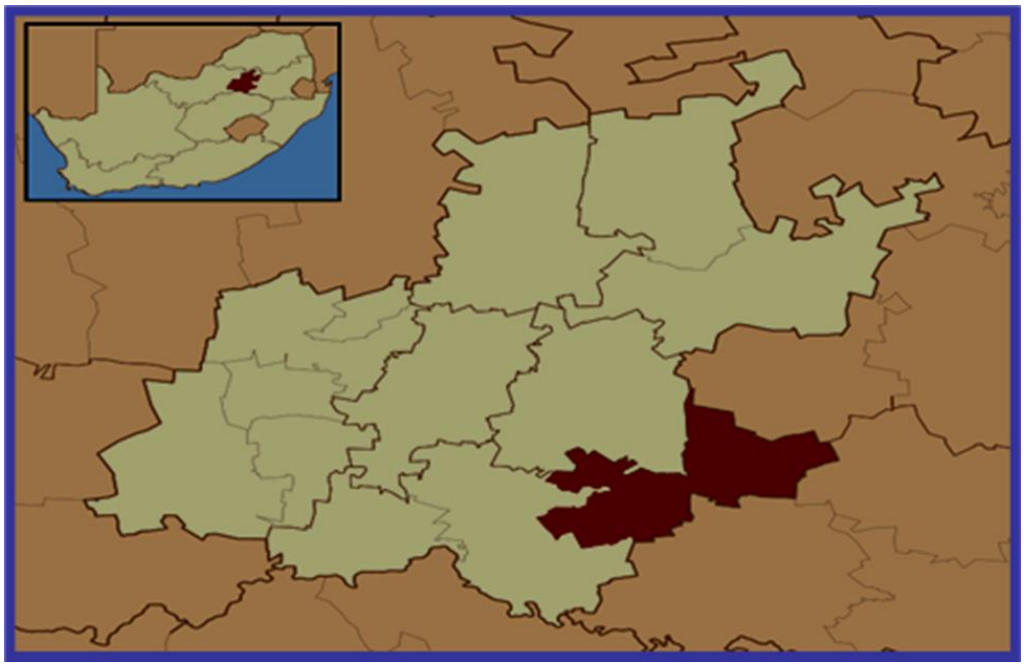

Figure 9-5: Locality of the Lesedi Local Municipality. (LLM 2022)

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 9-2: 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 9-3: 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**

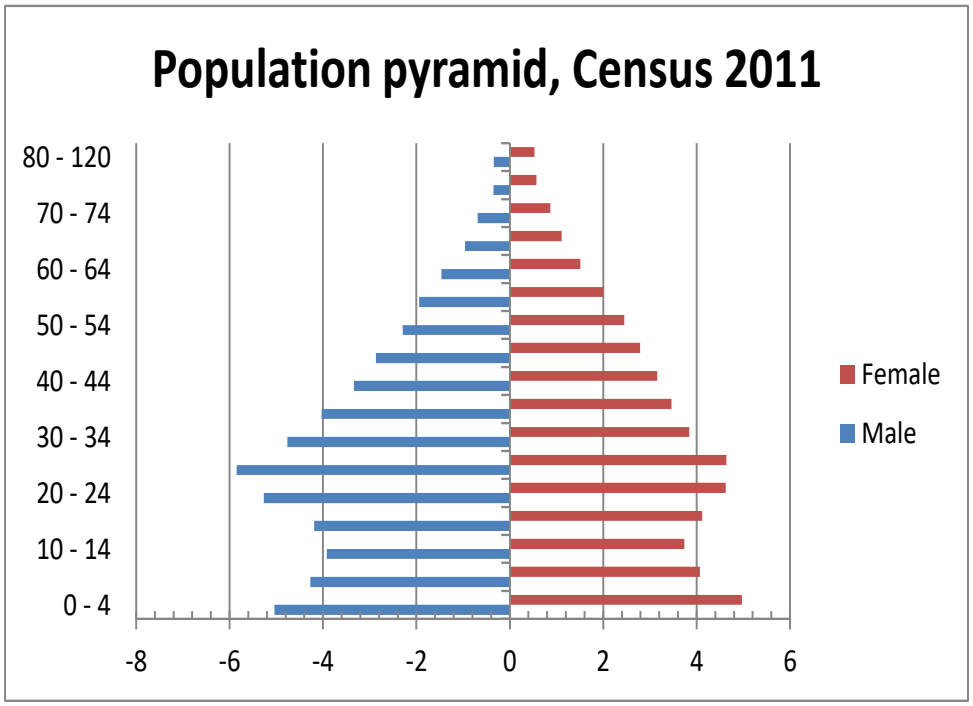

Figure 9-6: The graph of the population by gender at Lesedi Local Municipality. (LLM 2022)

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.

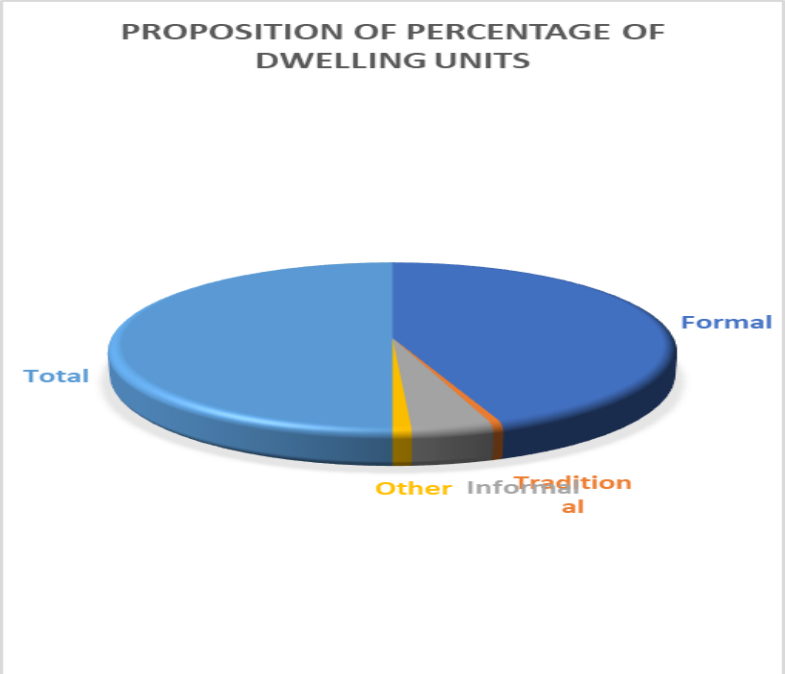

Figure 9-7: Pie Chart of the percentage dwellings. (LLM 2022)

Table 9-4: 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.

10.2. 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 conferences and events venues.

10.3. 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 mining right 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.

10.4. 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 below. There were no cultural or heritage sites identified on site.

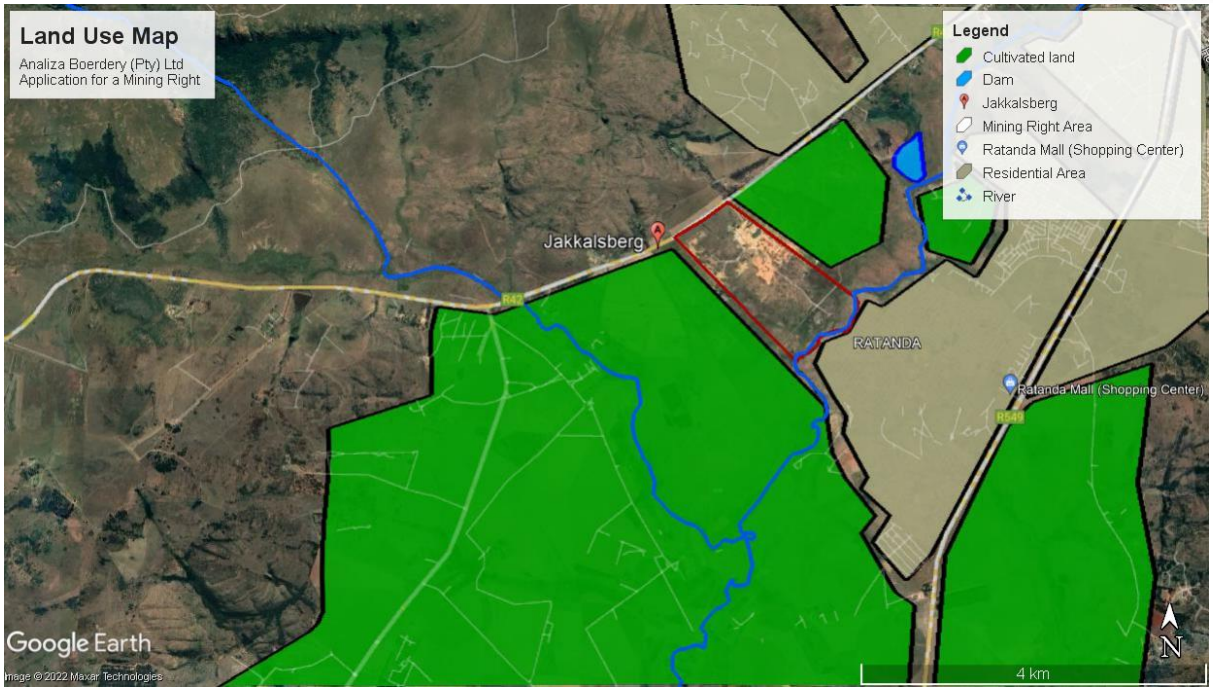

Figure 9-8: Environmental and current land use map.

11. 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 right area boundary, then flows along the southern boundary and to the south westerly of the mining right 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.

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

12.1. 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 of time.
- **Frequency** of the impact occurring: An indication of how often an aspect, as a result 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 a number of 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.

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 processes continue in a modified way.	**6**
	High	Function or process of the affected environment is disturbed to the	**8**

		extent where it temporarily or permanently ceases.	
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**

Table 12-1: Concequence and significance rating.

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 12-2: Impacts and their significance.

Aspect	Impacts	Extent	Duration	Magnitude	Probability	Significance	Reversibility	Replaceability
Soils and Land Capability	There will be major disturbance on the soil and erosion at the proposed mining area due to the vegetation clearance and the removal of the topsoil.	Local	Long - Term	Medium	Highly 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	Long - Term	High	Definite	High	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 prospecting is ongoing.	Site	Long - Term	Medium	Definite	Moderate	Irreversible	Irreplaceable
Surface Water	The river is located 1.3 km from the current operation; however, the operation will progress to as far as 100 m away from the river. This may have an impact on the water quality and quantity due to siltation and contamination.	region al	Long-term	Medium	Highly probable	Moderate	Reversible	Irreplaceable
Ground water	Groundwater contamination due to hydrocarbons seepages, drilling and blasting and water quantity due to unregulated extraction of groundwater.	Site	Long-term	Medium	Probable	Moderate	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	Long-Term	Medium	Highly Probable	Moderate	Reversible	Replaceable
Noise	Noise nuisance will be created by the drilling and blasting, operating processing plant and vehicle movement.	Site	Medium - Term	Mediun	Probable	Low	Irreversible	Replaceable
Cultural Heritage	Impacts on cultural and heritage resources, if any exists.	Local	Short - Term	Low	Improbable	Low	Reversible	Replaceable
Visual	The mining activities will change the visual character of the property.	Site	Long - Term	High	Definite	High	Irreversible	Replaceable
Socio-economic	The effect of this mining activity for employment and socio-economic regime would be positive.	Region al	Long-Term	Medium	Probable	Moderate (positive)	Reversible	Replaceable
Safety	Equipment theft and property vandalism	Local	Long-Term	Medium	Probable	Low	Reversible	Replaceable

Health	Health impact due to dust inhalation, occupational injuries.	Local	Long-Term	Medium	Probable	Low	Reversible	Replaceable
Waste Generation	Waste nuisance and littering	Site	Long-Term	Medium	Probable	Moderate	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.	Regional	Long-Term	Medium	Probable	Low	Reversible	Replaceable

12.2. 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 12-3: Positive and negative impacts of the proposed activity.

Impact	Rating Pre-Mitigation	Construction	Operation	Decommission	Rating Post-Mitigation
Positive (+)	**Medium**		• Employment opportunities and job security • Support to local businesses and SMME's • Income generation for accommodation business sector • Contributing to the national's economy	• Employment opportunities • Land and soils capability restoration • Re-vegetation and regeneration of the indigenous vegetation •	**Low**
Negative (-)	**Moderate**		• Visual nuisance • Health and Safety impacts • Surface and groundwater contamination • Impacts on traffic • Unsustainable job security • Disturbance on the landscape • Waste generation • Alien vegetation species invasion • Noise disturbances	• Visual nuisance • Health and Safety impacts • Surface and groundwater contamination • Impacts on traffic • Job losses	**Low**
Negative (-)	**High**		• Habitat disturbance • Vegetation disturbances • Loss of biodiversity • Soil erosion • Impacts on groundwater quality • Soils contamination • Visual nuisance to moving equipment and vehicles	• Habitat disturbance • Vegetation disturbances due to vegetation clearance • Alien vegetation species invasion • Soil erosion • Impacts on groundwater quality • Waste generation • Visual nuisance to moving equipment and vehicles	**Medium**

12.3. 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 take into account 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.

12.4. 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.

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

There have been no alternative development locations identified within the overall site. The proposed final site layout will be based on the issues and comments of the interested and affected parties.

12.6. 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

12.7. Aspects to be assessed by specialists

The following Specialist Impact Assessments will be undertaken as part of the EIA Phase:

- Hydropedology Study;
- Agricultural Impact Assessment;
- Fauna and Flora Impact Assessment;
- Air Quality Impact Assessment;
- Noise Impact Assessment; and
- Social Impact Assessment.

The specialist reports will be included as part of the Draft EIA and will be made available for public review before submission to the decision-making authorities.

12.8. 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 in order 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 in order to understand their needs and expectations; and
- Establish a process to enable authorities to make informed decisions, particularly in light of 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 in order 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 12-4: 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 12-5: 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.

12.9. Description of proposed method of assessing duration and significance

The duration of impact is a temporal indication of how long the effects of the impact will last if the activity that caused the impact stops. For example, the impact of noise is transient (it goes away when the activity stops), whereas the impact of removing topsoil lasts much longer.

Duration of Impact is identified in terms of the following:

- Short-term – The impact will either disappear with mitigation or will be mitigated through the natural processes in shorter time span.
- 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.
- 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.
- Permanent – Intervention will not occur in such a way or in such a time span that the impact can be considered transient.

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. Impacts can be assigned a rating of a potential risk, uncertain risk and significant risk.

Potential Significant Risk

Impact will be of potential significant risk if any of the following applies:

- The extent is national to international;
- The duration is long term to permanent;
- The magnitude will be high and above the acceptable standard; and
- Requires extensive intervention to mitigate the impacts.

Uncertain Risk

Impact will be of moderate significant risk if any of the following applies:

- The extent is local to regional;
- The duration is medium to long term;
- The magnitude is above the acceptable standard; and
- The environmental impacts are uncertain and may require some interventions to limit the impacts in future.

Insignificant Risk

Impact will be of low significant risk if any of the following applies:

- The extent is site specific;

- The duration is temporary;
- The magnitude is within the acceptable standard; and
- The environmental is ecologically and physically stable and no further interventions will be required in future.

12.10. An indication of the stages at which the competent authority will be consulted.

The DMRE is the project's competent authority, and it will be kept informed throughout the Environmental Authorisation Application process. The DMRE has also been designated as a Key Stakeholder and will receive all notifications sent to I&APS throughout the process. The DMRE will also be invited to any/all public engagements and site inspections.

The following proposed Project dates apply to the Project Schedule:

- Submission of the Application Form: September 2022
- Assumed submission of the Draft Scoping Report for Public Review: 11 October 2022;
- Assumed submission of Final Scoping Report: October 2022;

12.11. Details of the Public Participation Process to be followed during the EIA process

In accordance with the NEMA, the public participation process will be aligned with the regulatory requirements outlined in Chapter 6 of the EIA Regulations, 2014 (as amended). Stakeholder feedback gathered during the Scoping Phase, as well as the outcomes of public meetings, will be carefully considered for future Public Participation activities and inclusion in specialist studies (where applicable). The primary focus of stakeholder meetings during this phase will be to share the results of the completed specialist impact studies, as well as the associated suggested mitigation measures and recommendations.

It is expected that the Stakeholder Engagement process for the EIA Phase will be similar to the process used for the Scoping Phase. The premise of activities is to follow a single, integrated process while adhering to various legislative requirements for Public Participation. This will reduce stakeholder fatigue and provide stakeholders with a unified view of the Project. During the EIA Phase, a public meeting will be held to present the EIA process's findings.

12.12. EIA process

The following tasks will be undertaken during the EIA Phase:

- Further define the Project activities;
- Further assess the Project alternatives based on technical, economic, social and environmental criteria;
- Supplement the legal review of the Project;
- Undertake detailed specialist investigations and impact assessment;
- Confirm water requirements for the different phases of the mine and water resource;
- Identification of possible fatal flaws;
- Assess potential impacts using the methodology provided herein;
- Provide detailed and feasible mitigation and management measures in an EMPr; and
- Public participation activities, including public and key stakeholder meetings.

12.13. Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored

Table 12-6: Determination of the extent of the residual risks that need to be managed and monitored

POTENTIAL IMPACT	ASPECTS AFFECTED	SIGNIFICANCE	MITIGATION TYPE	Residual Risk
Vegetation Destruction if natural vegetation Loss of threatened plant species Invasion of alien and invasive vegetation Exposure to erosion Loss of biodiversity	Vegetation (flora) Animal life (fauna) Soil and land capability	Moderate	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
Noise Noise Generation	Noise pollution	Moderate	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
Visual Visual impact of project activities Visual impact on observers travelling along the roads and residents	Topography and Visual Environment	Moderate	Minimise unvegetated areas as far as possible; Conduct concurrent rehabilitation of all disturbed areas.	Moderate
Air Quality Dust generation	Dust fall & nuisance from activities	Moderate	Implementation of the dust suppression system; Dust monitoring should be implemented;	Low

			Low vehicle speeds enforcement on unpaved surfaces; and Maintain a buffer of 500m- 1000m between operational site and dwellings.	
Soils and land Capability Soil Compaction leading to erosion and sedimentation	Soil and vegetation disturbance	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 so as 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
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	Medium	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

Health and Safety Health and safety of employees and surrounding communities	Human health and safe working environment	Moderate	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 Promote ongoing health and safety awareness campaigns.	Low
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
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	Low

			Identified sites must be clearly demarcated as no-go areas.	
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
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

13. Other information required by the competent authority

In accordance with the provisions of Regulation 23(3) of the EIA 2014 Regulations (as amended) the EIA should include all information required as set out in Appendix 3 and in terms of Regulation 23(4) the Environmental Management Plan (EMP) should contain all information required as set out in Appendix 4. The Competent Authority has not requested any other information. The EIA report must include the following:

- Details of the EAP who prepared the report and the expertise of the EAP, including a curriculum vitae;
- A plan, which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale;
- A description of the scope of the proposed activity;
- A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;
- A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;
- A full public participation process including a CRR in the EIA report;
- Impact Assessment, including methodology, of the necessary environmental aspects, including the nature, significance, extent, duration and probability of the impacts occurring, positive and negative impacts, including mitigation and monitoring measures;
- An assessment of the proposed alternatives;
- A complete EMPr;
- An impact statement from the EAP, specific information the Competent Authority may require, and conditions for approval; and
- An EAP oath regarding the correctness of information provided in the report.

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

A description of the baseline socio-economic environment likely to be affected by the proposed project in the study area with a detailed assessment of the identified potential impacts and confirmation of their significance will be undertaken as part of the EIA phase.

13.2. Impact on any national estate referred to in section 3(2) of the national heritage resources act

A detailed assessment of the identified potential impacts and confirmation of their significance (with input from the specialist investigations) will be undertaken as part of the EIA phase.

14. 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:

10 October 2022

Date:

References

Department of Environmental Affairs. 2013. Mining and biodiversity guideline- Mainstreaming biodiversity into the mining sector.

Department of Water Affairs and Forestry (DWAF) 2005. Final draft: A practical field procedure for identification and delineation of wetlands and Riparian areas.

Department of Water and Environmental Affairs & Water Research Commission, First Edition 2000: Quality of Domestic Water Supplies: Volume 2: Sampling Guide.

Fish, L., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T. (2015). Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions. SANBI, Pretoria.

GDARD. (2014): Technical Report for the Gauteng Conservation Plan (Gauteng C-Plan v3.3). Gauteng Department of Agriculture and Rural Development: Nature Conservation Directorate,

GDARD. (2014). Requirements for biodiversity assessments: Version 3. Johannesburg: Gauteng Department of Agriculture and Rural Development; 2014.

Government Notice No. 1207. (2018). Amendments to the Listed Activities and Associated Minimum Emission Standards Identified in terms of Section 21 of the National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004). Government Gazette No. 42013. Cape Town, South Africa: Government Printer.

Government Notice No. 1210. (2009). National ambient air quality standards. Government Gazette No. 32816. Cape Town, South Africa: Government Printer.

Government Notice No. 326. (2017). Amendments to the environmental impact assessment regulations, 2014. Government Gazette No. 40772. Cape Town, South Africa: Government Printer.

Government Notice No. 365. (2006). Declaration of the Vaal Triangle Air-Shed Priority Area. Government Gazette No. 28732. Cape Town, South Africa: Government Printer.

Government Notice No. 486. (2012). National ambient air quality standard for particulate matter with aerodynamic diameter less than 2.5-micron metres (PM2.5). Government Gazette No. 35463. Cape Town, South Africa: Government Printer.

Government Notice No. 551. (2015). Amendments to the List of Activities, which Result in Atmospheric Emissions Which Have or May Have a Significant Detrimental Effect on the Environment, Including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage. Government Gazette No. 38863. Cape Town, South Africa: Government Printer.

Government Notice No. 893. (2013). List of Activities which Result in Atmospheric Emissions Which Have or May Have a Significant Detrimental Effect on the Environment, Including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage. Government Gazette No. 37054. Cape Town: Government Publisher.

Government Notice No. R533. (2014). Regulations regarding air dispersion modelling. Government Gazette No. 37804. Cape Town, South Africa: Government Printer.

Government Notice No. R982. (2014). Environmental impact assessment regulations. Government Gazette No. 38282. Cape Town, South Africa: Government Printer.

GPEMF. (2014). Gauteng Provincial Environmental Management Framework. Environomics, Gauteng Province, Agricultural and rural Development.

Green Fund, October 2015. Policy Brief 5. Green Economy Policy Brief Series. The use of dormant urban mine sites to achieve a greener South Africa: Investigation Innovative Solutions.

Hatch, “A Geological Survey of the Witwatersrand and other districts in the Southern Transvaal”: Quart. Journ. Geol. Soc., vol. liv, 1898, p. 73.

Lesedi Local Municipality. 2022. Integrated Development Plan 2022/2023: Final IDP

Mucina, L. et al. 2005. The vegetation of South Africa, Lesotho and Swaziland. Strelitura 19:397. South African National Biodiversity Institution, Pretoria.

Warren M. 2009. Terrestrial Ecology Assessment – Brandspruit Mine (Impumelelo Shaft) (January 2009). De Castro & Brits Ecological Consultants.

Rogers, “The Geology of the neighbourhood of Heidelberg”: Trans. Geol. Soc. S.A., vol. xxiv, 1921, p. 17