PROPOSED AGGREGATE MINE ON PORTION 1 AND 2 OF THE FARM VINGERFONTEIN 162, VICTORIA WEST, NORTHERN CAPE PROVINCE.

DRAFT BASIC ASSESSMENT REPORT

JANUARY 2026

REFERENCE NUMBER: NC30/5/1/3/2/11318MP

PREPARED FOR:
Power Construction (Pty) Ltd
PO Box 129,
Blackheath
7580
Tel: 021 907 1374
E-mail: nbezuidenhout@powergrp.co.za

PREPARED BY:
Greenmined Environmental
Unit MO1, Office No 37
AECI Site, Baker Square
Paardevlei
De Beers Avenue
Somerset West
7130
Tel: 021 851 2673
Cell: 084 5855706
Fax: 086 546 0579
E -mail: sonette.s@greenmined.co.za

EXECUTIVE SUMMARY

This Draft Basic Assessment Report (DBAR) has been prepared in support of an application by Power Construction (Pty) Ltd for a Mining Permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). The application involves the extraction of dolerite aggregate from a ±5 ha quarry footprint located on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West, within the Ubuntu Local Municipality, Pixley ka Seme District Municipality, Northern Cape Province.

Legal Context

The proposed activity triggers listed activities under the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended). A Basic Assessment Process is therefore required to identify potential environmental impacts, assess reasonable alternatives, consider public input, and outline mitigation and management measures. The process culminates in an Environmental Management Programme (EMPr), which allows the Department of Mineral Resources and Energy (DMPR) to determine whether Environmental Authorisation should be granted.

This DBAR is the first formal public review document and has been prepared in accordance with Regulation 19 of the EIA Regulations.

Project Overview

The project entails the establishment of a small-scale open-cast dolerite quarry to supply aggregate for regional construction and infrastructure needs. Mining will follow a phased approach involving drilling and blasting, excavation, crushing, screening, and stockpiling. Only 1–1.5 ha will be actively mined at any given time to enable progressive rehabilitation during the approximate 2–5-year operational period.

Access to the site will occur via an upgrade of an existing farm track to form a ±1.5 km access road. Power will be supplied by diesel generators. Water for dust suppression will be sourced from an authorised abstraction point, and any new abstraction required will trigger a Water Use Authorisation under the National Water Act, 1998.

Site Context and Environmental Setting

Terrestrial Ecology

The ecological assessment confirmed that the quarry footprint, access road, and associated infrastructure occur within natural Eastern Upper Karoo vegetation in good condition, with only small areas previously disturbed by livestock farming. The Northern Cape Biodiversity Spatial Plan (NCBSP, 2024) classifies the area as an Other Natural Area (ONA), indicating no Critical Biodiversity Areas on site.

Although the national Screening Tool flagged “Very High” terrestrial biodiversity sensitivity due to broader regional conservation priorities, field verification found no irreplaceable biodiversity features, no Riverine Rabbit habitat, and moderate overall ecological sensitivity. Several protected succulent and geophytic species do occur and will require permit-based removal or translocation.

Hydrology

Hydrological verification confirmed no perennial rivers, wetlands, or seasonal drainage lines within 500 m of the quarry footprint. Minor ephemeral flow paths occur along the access-road alignment and will be managed through erosion and stormwater controls. No activities will take place within any regulated watercourse.

Heritage and Palaeontology

The Heritage Impact Assessment identified three high-significance rock art engraving sites (VF001–VF003) located within or immediately adjacent to the proposed quarry footprint, requiring management in terms of the National Heritage Resources Act (NHRA). Due to the location of these sites within the operational footprint, avoidance through the implementation of buffers is not considered feasible. Accordingly, mitigation measures, including the potential relocation of engraved boulders, will be investigated, subject to the issuing of a Section 35 permit by SAHRA.

At this stage, it is noted that the engraved boulders are large in size and exhibit existing fracturing, which may limit the feasibility of successful relocation without damage. A suitably qualified rock art specialist will therefore be appointed to assess the technical feasibility, risks, and heritage implications of any proposed mitigation measures. In addition, the landowner has indicated that the engravings were created by his father; however, this information will be independently assessed and verified by the specialist. The findings and recommended management approach will be confirmed and presented in the Final Basic Assessment Report (FBAR).

The Palaeontological Impact Assessment refined the Screening Tool's "Very High" sensitivity rating and confirmed Low palaeontological sensitivity on site due to the non-fossiliferous dolerite underlying the footprint. No fossils were recorded, and palaeontological risk will be managed through a chance-find procedure.

Consideration of Alternatives

The Basic Assessment considered several alternatives, including:

Layout alternatives to reduce vegetation loss and heritage impact.

Mining method alternatives, where controlled blasting was selected for safety and operational efficiency.

Operational alternatives, including phased mining and concurrent rehabilitation.

The No-Go Alternative, which would avoid environmental disturbance but prevent aggregate supply and associated socio-economic benefits.

Site Alternative 1 (S1) was selected as the Best Practicable Environmental Option (BPEO) because it minimises ecological disturbance, provides safe access, and allows legally compliant management of higher-sensitivity heritage features.

Public Participation Process (PPP)

The PPP was undertaken in terms of Regulations 41–44 of the EIA Regulations and included:

- Notification of I&APs via letters, email, and site notices;
- Newspaper advertisement in Media24 and the Victoria West Rekord;
- Placement of four on-site notices at visible locations, including the farm boundary fence;
- Release of the DBAR for a 30-day public review period; and
- Engagement with landowners, municipal authorities, and neighbouring stakeholders.

All comments received will be recorded in the Comments and Responses Report (CRR), appended to the Final BAR.

Socio-Economic Context

The project occurs in a rural area with limited employment opportunities. According to the Ubuntu Local Municipality IDP (2023/24), priorities include job creation, infrastructure improvement, and local economic development. The quarry is expected to:

- Create direct employment during construction and operation;
- Support indirect jobs through transport and supply chains;
- Facilitate local infrastructure development, particularly road upgrades; and
- Contribute to skills development and economic diversification.

Potential Impacts and Mitigation

Key potential impacts include:

- Loss of natural vegetation and protected plant species;
- Temporary disturbance to fauna;
- Dust, noise, and visual impacts;
- Risk of soil erosion;
- Impact on high-significance rock art sites; and
- Low residual palaeontological risk.

With the implementation of the EMPr—covering footprint control, botanical walk-throughs, translocation of protected plants, stormwater and erosion management, dust and noise suppression, waste control, heritage mitigation, SAHRA permitting, and progressive rehabilitation—biophysical impacts are expected to be Low to Low–Medium and reversible.

Heritage impacts are reduced to a low-to-moderate, manageable residual risk with SAHRA-approved mitigation.

Conclusion

The Basic Assessment demonstrates that the proposed quarry is environmentally feasible, operationally viable, and socio-economically beneficial. The preferred layout and mining method represent the Best Practicable Environmental Option, ensuring that environmental and heritage impacts can be effectively mitigated in line with the principles of sustainable development set out in Section 2 of the National Environmental Management Act.

This Draft Basic Assessment Report is submitted for public review and comment, marking a key milestone in the Environmental Authorisation process.

LIST OF ABBREVIATIONS

BGIS	Biodiversity GIS
ABSA	Aquatic Biodiversity Specialist Assessment
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DBAR	Draft Basic Assessment Report
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DMPR	Department of Mineral and Petroleum Resources
DoT	Department of Transport
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EISC	Ecological Importance and Sensitivity Category
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
FEL	Front-end-loader
FSBP	Western Cape Biodiversity Plan
GDP	Gross Domestic Product
GNR	Government Notice
I&AP's	Interested and Affected Parties
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM: AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)

NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCB’s	Polychlorinated Biphenyl
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RA	Risk Assessment
REC	Recommended Ecological Category
S1	Site Alternative 1
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WMA	Water Management Area
WULA	Water Use Licence Application

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	Power Construction (Pty) Ltd
TEL NO:	Tel: 021 907 1374
FAX NO:	N/A
POSTAL ADDRESS:	PO Box 129, Blackheath 7580
PHYSICAL ADDRESS:	Corner of Strand (R102) and Wimbledon Roads, Blackheath
FILE REFERENCE NUMBER SAMRAD:	NC30/5/1/3/2/11318MP

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 of 2002) as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

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

  (ii) the degree to which these impacts –

    (aa) can be reversed.

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated.

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

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

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

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

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) of any activities regulated in terms of the Act. Power Construction (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Power Construction (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended April 2017) (EIA Regulations).

i) Details of the EAP

Name of the Practitioner:	Mrs Sonette Smit (Senior Environmental Consultant)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	sonette.s@greenmined.co.za
EAP Registration No:	2020/2467

ii) Expertise of the EAP.

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

Mrs. S Smit has sixteen years of experience in environmental legal compliance audits, (GIS) geographic information system, mining right and permit applications and applications for environmental authorisations & Water use applications. Please find full CV attached in Appendix K.

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

Sonette Smit is an Environmental Consultant with 17 years' experience in the environmental sector. She specialized in the last 12 years in the mining sector where she conducted mining related reports and programs. She has also been involved in several other environmental and water use application projects where

she compiled environmental management plans, environmental impact assessments, environmental audits, IWULA's/IWWMP's.

Mrs. S Smit is a registered Environmental Assessment Practitioner (registration no: 2020/2467) with EAPASA (Environmental Assessment 19 Practitioners Association of South Africa) since 2020. See a list of past projects attached as Appendix K.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	Portion 1 and 2 of the farm Vingerfontein 162, Victoria West, Northern Cape Province.
Application area (Ha)	5 ha
Magisterial district:	Victoria West
Distance and direction from the nearest town	The site lies approximately ±30 km west of the town of Victoria West, accessed via the R63 provincial road. The project area falls under the jurisdiction of the Ubuntu Local Municipality, within the Pixley ka Seme District Municipality.
21-digit Surveyor General Code for each farm portion	C08000000000016200001/ C08000000000016200002

c) Locality map

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

The requested map is attached as Appendix B.

Figure 1: Satellite view of the proposed mining permit area (red polygon), laydown area (Green polygon) and connecting access road (yellow line) of Power Construction (Pty) Ltd (image obtained from Google Earth).

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

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

Power Construction (Pty) Ltd has applied for a Mining Permit to extract dolerite aggregate from an area located on Portions 1 and 2 of the farm Vingerfontein 162, near Victoria West in the Northern Cape Province. The site lies approximately 30 km west of Victoria West, within the jurisdiction of the Ubuntu Local Municipality and the Pixley ka Seme District Municipality.

The proposed mining footprint, as defined in the Regulation 2.2 mine plan, covers a 5 ha area used for low-intensity livestock grazing consisting of a 1.5 ha hard-rock quarry, a 2.1 ha stockpile/crushing area, and a 1.5 km new access road connecting to the R63. The terrain consists mainly of shallow soils and rocky doleritic outcrops typical of the Karoo landscape. All mining-related activities will be confined within the approved mining permit boundaries.

Mining Method and Phasing

The proposed operation will employ open-cast quarrying methods to extract hard rock dolerite. Mining will follow a phased approach, where limited areas of approximately 1–1.5 ha will be actively mined at any given time. Each mined section will be progressively

rehabilitated before the next phase is opened, thereby minimising the disturbed footprint and reducing environmental impact.

The mining process will begin with removal and stockpiling of topsoil for later reuse during rehabilitation. Drilling and controlled blasting will be undertaken to fragment the dolerite, followed by loading and hauling using suitable earth-moving equipment. The mined material will be processed through a mobile or static crushing and screening plant to produce various aggregate sizes for local construction and infrastructure markets.

The operation is expected to continue for two years, with the option of a three-year extension subject to permit renewal. The quarry will support local road maintenance and building projects, contributing to regional infrastructure development and economic upliftment in the Victoria West area.

Key Mining Activities

The primary activities associated with the mining operation include:

- Phased removal and stockpiling of topsoil prior to mining;
- Drilling and blasting of dolerite rock;
- Excavation, crushing, screening, and stockpiling of aggregate;
- Hauling and transport of processed material via tipper trucks;
- Progressive rehabilitation, including sloping, landscaping, and re-spreading of topsoil to promote natural revegetation and restore land capability post-mining.

Infrastructure and On-site Facilities

The mining site will accommodate the following supporting infrastructure:

- Excavators, loaders, and earth-moving machinery;
- Drilling and blasting equiptment
- Mobile or static crushing and screening plant;
- Access and internal haul roads (including a ± 1.5 km entrance road connecting to the R63);
- Site office and workshop containers;
- Parking and laydown areas for vehicles and equipment;
- Chemical ablution facilities;
- Bunded diesel and oil storage (below NEMA EIA thresholds);
- Generators and/or solar units for power supply;
- Weighbridge and demarcated waste management area for general and hazardous waste.

Access and Transport

Access to the site will be obtained via a 1.5 km long new access road, which will be upgraded for safe use by heavy vehicles branching from the R63 provincial road. Short

internal haul roads will be developed to reach active phases of the quarry. These haul roads will be extended as mining progresses and rehabilitated as part of final closure. Aggregate will be transported via tipper trucks using the R63 to reach end-users and regional project sites.

Water and Power Supply

No formal electricity connections will be required. Power will be supplied by diesel generators and/or solar installations. Water for operational use (e.g., dust suppression and sanitation) will be sourced from permitted boreholes. Although the project does not inherently require a license for watercourse alteration, the applicant will apply for a Water Use Authorisation to ensure that all water-related activities associated with the project are legally compliant and formally recognised by the Department of Water and Sanitation under the National Water Act (Act 36 of 1998) due to certain regulated activities within the broader project footprint.

Overall Objective and Socio-Economic Contribution

The project aims to supply locally sourced construction material to meet the growing demand for aggregates in the Victoria West region. By reducing transport distances and providing a local source of dolerite, the operation will lower infrastructure costs, create employment, and support sustainable economic growth within the Ubuntu Local Municipality.

Figure 2: Operation Plan of the proposed site.

See attached as Appendix C a copy of the site activities map for the proposed project.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated mining activities

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	5 ha	N/A	Not listed
Stripping and stockpiling of topsoil.	5 ha	N/A	GNR 983 Listing Notice 1 Activity 21: Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.
Drilling and blasting.	±1.5 ha	N/A	
Excavation, loading and hauling to the processing area.	±1.5 ha	N/A	
Stockpiling and transportation of material from site	±2 ha	N/A	
Sloping and landscaping upon closure of the mining area.	±5 ha	N/A	
Replacing the topsoil and vegetating the disturbed area.	±5 ha	N/A	

iii) Description of the activities to be undertaken

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

The proposed activity involves the small-scale mining of dolerite within a 4.9-hectare mining permit area located on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West in the Ubuntu Local Municipality, Pixley ka Seme District, Northern Cape Province.

The purpose of the project is to extract dolerite aggregate to supply road construction, maintenance, and infrastructure development in the region. The operation will follow a phased open-cast method, limiting active disturbance to approximately 1–1.5 ha at any time, with progressive rehabilitation throughout the life of mine.

Site Setting and Geology

The proposed quarry area is situated within the Karoo Supergroup, underlain by dolerite intrusions (dykes and sills) typical of the region. Dolerite is a hard, dark, fine- to medium-grained igneous rock composed primarily of plagioclase feldspar and pyroxene. It is an excellent source of crushed stone and road-building aggregate due to its high strength and durability.

The terrain is gently undulating with low rocky rises and shallow depressions. Elevation averages around 1 250–1 280 metres above mean sea level (m.a.s.l.). Surface drainage is poorly defined, consisting mainly of diffuse runoff following rainfall events.

The soils are shallow, stony, and weakly developed lithosols overlying dolerite bedrock, with limited organic content and low agricultural potential. Vegetation is sparse, consisting of Karoo shrubland with isolated grass patches, representative of the Nama-Karoo Biome. The land is currently utilised for low-intensity livestock grazing.

PHASES OF THE PROJECT

Site Establishment Phase

This phase will prepare the site for mining and ensure environmental protection from the outset.

Demarcation of Mining Boundaries

Following receipt of the Environmental Authorisation (EA) and Mining Permit (MP), the 4.9-hectare mining area will be demarcated with visible beacons in accordance with the approved Regulation 2.2 mine plan. This ensures that all activities are confined within the authorised footprint.

Table 3: GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	31°22'22.76"S	22°51'55.84"E	-31.372988	22.86551
B	31°22'30.09"S	22°51'58.55"E	-31.375024	22.866264
C	31°22'45.20"S	22°52'01.15"E	-31.379223	22.866987
D	31°22'49.48"S	22°52'02.37"E	-31.380411	22.867326
E	31°22'50.61"S	22°51'56.49"E	-31.380726	22.865692
F	31°22'55.56"S	22°51'45.97"E	-31.382101	22.862769
G	31°22'56.91"S	22°51'44.75"E	-31.382475	22.862431
H	31°22'59.40"S	22°51'43.31"E	-31.383168	22.86203
I	31°23'01.32"S	22°51'43.27"E	-31.383701	22.862019
J	31°23'01.99"S	22°51'43.58"E	-31.383886	22.862106
K	31°23'06.27"S	22°51'45.68"E	-31.385074	22.86269
L	31°23'07.48"S	22°51'41.93"E	-31.38541	22.861647
M	31°23'03.25"S	22°51'39.83"E	-31.384235	22.861064
N	31°23'02.08"S	22°51'43.25"E	-31.383912	22.862013
O	31°23'01.39"S	22°51'42.89"E	-31.38372	22.861914
P	31°22'59.34"S	22°51'42.93"E	-31.383149	22.861925
Q	31°22'56.83"S	22°51'44.39"E	-31.382454	22.86233
R	31°22'55.26"S	22°51'45.85"E	-31.382017	22.862736
S	31°22'50.30"S	22°51'56.38"E	-31.380639	22.865662
T	31°22'46.47"S	22°51'55.18"E	-31.379576	22.865327
U	31°22'45.29"S	22°52'00.79"E	-31.379246	22.866885
V	31°22'30.19"S	22°51'58.17"E	-31.375052	22.866157
W	31°22'22.75"S	22°51'55.45"E	-31.372985	22.865403

Access Road and Haul Routes

Access to the site will be via gravel road connected to the R63 provincial road. A 1.5 km entrance road will be constructed from the gravel road to the mining area. Internal haul roads will be developed to link the active mining area with the crushing and stockpile zones. Haul roads will be extended as mining progresses and rehabilitated once they are no longer required.

The initial permit period is two (2) years, with an option to apply for a three-year extension in accordance with the MPRDA. Mining activities will under the supervision of a competent person appointed in terms of the Mine Health and Safety Act.

Figure 3: Satellite view showing the access roads (yellow lines) to the proposed mining area (green and red polygon).

Figure 4: Photo showing the existing entrance into the mining area.

Clearing of Vegetation

The mining footprint is located on minimally vegetated grazing land with sparse shrubs and rocky substrate. Vegetation clearing will be limited to areas required for safe operation, and topsoil will be conserved for later use in rehabilitation. All clearing will comply with the National Environmental Management: Biodiversity Act (Act 10 of 2004) and the Environmental Management Programme (EMPr).

Topsoil Stripping and Stockpiling

Topsoil will be stripped and stockpiled in berms no higher than 2 metres along the perimeter of the site. The A-horizon (100–300 mm, where present) will be removed prior to mining.

Stockpiles will be stabilised and seeded if left bare for extended periods. Given the limited soil depth, rehabilitation will focus on redistributing available soil to stabilise the landscape and support natural vegetation re-establishment.

Introduction of Mining Machinery

After site preparation, mobile mining equipment will be introduced, including:

- Drilling and blasting equiptment
- Excavators and front-end loaders;
- Articulated dump trucks;
- Mobile crushing and screening units; and
- Light vehicles for site supervision and material movement.

Temporary facilities will include a site office, laydown area, chemical toilets, and bunded fuel storage. No permanent infrastructure or fixed workshop will be constructed.

Operational Phase

The operational phase will comprise the extraction, processing, and distribution of dolerite. The operation will proceed in phases of approximately 1–1.5 ha, with concurrent rehabilitation of completed sections.

Mining Method

The method of mining will consist of:

- Drilling and controlled blasting to fracture dolerite rock;
- Excavation and loading of broken rock using earth-moving equipment;
- Hauling of material to the mobile crushing and screening plant;
- Processing into various aggregate sizes suitable for construction;
- Stockpiling and transport of aggregate to clients via tipper trucks on the R63.

All mining and processing activities will be contained within the approved mining permit boundary.

Drilling and Blasting

- Controlled drilling and blasting will be used to loosen the dolerite.
- Blasting will be undertaken by certified contractors in compliance with the Explosives Act (Act 26 of 1956) and the Mine Health and Safety Act (Act 29 of 1996).

- Blasting will occur only when required and within permitted times to minimise vibration and noise impacts.

Loading and Hauling

- Crushed material will be loaded using hydraulic excavators and front-end loaders.
- Material will be hauled via articulated dump trucks (ADTs) to the crushing and screening area within the permit boundary.

Crushing and Screening

- A mobile or semi-mobile crushing and screening plant will be used to process the dolerite into different aggregate sizes.
- Screens and conveyors will separate the material into:
    - Crusher run (G5/G6)
    - Base course material (G2–G4)
    - Various single-sized aggregates for surfacing or concrete applications.
- Due to the semi-arid nature of the Karoo, sufficient water supply might not always be available, in which case dust suppression by water will be done on a risk basis.

Stockpiling and Transport

- Processed material will be stockpiled on compacted area within the designated plant area.
- Stockpiles will be stabilised to minimise erosion and dust emissions.
- Aggregate will be transported via tipper trucks along the R63 to end-users in the surrounding area.

Water Use

Water will not be used for mineral processing. Dust suppression and domestic use will be the only water requirements. Dust will be controlled by:

- Restricting vehicle speeds to 40 km/h;
- Covering truck loads to minimise windblown dust;
- Reducing cleared areas to the smallest practical size;
- Using water carts to dampen haul roads when necessary.
- Due to the semi-arid nature of the Karoo, sufficient water supply might not always be available, in which case dust suppression by water will be done on a risk basis.

All water will be sourced from authorised sources or pumped from on site boreholes and transported to the site.

Electricity Supply

Operations will be powered by diesel generators and/or solar units. No grid electricity connection will be required.

Waste Handling

Due to the small-scale, mobile nature of the operation, minimal waste will be generated:

- General waste: Collected in bins and disposed of at a licensed municipal landfill.
- Hazardous waste: Contaminated material (e.g., oil or fuel spills) will be cleaned immediately and stored in designated hazardous containers for removal by a registered contractor.
- Ablutions: Chemical toilets will be provided and serviced by a licensed contractor.

No burning or burial of waste will be permitted.

Servicing and Maintenance

Minor servicing of equipment will take place in a demarcated, bunded service area. Emergency repairs in the pit will make use of drip trays and spill-absorbent materials. Fuel storage associated with the proposed activity will not exceed 80 m^3, which remains below the thresholds that trigger a listed activity in terms of the Environmental Impact Assessment Regulations, and all chemicals will be stored per SDS specifications. Hydrocarbon-contaminated soil will be remediated using approved biological products (e.g., OilCap).

Decommissioning and Rehabilitation Phase

Rehabilitation will be progressive throughout operations, and final closure will occur once all mining activities have ceased. The objective is to restore the site to a stable and safe condition suitable for low-intensity grazing.

Decommissioning Activities

- Removal of Equipment and Infrastructure: All mobile machinery, fuel storage, and temporary facilities will be removed from site.
- Stockpile Clearance: Remaining aggregate not required by the landowner will be removed.

- Sloping and Landscaping: Excavated areas will be shaped to stable, natural contours to prevent erosion.
- Topsoil Replacement: Available topsoil will be redistributed evenly to promote natural revegetation.
- Revegetation: Natural regrowth of indigenous species will be encouraged.
- Alien Vegetation Control: Category 1a and 1b species (as listed under NEM:BA) will be eradicated and monitored post-rehabilitation.

DMPR Final Rehabilitation Specifications

In compliance with the DMPR's closure objectives and Section 44 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002):

- All structures and waste material will be removed from the site.
- Unless otherwise agreed to in writing by the landowner, all stockpiled material must be removed from the site during the decommissioning phase.
- Disturbed or compacted areas will be ripped or scarified to a minimum depth of 200 mm to encourage infiltration and root establishment.
- Topsoil will be replaced to its original depth where available and stabilised with indigenous seed mix suited to the local biome (if applicable).
- No waste or scrap material may be buried or burned on site; all waste will be disposed of at licensed facilities.
- Photographic records will be taken at fixed points before, during, and after rehabilitation and submitted to the DMPR Regional Manager as proof of compliance.
- The permit holder will apply for a Closure Certificate in accordance with Section 43(4) of the MPRDA and GN R.940 (NEMA) upon completion of rehabilitation.

Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: “An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report”. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

The quarry will follow a phased and controlled mining sequence that integrates environmental management from the outset. By maintaining a small active footprint, progressively rehabilitating disturbed areas, and adhering to the DMPR’s closure requirements, the operation will balance resource utilisation, local economic benefit, and long-term land stability.

e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. • Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMPR-WC. Ref No: NC30/5/1/3/2/11318MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) • GNR 983 Listing Notice 1 Activity 21: Environmental Impact Assessment Regulations Listing Notice 1 Activity 21: • Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMPR-WC. Ref No: NC30/5/1/3/2/11318MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.*	The mitigation measures proposed for the site take into account the NEM: AQA, 2004 and the National Dust Control Regulations.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Dust Handling*.	
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM: WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM: WA.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment*	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology*. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The mitigation measures proposed for the site includes specifications of the NWA, 1998. A WULA will be applied for to the competent Authority, DWS.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations

f) Need and desirability of the proposed activities.

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

The proposed quarry responds directly to the regional demand for quality aggregate material required for construction and road maintenance projects in and around Victoria West and the Ubuntu Local Municipality. Currently, aggregate is sourced from distant suppliers, resulting in high transportation costs, project delays, and an increased carbon footprint due to long haul distances.

The proposed quarry will provide a local, reliable, and cost-effective supply of dolerite aggregate for:

- Wind farms and solar projects
- Provincial and municipal road upgrades and maintenance;
- Infrastructure and housing developments in Victoria West and surrounding rural communities;
- Private and commercial construction projects;
- Power Construction operations, ensuring operational efficiency and material availability within the region.

Establishing this local supply source will therefore support ongoing infrastructure investment, promote regional economic growth, and reduce dependency on external quarries.

Desirability within the Local Context

The Ubuntu Local Municipality is a predominantly rural area with limited industrial and economic activities. The project aligns with local and provincial development objectives, particularly those aimed at job creation, infrastructure improvement, and economic resilience in smaller Karoo towns.

The desirability of the project can be demonstrated as follows:

a) Socio-Economic Benefits

- Job Creation: The project will generate both temporary and semi-permanent employment opportunities for local residents during all phases of operation, including plant operation, haulage, and rehabilitation.
- Skills Development: Local workers will receive on-site training in environmental compliance, safety, and machinery operation, improving long-term employability.
- Local Economic Stimulation: Procurement of services such as water delivery, equipment maintenance, and waste management will support local businesses.
- Reduced Infrastructure Costs: The availability of local aggregate will reduce material costs for municipal and provincial construction projects, improving cost efficiency for public infrastructure development.

b) Environmental Considerations

- The proposed 5 ha quarry footprint has been positioned on a naturally rocky dolerite outcrop with low agricultural potential and moderate ecological sensitivity, as confirmed by the ecological assessment. Although the surrounding farm shows signs of historic grazing, the footprint itself supports natural Eastern Upper Karoo vegetation in good condition. The Heritage Impact Assessment (Appendix M3) identified high-significance rock art sites (VF001–VF003) located within or immediately adjacent to the proposed quarry footprint, requiring formal protection, avoidance buffers, and, where avoidance is not feasible, SAHRA-approved mitigation to ensure that the quarry layout remains environmentally and legally compliant.
- The project will follow a phased open-cast mining approach, limiting active disturbance to approximately 1–1.5 ha at any time and enabling concurrent rehabilitation of mined-out areas. This approach reduces cumulative landscape impacts and supports long-term ecological recovery.
- Environmental management measures including water conservation, dust suppression, stormwater control, and alien vegetation monitoring and removal will be implemented in accordance with the sustainable development principles of NEMA (Act 107 of 1998). These measures ensure that mining operations proceed responsibly, with impacts remaining within acceptable and manageable limits.

c) Policy and Planning Alignment

The proposed activity supports the following strategic frameworks:

- National Development Plan (NDP 2030): By promoting inclusive economic growth, infrastructure investment, and rural development.
- Northern Cape Provincial Spatial Development Framework (PSDF): By encouraging the sustainable use of natural resources and enhancing regional infrastructure capacity.
- Ubuntu Local Municipality IDP (2023–2028): By contributing to economic diversification, infrastructure improvement, and local employment within the district.

Sustainable Development Considerations

The project embodies the principles of sustainable development through:

- Efficient and responsible utilisation of a natural mineral resource;
- Phased and rehabilitated mining to restore grazing potential;
- Minimisation of long-distance haulage impacts on air quality and road safety;
- Promotion of economic self-sufficiency in the local construction sector; and
- Alignment with integrated environmental management principles as defined in Section 2 of NEMA.

The quarry represents a necessary and desirable development that balances economic, social, and environmental priorities. It will:

- Meet essential local and regional construction material needs;
- Create employment and business opportunities within a rural municipality;
- Operate within a controlled, small-scale footprint with progressive rehabilitation; and
- Contribute meaningfully to the sustainable development goals of the Northern Cape Province and the National Infrastructure Plan (NIP 2050).

Accordingly, the proposed activity is both needed and desirable in the context of sustainable local economic development and environmental stewardship.

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version

published in terms of section 24J of the NEMA in 2014, and second version in 2017). The following table shows the questions that were considered in this regard.

Table 5: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations taken into account?	The proposed quarry has been designed and located to ensure that ecological integrity is maintained through careful site selection, limited disturbance, and progressive rehabilitation. The application area (5 ha) is situated on a rocky dolerite rise characterised by shallow, stony soils and sparse Karoo vegetation of low ecological sensitivity. The Screening Tool confirmed that the site does not overlap with any Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), or protected environments. Ecological considerations informed all stages of project planning: • The site layout avoids natural drainage lines, sensitive habitats, and areas of higher vegetation density. • The mining method follows a phased approach (1–1.5 ha at a time), allowing for progressive rehabilitation and limiting the active disturbance footprint. • Topsoil conservation measures will be implemented to facilitate natural vegetation recovery. • The Environmental Management Programme (EMPr) includes mitigation for dust suppression, erosion control, and prevention of hydrocarbon contamination to protect soil and water quality. • Post-mining, the site will be contoured, stabilised, and reseeded with locally occurring species to promote ecological restoration.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	Through these measures, the development is expected to have low, localised, and reversible impacts on the ecological integrity of the surrounding landscape, ensuring compliance with the principles of sustainable development under NEMA. Also refer to: • Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation; • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity; • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas; • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; • Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas and Groundcover, • Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. As discussed under *Part A(1)(g)(iv)(1)(a)*. Access to the proposed mining area will be via a 1.5 km long new access road, which will be upgraded for safe use by heavy vehicles gravel road of the R63. Haul roads will be extended as the open cast mining progress and will be rehabilitated as part of the final reinstatement of the area. Trucks delivering the materials to the destinations will make use of the R63. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.	
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	The proposed quarry is located within the Nama-Karoo Biome, specifically within the Eastern Upper Karoo vegetation type, which is listed as Least Concern and remains widespread in the region. The site is currently in a largely natural state and classified as being in good ecological condition, with only limited, localised disturbances associated with existing farm infrastructure and grazing.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	The ecological assessment confirms that the development footprint (approximately 5 ha) supports moderate habitat and species diversity, characterised by dwarf karroid shrubland, a sparse grass layer, succulents, and geophytic species adapted to arid conditions. Importantly, while no threatened or endangered plant species were recorded, the site contains a high number of provincially protected succulent and geophytic species, several of which are considered uncommon and of high conservation value. These species contribute to the conservation significance of the site and require specific mitigation. The National Screening Tool and Northern Cape Biodiversity Spatial Plan classify the area as an Other Natural Area (ONA), indicating that it is not critical to meeting biodiversity conservation targets. Although the site forms part of a National Protected Areas Expansion Strategy (NPAES) Focus Area, the ecological assessment concludes that the limited extent of the proposed development is unlikely to compromise regional conservation objectives, and the overall biodiversity sensitivity of the site is rated as moderate. Potential disturbance to ecosystems and biodiversity will arise primarily from vegetation clearing, soil stripping, excavation, and increased vehicle movement during the construction and operational phases. These activities will result in the localised loss of natural vegetation and habitat, including habitat utilised by fauna. However, the assessment notes that extensive natural areas occur in the surrounding landscape, allowing fauna to disperse and relocate, thereby limiting the significance of habitat loss to a moderate level. Several small ephemeral drainage lines occur in the broader area and will be intersected by the proposed access road. While these features are not ecologically sensitive wetlands or rivers, they are recognised as watercourses and contribute to local habitat heterogeneity. Appropriate erosion control and stormwater management measures will therefore be required to prevent degradation.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	The project also presents a risk of increased establishment of invasive alien plant species, particularly *Prosopis glandulosa*, due to soil disturbance. Although no invasive species are currently present, the ecological assessment recommends a comprehensive monitoring and eradication programme to prevent long-term degradation of ecosystem integrity. Mitigation measures proposed to reduce biodiversity impacts include: • Avoidance of drainage lines and sensitive features within the quarry and stockpile footprint; • Permitting, rescue, and transplantation of protected plant species to adjacent suitable habitat prior to clearing; • Phased disturbance and progressive rehabilitation, limiting the active disturbed area at any given time; • Strict invasive species monitoring and control throughout the life of the project; • Faunal protection measures, including prohibition of hunting or trapping, daily inspection of open excavations, and safe relocation of fauna where necessary; and • Comprehensive rehabilitation following cessation of mining to reintegrate disturbed areas into the surrounding landscape. With the implementation of these mitigation measures, the ecological assessment concludes that the project will result in a moderate, localised, and manageable loss of biodiversity, with no fatal flaws identified. Rehabilitation and ongoing management will enable the site to recover ecological function over time, thereby maintaining the broader ecological integrity of the surrounding Karoo landscape.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**

How will this development pollute and/or degrade the biophysical environment?	The proposed quarry is a small-scale, open-cast mining operation with a limited footprint of 5 ha . Although the activity will temporarily alter the local landscape and remove surface vegetation, its potential to pollute or degrade the biophysical environment has been carefully assessed and will be effectively managed through the Environmental Management Programme (EMPr).
	
	Potential sources of environmental degradation include dust generation, noise, hydrocarbon spills, erosion, and solid waste. These impacts are site-specific, of low intensity, and reversible, and mitigation measures have been incorporated into all operational phases:
	
	• **Air quality:**
	  ○ Dust may be generated from soil stripping, crushing, and hauling activities.
	  ○ Mitigation includes limiting vehicle speeds, covering truck loads, applying water-based dust suppression when necessary, and restricting the disturbed footprint to active areas only.
	• **Noise:**
	  ○ Machinery and crushing operations may cause intermittent noise during operation.
	  ○ The site is remote (nearest dwelling ±1.8 km) and naturally buffered by ridges, ensuring low noise exposure to receptors.
	• **Soil and water contamination:**
	  ○ Hydrocarbon spills during refuelling and equipment maintenance pose a pollution risk.
	  ○ Spill kits, drip trays, and designated refuelling areas will be used. Any contaminated soil will be removed and treated appropriately.
		Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	○ No wash-water or effluent discharge will occur on-site. • **Erosion and sedimentation:** ○ Soil disturbance may result in localised erosion if left unmanaged. ○ Drainage berms, slope stabilisation, and phased rehabilitation will prevent sediment runoff. • **Waste management:** ○ General and hazardous waste (e.g., oily rags, containers) will be collected, stored safely, and removed to licensed facilities. ○ Chemical toilets will be serviced by registered contractors to prevent groundwater contamination. • **Biodiversity degradation:** ○ Limited removal of natural vegetation will occur; however, progressive rehabilitation will restore ecological function and prevent long-term degradation. Overall, potential degradation is temporary, low in magnitude, and confined to the immediate footprint. With proper implementation of the EMPr, the project will not result in significant pollution or long-term environmental degradation. Also refer to: • Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.	
What waste will be generated by this development?	The quarry is a small-scale, mobile mining operation that will generate minimal waste due to its limited footprint and the absence of permanent infrastructure. The following types of waste are anticipated during the construction, operational, and decommissioning phases:	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	General Waste • Domestic waste such as food packaging, paper, and plastics produced by on-site personnel. • Small quantities of construction waste, including offcuts of piping, fencing materials, and packaging from equipment or consumables. • These materials will be collected in covered, clearly labelled bins and removed weekly by a licensed waste contractor for disposal at an approved municipal landfill site (Victoria West). Hazardous Waste • Hydrocarbon-contaminated materials (e.g., oil-soaked rags, used filters, and small fuel residues) generated during equipment servicing or refuelling. • These will be placed in designated hazardous waste containers and transported off-site for disposal by an accredited hazardous waste handler. • No bulk fuel storage (>80 000 litres) will occur on-site, thereby significantly reducing the risk of large-scale contamination. Human Waste • Chemical toilets will be installed for all site personnel.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	• These units will be serviced regularly by a registered sanitation contractor, with waste removed to a licensed disposal facility to prevent pollution of soil or groundwater. Mineral Waste • The quarry will not produce any processing tailings or slimes, as all excavated dolerite will be crushed, screened, and marketed. • Overburden and topsoil will be temporarily stockpiled and reused during rehabilitation, meaning no long-term mineral waste will remain. Waste Minimisation and Management • A waste management plan forms part of the EMPr, focusing on: o Waste separation at source; o Proper containment of all refuse; o Regular collection and off-site disposal; and o Prohibition of any burning or burial of waste on-site.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	The waste management approach ensures that all waste generated is contained, controlled, and disposed of responsibly, in compliance with the National Environmental Management: Waste Act (Act No. 59 of 2008).	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	The proposed quarry is located within a rural Karoo landscape characterised by natural dolerite outcrops and low-intensity pastoral farming. While the broader landscape is not formally protected as a cultural heritage site, it contains features that reflect long-term human interaction with the environment. The Heritage Impact Assessment (HIA) (Appendix M3) identified three rock art engraving sites (VF001–VF003) situated within the proposed quarry footprint. These sites comprise finely detailed engravings depicting animals, human figures, geometric motifs, inscriptions, and imagery associated with the historical period. Based on their characteristics, the engravings were initially interpreted as representing multi-period cultural expression associated with San hunter-gatherers, Khoekhoe pastoralists, and later colonial groups, and were accordingly assessed as heritage resources of high significance (Grade IIIA) due to their aesthetic, scientific, historical, and cultural value. No built heritage resources, historical farm structures, or graves were identified within the survey area. In addition, the Palaeontological Impact Assessment confirmed that the underlying geology presents no exposed fossil material and that the likelihood of encountering significant subsurface palaeontological resources is low. The development therefore has the potential to disturb nationally significant archaeological heritage, particularly through activities such as blasting, excavation, and vehicle movement, which could result in damage to or loss of engraved dolerite boulders. The quarrying activities may also temporarily alter the visual character of a landscape that contains visible cultural signatures. Due to the location of the identified rock art sites within the operational footprint of the quarry, avoidance through the application of buffers is not considered feasible. Mitigation measures will therefore be required. At this stage, it is noted that the engraved boulders are large and exhibit existing fracturing, which may limit the feasibility of successful relocation. A suitably qualified rock art specialist will be appointed to assess the technical feasibility, heritage implications, and appropriate mitigation options.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	The landowner has further indicated that the engravings were created by his father; however, this information has not yet been independently verified and will be assessed by the specialist as part of the next phase of investigation. The specialist's findings may influence the final assessment of significance and management recommendations and will be reported in the Final Basic Assessment Report (FBAR). Notwithstanding the above, the HIA confirms that heritage-related impacts can be reduced to a manageable level through the implementation of appropriate mitigation measures, including detailed recording, mapping, and high-resolution photographic documentation, permitting and management in terms of Section 35 of the National Heritage Resources Act, the implementation of a Heritage Chance Find Procedure, and ongoing monitoring by an Environmental Control Officer (ECO). The project will be submitted to SAHRA for review in terms of Section 38(8) of the NHRA. With these measures in place, the disturbance to cultural heritage resources is expected to be managed responsibly, with no irreplaceable loss anticipated. The broader cultural identity of the region is not expected to be significantly altered, particularly given the temporary nature of the visual impacts and the planned rehabilitation of disturbed areas following closure.	
How will this development use and/or impact on non-renewable natural resources?	The proposed site will extract dolerite rock, a non-renewable mineral resource, from a 5 ha area on Portions 1 and 2 of the farm Vingerfontein 162. The use of this resource is, however, justified as it supports local and regional infrastructure development, including road construction, maintenance, and building projects, thereby contributing to sustainable economic growth within the Ubuntu Local Municipality. The extraction and processing of dolerite will be conducted using small-scale, open-cast quarrying methods, designed to ensure the efficient and responsible use of the resource while minimising environmental impact. The operation will be limited in duration (approximately two years, with a possible three-year extension) and will follow a phased mining approach, rehabilitating each section as mining progresses. Key considerations in the responsible use of non-renewable resources include:	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**

	• Efficient Resource Use:
	  ○ The quarry will extract and process only the required volume of dolerite to meet local demand, avoiding unnecessary overproduction.
	  ○ All excavated material will be utilized, no waste rock or tailings will be discarded.
	• Energy Resources:
	  ○ The project will make use of diesel-powered equipment and generators, but on a small scale relative to larger mining operations.
	  ○ Fuel consumption will be managed carefully, and refuelling will occur in designated, bunded areas to prevent spillage.
	• Land Resources:
	  ○ The area chosen has low agricultural potential and is not under active crop cultivation, ensuring minimal conflict with other productive land uses.
	  ○ Progressive rehabilitation will restore the land for future grazing or natural vegetation recovery, extending the productive life of the land beyond the quarry's operational phase.
	• Water Resources:	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	○ Water use will be minimal and intermittent, limited primarily to dust suppression and domestic use, with all water sourced permitted on site boreholes. Although the quarry involves the extraction of a non-renewable mineral, it represents a strategic and justified use of this resource to support the local economy and infrastructure needs. Through efficient utilisation, short-term operation, and post-closure rehabilitation, the project aligns with the principle of sustainable resource management under the National Environmental Management Act (Act 107 of 1998).	
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	The proposed quarry will make limited use of renewable natural resources, primarily water, air, and soil, and these resources will be managed sustainably throughout the project's short operational lifespan. Water will be used in small quantities for dust suppression and domestic purposes only, sourced from permitted on site boreholes. There will be no abstraction from local surface or groundwater sources, ensuring that renewable water resources are not depleted or contaminated. Soil will be temporarily disturbed during site preparation but carefully stripped, stockpiled, and replaced during progressive rehabilitation. This ensures that the soil resource is conserved for future agricultural or ecological use. Air quality will be preserved through strict dust control measures, including speed limits, regular road maintenance, and covering of truck loads to prevent dust dispersion. The quarry's limited footprint (5 ha) and phased mining approach will minimise ecosystem disturbance and allow natural regeneration in rehabilitated sections. Post-closure, the reinstated land will support grazing and indigenous vegetation recovery, ensuring the long-term sustainability of renewable natural resources in the area.	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were a risk-averse and cautious approach applied in terms of ecological impacts?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that ecological impacts should be fully mitigated. Refer to the following sections: • Part A(1)(d)(ii) Description of the activities to be undertaken; • Part A(1)(h)(i) Details of the development footprint alternatives considered; • Part A(1)(h)(iv) The environmental attributes associated with the alternatives; • Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity; • Part A(1)(l) Environmental impact statement.	Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	The proposed quarry will be undertaken in a controlled, small-scale manner, and its ecological impacts are localised and temporary. Through compliance with the National Environmental Management Act (Act 107 of 1998) and adherence to the mitigation hierarchy (avoid, minimise, rehabilitate, offset), the development will not result in any significant infringement on the right of people to an environment that is not harmful to their health or well-being, as guaranteed under Section 24 of the Constitution. All potential ecological impacts, such as dust emissions, vegetation disturbance, and habitat modification will be mitigated through best-practice environmental management, including dust suppression, limited clearing, controlled vehicle movement, and progressive rehabilitation. No wetlands or critical biodiversity areas occur within the footprint, and the site has low agricultural potential, reducing the likelihood of ecosystem service loss.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	By ensuring that the biophysical environment remains functional and that post-mining rehabilitation restores the land to a productive state, the project aligns with the principles of sustainable development. As such, the ecological impacts are not expected to violate environmental rights but rather support them through responsible land use and local economic benefit. Should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	

Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	Local livelihoods in the Victoria West area rely mainly on livestock grazing supported by the semi-arid Nama-Karoo ecosystem. The project area has low agricultural and biodiversity sensitivity, and the quarry will temporarily disturb about 5 ha of grazing land. Impacts on ecosystem services such as forage availability, soil stability, and visual quality are short-term and reversible due to the phased mining approach and progressive rehabilitation. Ecological impacts are localised and manageable, with no effect on wetlands, surface water, or critical biodiversity areas. The site will be reshaped, stabilised, and returned to grazing use, maintaining ecological integrity and long-term land productivity. Among the layout alternatives considered, the preferred option avoids sensitive drainage areas, uses an existing access road, and occupies the least ecologically sensitive footprint, making it the Best Practicable Environmental Option (BPEO) in terms of ecological sustainability. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner, nor will it impact negatively on the socio-economic status of the area.	Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
What is the socio-economic context of the area?	The project is located within the Ubuntu Local Municipality (Pixley ka Seme District, Northern Cape Province), which includes the towns of Victoria West, Loxton, and Richmond. The area is predominantly rural and agriculture-based, with sheep and cattle farming as the main economic activity. Unemployment levels remain high, particularly among the youth, and economic opportunities are limited outside of government services and small-scale farming.	Highly Desirable

	According to the Ubuntu Local Municipality Integrated Development Plan (IDP 2023/24), the municipality faces challenges related to economic diversification, infrastructure backlogs, and limited access to employment. The mining and construction sectors are recognised as key contributors to regional economic growth and infrastructure development. Victoria West serves as the main administrative and service centre, providing limited retail, education, and healthcare facilities to surrounding rural communities. Access to reliable water supply and road maintenance are ongoing priorities under the IDP. The proposed quarry will contribute to this socio-economic context by creating local job opportunities, supporting infrastructure projects, and promoting skills development and local procurement, thereby strengthening the municipality's economic base. Please refer to Heading 2(h)(iv)(1)(a) Socio-economic Environment.	
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	The proposed quarry will have positive socio-economic impacts in an area characterised by high unemployment and limited economic diversification. During its lifespan (approximately two years, with a possible three-year extension), the project will create temporary and semi-skilled employment opportunities for local residents and promote local procurement of goods and services such as transport, equipment hire, and maintenance. The quarry will provide construction aggregate to support infrastructure development and road maintenance within the Ubuntu Local Municipality, directly contributing to key IDP objectives of improving transport infrastructure, stimulating local investment, and reducing poverty. Indirect benefits include skills transfer, increased household income, and short-term stimulation of the local economy through spending by employees and contractors in Victoria West and surrounding areas. Potential negative impacts, such as noise, dust, or visual intrusion, are temporary and manageable through the EMPr, ensuring they do not detract from the area's quality of life. Overall, the project supports the municipality's socio-economic objectives by contributing to job creation, rural economic diversification, and infrastructure improvement without displacing existing agricultural activities.	

How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The quarry will address the physical and developmental needs of the surrounding communities by supplying locally sourced construction material essential for road maintenance, housing, and infrastructure upgrades within the Ubuntu Local Municipality. Improved local infrastructure directly enhances community access to services, mobility, and safety. The project will support psychological and social well-being by creating short-term employment opportunities, income generation, and a sense of local participation in development. This is especially significant in a municipality with high unemployment and low economic diversity, where even small-scale operations can contribute positively to community morale and stability. Negative impacts on community cultural identity at a regional or social level are not anticipated; however, the Heritage Impact Assessment confirmed that the proposed mining footprint contains three significant rock art sites (VF001–VF003) as per attached Heritage Impact assessment Appendix M3, engraved onto dolerite outcrops. These archaeological features hold cultural, historical, and scientific value linked to San, Khoekhoe, and later historical-period groups, and therefore require formal management in terms of the National Heritage Resources Act. While these sites do not represent places of contemporary social practice or living cultural identity, they are nonetheless important archaeological resources that must be protected or managed through avoidance, documentation, and/or relocation in consultation with SAHRA. The project will operate in ongoing consultation with the landowner and relevant stakeholders to ensure transparent communication and to prevent unnecessary disturbance to these heritage resources. With the implementation of the prescribed mitigation measures, no broader cultural or social identity impacts are expected. By promoting skills transfer, local procurement, and contributing to infrastructure and economic upliftment, the project aligns with the community's developmental and social needs, as defined in the Ubuntu IDP (2023/24). If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner, nor will it impact negatively on the socio-economic status of the area.	Highly Desirable
Will the development result in equitable impact distribution, in the short- and long-term?	Yes. The quarry is designed to ensure that both positive and negative impacts are fairly distributed across affected stakeholders. In the short term, the primary benefits such as employment, income generation, and local procurement	Highly Desirable

	opportunities will be directed toward residents of Victoria West and surrounding rural areas, where unemployment levels are high. The economic benefits of material supply for public infrastructure projects will be shared regionally, improving accessibility and service delivery for a wider community. Environmental impacts such as dust, noise, and temporary land disturbance will be localised, short-term, and reversible, and mitigation measures outlined in the EMPr will ensure they do not disproportionately affect vulnerable groups. In the long term, the progressive rehabilitation of the site will restore it to productive grazing land, ensuring continued land use benefits for the landowner and maintaining ecological functionality. The project therefore balances economic upliftment with environmental responsibility, achieving equitable outcomes over time.	
In terms of location, describe how the placement of the proposed development will contribute to the area.	The proposed Vingerfontein Dolerite Quarry is strategically located on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West in the Ubuntu Local Municipality. The placement was selected to ensure proximity to existing road infrastructure (the R63) and construction demand nodes, thereby reducing transport distances, fuel use, and associated emissions. The quarry's location on low-potential agricultural land minimises conflict with productive land uses and avoids sensitive environmental areas, such as wetlands, drainage lines, and biodiversity hotspots. The site's existing access route and low visual exposure further reduce the need for new infrastructure and environmental disturbance. By providing locally sourced aggregate, the quarry will directly support municipal and regional infrastructure projects, road upgrades, and maintenance in and around Victoria West, contributing to economic efficiency and local development. Its siting therefore complements the area's land-use character while fostering sustainable resource utilisation and rural economic growth.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	A risk-averse and cautious approach was adopted to ensure that potential socio-economic impacts are identified early, effectively mitigated, and remain within acceptable limits. The project's scale, duration, and location were carefully designed to avoid displacement of agricultural activities, minimise disturbance, and prevent disproportionate effects on the surrounding rural community.	Highly Desirable

	Employment and procurement opportunities will be prioritised for local residents, promoting equitable benefit distribution while maintaining transparency in engagement with affected parties. Potential negative effects such as noise, dust, and temporary traffic increases are addressed through the Environmental Management Programme (EMPr), which includes strict operational controls, communication protocols, and grievance procedures. Progressive rehabilitation and ongoing stakeholder consultation further ensure that the project's short-term benefits do not result in long-term socio-economic burdens. This precautionary planning supports sustainable development and aligns with the NEMA principles of risk avoidance and adaptive management.	
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Heading *3(j)(1) Impact on the socio-economic condition of any directly affected person*, the socio-economic impacts of the proposed quarry will be positive and complementary to the realisation of people's environmental rights, as defined in Section 24 of the Constitution. The project will support these rights by contributing to local economic development, employment creation, and improved infrastructure, while maintaining a healthy and sustainable environment through responsible management. Potential negative effects such as dust, noise, or visual disturbance will be localised, temporary, and mitigated through the implementation of the Environmental Management Programme (EMPr) and adherence to environmental authorisation conditions. These measures will ensure that the project does not compromise air, soil, or water quality, or the well-being of nearby communities. In this way, the development balances social and economic upliftment with environmental protection, promoting an outcome that is consistent with NEMA's sustainable development principles and upholds the community's right to an environment that is not harmful to health or well-being.	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	Local livelihoods in the Victoria West area depend primarily on livestock grazing and small-scale agriculture, which rely on healthy soils, vegetation cover, and clean water key ecosystem services that support both ecological balance and community wellbeing. The semi-arid Nama-Karoo environment provides limited natural resources, making responsible land use and rehabilitation essential to sustaining long-term productivity.	Highly Desirable

	The quarry will temporarily affect these services through vegetation clearing, soil disturbance, and dust generation, potentially influencing grazing quality and local ecological function. However, these impacts are site-specific, small in scale (5 ha), and reversible due to the project's phased mining approach, strict environmental controls, and progressive rehabilitation plan. Conversely, the quarry's positive socio-economic impacts including job creation, infrastructure support, and improved local income can indirectly enhance community resilience and capacity to manage natural resources sustainably. Through effective implementation of the EMPr, the project ensures that socio-economic gains do not compromise ecological integrity, maintaining a balance between human wellbeing and environmental health.	
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The selection of the Best Practicable Environmental Option (BPEO) was guided by a balanced evaluation of socio-economic benefits, environmental sustainability, and land-use compatibility. The preferred 5 ha site was chosen after assessing alternative layout options to ensure maximum local benefit with minimal environmental disruption. Key measures taken include: Localisation of benefits: Prioritising employment, training, and procurement for residents of Victoria West and surrounding rural areas, aligning with Ubuntu Local Municipality's IDP 2023/24 development goals. Avoidance of displacement: The site was located on low-potential agricultural land, ensuring that no households or productive farming operations are affected. Infrastructure efficiency: Using the existing gravel access road and proximity to the R63 reduces the need for new infrastructure, minimising costs, emissions, and landscape disturbance. Short-term, small-scale operation: The limited lifespan and phased mining approach (1–1.5 ha at a time) ensure that land rehabilitation and socio-economic benefits occur concurrently. Stakeholder inclusion: Early consultation with the landowner and local authorities ensured that the project reflects community needs and avoids social conflict. Through these measures, the preferred option achieves a balanced, equitable outcome, promoting local socio-economic upliftment while safeguarding environmental and community well-being.	Highly Desirable

	If the mitigation measures proposed in this document is adhered to, the project entails the mining of a 5ha area. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the employment, and support of the local economy. Please refer to: • Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?	Environmental justice principles were applied throughout the planning and design of the quarry to ensure that no individual or group particularly vulnerable or disadvantaged persons is unfairly burdened by environmental impacts. The quarry is located on privately owned farmland, more than 1.8 km from the nearest dwelling, ensuring that no communities or households will be directly affected by noise, dust, or visual intrusion. The environmental impacts of the project are localised, short-term, and reversible, and mitigation measures outlined in the Environmental Management Programme (EMPr) will ensure that air quality, soil, and water resources remain within acceptable standards. Continuous environmental monitoring will further prevent cumulative or unequal exposure to impacts. Conversely, the social and economic benefits including employment, local procurement, and infrastructure support will be directed toward the local community, where unemployment and poverty levels are high. Transparent stakeholder engagement and accessible grievance mechanisms will ensure that all affected parties have a voice throughout the project lifecycle. Through fair distribution of benefits and effective mitigation of impacts, the project upholds the principles of environmental justice, ensuring no discrimination or disproportionate impact on vulnerable groups while promoting equitable local development.	Highly Desirable
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by	The quarry has been designed to promote equitable access to environmental resources and socio-economic benefits for the local community. The quarry will supply locally sourced aggregate to support road upgrades, public works, and infrastructure projects in the Ubuntu Local Municipality, directly improving access to essential services and contributing to human wellbeing. To ensure equitable benefit distribution, the project prioritises:	Highly Desirable

categories of persons disadvantaged by unfair discrimination?	• Local employment and skills development for residents of Victoria West and surrounding rural areas, focusing on previously disadvantaged individuals (PDIs); • Procurement of goods and services from local small and emerging businesses, enabling participation in the regional economy; and • Transparent engagement with affected parties through fair consultation, ensuring all voices are heard and considered in decision-making. • No community will be denied access to environmental resources, and the quarry's design ensures that agricultural land use and ecosystem services remain intact outside the mining footprint. By fostering inclusive participation and equitable benefit sharing, the development advances social equity and supports the constitutional right to a healthy environment and fair access to its benefits.	
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Environmental health and safety responsibilities have been integrated into all phases of the quarry from planning and design through to operation, rehabilitation, and closure. The applicant, Power Construction (Pty) Ltd, will implement a comprehensive Environmental Management Programme (EMPr) that outlines the specific mitigation, monitoring, and reporting measures to ensure environmental and occupational safety compliance. Key measures include: • Compliance with legislative frameworks, including the National Environmental Management Act (NEMA), Mine Health and Safety Act (MHSA), and associated DMPR regulations; • Appointment of a competent Environmental Control Officer (ECO) to oversee environmental compliance and conduct regular inspections; • Implementation of site-specific safety protocols, including PPE requirements, demarcation of active mining zones, and emergency response procedures; • Training and induction for all employees and contractors on environmental awareness, health and safety procedures, and spill response; • Progressive rehabilitation and pollution prevention measures, such as dust control, spill containment, and erosion management, ensuring that impacts are mitigated during operation and not deferred to closure; and • Closure planning incorporated from project inception, including site rehabilitation, removal of infrastructure, and post-closure monitoring.	Highly Desirable

	These measures ensure that environmental health and safety accountability is maintained throughout the quarry's life cycle, safeguarding both workers and surrounding communities while protecting the natural environment.	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	The quarry was planned and designed with consideration of the interests, needs, and values of local stakeholders, as identified through public participation and alignment with the Ubuntu Local Municipality's IDP (2023/24). The project directly responds to the area's priority needs of job creation, infrastructure improvement, and economic diversification. Opportunities will be created across multiple community segments through: • Local employment and training during the site establishment and operational phases, prioritising previously disadvantaged individuals (PDIs) and youth from Victoria West and surrounding rural settlements; • Procurement of goods and services such as transport, equipment hire, and maintenance from local small enterprises, stimulating microeconomic growth; • Provision of locally sourced aggregate for municipal infrastructure and road upgrades, improving community mobility and access to services; and • Ongoing consultation and transparent communication, ensuring that local voices guide operational decisions and that community expectations are managed fairly. The project therefore enables broad-based participation and shared benefits, aligning with both national transformation objectives and the municipality's development priorities, while maintaining environmental and social accountability. It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The quarry will operate in full compliance with the Mine Health and Safety Act (Act No. 29 of 1996), ensuring that all workers are informed, trained, and protected against any potential health, safety, or environmental risks associated with mining operations. Key measures include: • Comprehensive induction and training for all employees and contractors on site-specific hazards, safe operating procedures, and emergency response protocols;	Highly Desirable

	• Ongoing safety briefings and toolbox talks, ensuring that workers remain aware of changing site conditions and associated risks; • Clear signage and hazard communication systems in accordance with the Occupational Health and Safety Act (OHSA); • The mining activities will be in accordance with the specifications of the Mine Health and Safety Act, 1996. Site management will have daily discussions with the drill rig operators regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings. • Provision of appropriate personal protective equipment (PPE) and enforcement of its use at all times; • Implementation of a Health and Safety Plan aligned with the EMPr, detailing procedures for incident reporting, accident prevention, and medical emergencies; and • Protection of workers' rights through a formalised Right to Refuse Dangerous Work policy, ensuring that any employee may withdraw from unsafe conditions without fear of reprisal, as provided for under Section 23 of the MHSA. • Through these measures, the quarry ensures a safe, transparent, and legally compliant working environment, where health, safety, and environmental awareness are embedded in daily operations.	
Describe how the development will impact on job creation in terms of, amongst other aspects?	The proposed quarry will contribute directly and indirectly to job creation within the Ubuntu Local Municipality, where unemployment and economic dependency on agriculture are high. The project will generate temporary employment during the site establishment and operational phases, prioritising local residents from Victoria West and nearby rural communities. Key job creation aspects include: • Direct employment: Some local workers may be employed for activities such as clearing, excavation, crushing, loading, and transport operations. • Indirect employment: Additional opportunities will arise through local service providers, including security, equipment maintenance, fuel supply, and transport contractors. • Skills development: On-the-job training will enhance workers' technical and safety competencies, improving their future employability within the construction and mining sectors. • Sustainability of livelihoods: Income earned will contribute to household stability and local economic circulation, supporting small businesses in Victoria West. • Post-mining benefits: Land rehabilitation will allow for continued agricultural use, maintaining long-term employment in the farming sector.	Highly Desirable

	• The project therefore provides short- to medium-term employment and skills transfer opportunities while supporting broader municipal goals for rural economic development and poverty reduction.	
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	The quarry has been planned and designed in alignment with the National Environmental Management Act (Act No. 107 of 1998) principles, ensuring that the environment is managed in the public trust and that resource use serves both present and future generations. Key measures include: Sustainable resource utilisation: The extraction of dolerite, a non-renewable resource, will be undertaken efficiently and responsibly, with minimal disturbance to the surrounding environment. The material will primarily serve local infrastructure and road maintenance projects, thereby contributing to the public interest and community wellbeing. Environmental protection: The project avoids sensitive ecological and cultural areas, limits its footprint to 5 ha of low-potential grazing land, and implements progressive rehabilitation to restore the land for future agricultural or ecological use. Compliance and oversight: The activity will operate under a legally approved EMPr and Environmental Authorisation, ensuring continuous monitoring, mitigation of impacts, and transparent reporting. Public participation: The environmental process has included consultation with interested and affected parties (I&APs), giving the public an opportunity to influence decisions that may affect their environment. Long-term stewardship: Post-closure rehabilitation will stabilise landforms, restore vegetation, and prevent pollution, ensuring the environment remains a shared and protected heritage for future generations. Through these measures, the development ensures that the beneficial use of resources aligns with the public good while safeguarding the environment as part of South Africa's common natural heritage.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	Yes. The mitigation measures proposed for the quarry are realistic, practical, and aligned with the scale and nature of the proposed 5 ha mining operation. These measures have been developed in accordance with the Environmental Management Programme (EMPr) and are based on established best practices for small-scale quarrying in the Northern Cape.	Highly Desirable

	Key measures include phased mining and rehabilitation (1–1.5 ha at a time), dust and erosion control, hydrocarbon spill prevention, waste management, and progressive topsoil replacement and revegetation. These mitigation actions are implementable with available resources, supported by clear management responsibilities, and subject to routine monitoring by the Environmental Control Officer (ECO). The long-term environmental legacy will be positive and low risk. Once mining concludes, the disturbed area will be stabilised, contoured, and returned to grazing use, with no permanent infrastructure or pollution sources remaining. The managed burden will therefore be minimal, limited to routine post-closure monitoring to ensure vegetation recovery and erosion control. Through this proactive, progressive rehabilitation approach, the site will not leave a lasting environmental burden but rather a safe, stable, and productive landscape, compatible with surrounding land uses. It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when needed) by the proposed activities. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the residual impact on the environment is of low significance.	
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	The polluter-pays principle, as set out in Section 2(4)(p) of the National Environmental Management Act (Act 107 of 1998), has been fully incorporated into the design, operation, and closure planning of the quarry. The applicant, Power Construction (Pty) Ltd, accepts full responsibility for all potential environmental liabilities arising from the project and will bear the cost of preventing, mitigating, and remedying pollution or degradation throughout the quarry's life cycle. Key measures include: • Implementation of a site-specific EMPr, detailing all mitigation, monitoring, and emergency response procedures to prevent or manage environmental harm; • In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMPR that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. Financial provision for rehabilitation, established in accordance with the Mineral and Petroleum Resources Development Act (MPRDA) and GN R.1147 of 2015, to ensure adequate funding for closure and post-closure activities; • Immediate remediation of incidents, such as hydrocarbon spills or dust exceedances, at the cost of the permit holder;	Highly Desirable

	• Regular environmental performance monitoring and reporting by the Environmental Control Officer (ECO) to verify compliance; and • Post-closure rehabilitation and monitoring, undertaken and financed by the applicant to restore the site to a safe and sustainable land use condition. These measures ensure that no environmental or health-related costs are transferred to the public, and that all remediation responsibilities remain with the developer in line with South Africa's environmental governance framework.	
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	Several site layout and operational alternatives were assessed to ensure that the preferred option represents the Best Practicable Environmental Option (BPEO) by balancing socio-economic benefits with the protection of ecological integrity. The alternatives considered included two potential layout shifts (east and west of the preferred footprint) and the no-go alternative. The preferred 5 ha site was selected because it: • It is considered a valuable source of hard rock. • Lies on low-potential agricultural land already modified by grazing, thus avoiding displacement of productive farmland or communities; • Is proximate to existing infrastructure (the R63), minimising new road construction, emissions, and disturbance; • Provides local socio-economic benefits, including job creation, skills development, and local material supply for infrastructure projects, supporting the Ubuntu Local Municipality IDP (2023/24) goals; and • Limits environmental impacts through a phased mining and rehabilitation approach, ensuring that disturbed areas are progressively restored. • The no-go alternative would prevent environmental disturbance but also forgo significant local employment and infrastructure support, which are critical in this rural, economically constrained area. Therefore, the preferred layout and operation were selected as the BPEO, as they deliver tangible social and economic benefits while maintaining ecological balance and long-term land productivity through responsible environmental management. Please refer to: • Part A(1)(g)(i) Details of the development footprint alternatives considered;	Highly Desirable

	• Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Socio-Economic Environment; • Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	The quarry is a small-scale mining operation (5 ha) located approximately 30 km west of Victoria West within the Ubuntu Local Municipality, an area with limited industrial activity and an economy primarily dependent on agriculture and government services. Given its modest scale and short operational lifespan (±2–5 years), the project's cumulative socio-economic impacts are expected to be localised and moderate, with positive outcomes outweighing negatives. Positive cumulative impacts: • Job creation and skills development: Temporary employment and training for local residents will contribute to reduced unemployment and skills enhancement in the construction and quarrying sectors. • Local economic stimulation: Increased demand for services such as transport, equipment hire, and maintenance will benefit small businesses and informal traders in Victoria West. • Infrastructure support: The supply of affordable, locally sourced aggregate will strengthen regional infrastructure development and road maintenance, contributing to long-term economic resilience. • Municipal alignment: The project complements the Ubuntu IDP (2023/24) goals of rural economic diversification and infrastructure upgrading. Negative cumulative impacts: • Short-term nuisance impacts such as noise, dust, and increased traffic may coincide with other regional construction projects but will be mitigated through EMPr measures and strict operational controls. • Temporary land-use change on a small portion of farmland, reversible through progressive rehabilitation. Overall, the cumulative socio-economic impact of the project is positive and locally significant, providing short-term economic upliftment without long-term adverse social or environmental consequences.	Highly Desirable

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

The preferred alternative for the proposed quarry was selected after considering environmental sensitivity, geological feasibility, socio-economic benefit, and land-use compatibility. The preferred option represents a balanced, sustainable outcome, ensuring that the extraction of mineral resources is undertaken responsibly, with minimal ecological disturbance and maximum socio-economic value for the Ubuntu Local Municipality and surrounding communities.

1. Motivation for the Preferred Site

The preferred site is situated on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West in the Northern Cape Province. This 5 ha area was identified as the most suitable location due to its geological, environmental, and accessibility advantages:

- Geological suitability: The site contains a confirmed dolerite intrusion of high quality, making it economically viable for producing road construction aggregate. As mineral resources occur only where geological conditions allow, mining is limited to this specific location.
- Environmental considerations: The area comprises low-potential agricultural land with shallow, stony soils and sparse Karoo vegetation. The Screening Tool confirmed the absence of wetlands, drainage lines, or protected biodiversity areas within 500 m of the footprint.
- Accessibility: The quarry will be via a 1.5 km long new access road, which will be upgraded for safe use by heavy vehicles gravel access road connecting directly to the R63, reducing the need for new infrastructure and limiting land disturbance.
- Land-use compatibility: The site is located on privately owned farmland used primarily for grazing and has no dwellings or community infrastructure within 1.8 km, ensuring minimal social conflict.
- Planning alignment: The site supports the Ubuntu Local Municipality Integrated Development Plan (2023/24), which identifies infrastructure investment and economic diversification as key development priorities.

The preferred site thus provides the lowest environmental sensitivity and highest operational efficiency, aligning with sustainable land-use principles and minimising cumulative impacts.

2. Motivation for the Preferred Activity

The preferred activity involves open-cast quarrying of dolerite using a phased mining approach (1–1.5 ha at a time), followed by progressive rehabilitation. This method was chosen as it allows controlled, small-scale extraction with manageable and reversible environmental impacts.

Key considerations include:

- Controlled blasting:
  - Blasting will be undertaken by registered, qualified blasting contractors using licensed explosives under strict safety and environmental protocols.
  - Blasting will be intermittent and small-scale, with advance notification to the landowner and nearby receptors.
  - Mitigation measures will include controlled charge sizes, timing, and safety exclusion zones to prevent fly rock, vibration damage, or excessive noise.
- Phased mining: Only one section (1–1.5 ha) will be active at a time, with concurrent rehabilitation of completed areas.
- Progressive rehabilitation: Disturbed areas will be reshaped, stabilised, and covered with stored topsoil to restore grazing potential and prevent erosion.
- Short-term and reversible impacts: The limited lifespan (approximately 2 years, with possible 3-year extension) and scale of activity ensure that impacts remain localised and manageable.

The preferred mining approach provides an operationally efficient yet environmentally sound method of dolerite extraction.

Motivation for the Preferred Technology Alternative

The preferred technology option uses mobile crushing and screening plants, diesel-powered earthmoving machinery, and controlled blasting to access and process dolerite.

Justification for this technology includes:

- Operational flexibility: Mobile units can be relocated within the site, minimising the active footprint and enabling concurrent rehabilitation.
- Reduced infrastructure: No permanent plant or workshops will be constructed; all facilities (office container, ablutions, and fuel storage) are temporary and removable at closure.

- Energy efficiency: Diesel generators will provide intermittent power only when needed, reducing energy consumption.
- Environmental performance: Modern mobile crushers and screeners are equipped with dust suppression and sound attenuation features to reduce nuisance impacts.
- Ease of decommissioning: All mobile equipment can be removed post-mining, leaving the site free of permanent infrastructure.

This low-impact technology aligns with the DMPR's standards for small-scale mining and ensures full compliance with NEMA and MPRDA requirements.

Integration of Socio-Economic and Environmental Objectives

The preferred site and technology were selected to achieve an equitable balance between socio-economic upliftment and environmental protection.

- Socio-economic benefits: Local employment, skills transfer, and material supply for infrastructure projects will strengthen the rural economy.
- Environmental protection: Controlled blasting, dust suppression, erosion control, and progressive rehabilitation will maintain long-term environmental quality.
- Community participation: Engagement with the landowner and local stakeholders ensures that community values, safety, and expectations are respected.

This integrated approach secures both human wellbeing and ecological integrity as envisaged under Section 2 of NEMA.

Conclusion

The quarry represents the Best Practicable Environmental Option (BPEO) for the site, activity, and technology, ensuring a responsible balance between economic viability, social responsibility, and environmental sustainability.

The preferred option:

- Utilises existing access infrastructure and low-sensitivity land;
- Employs controlled blasting and mobile technology to reduce environmental risk;
- Generates local socio-economic benefits aligned with municipal priorities; and
- Ensures complete rehabilitation and post-mining land stability.
- Accordingly, the preferred site, activity, and technology combination is considered environmentally justifiable, operationally feasible, and socially desirable, supporting sustainable development in the Victoria West region.

Therefore, the preferred alternative is considered environmentally justifiable, operationally feasible, and socially desirable, fully consistent with the principles of sustainable development outlined in the National Environmental Management Act. The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. Considering the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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

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

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Site Alternative 1 (S1) (Preferred and Only Site Alternative):

(a) Property or Location

The quarry will be located on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West, Northern Cape Province, within the Ubuntu Local Municipality (Ward 2). The site was selected based on:

- Geological confirmation of viable dolerite resource;
- Proximity to the R63, ensuring efficient transport logistics;
- Low agricultural and biodiversity sensitivity; and
- Absence of nearby settlements or sensitive receptors.

No alternative properties were considered because dolerite resources occur only where geological conditions permit, making the resource location site-specific.

Site Alternative 1 entails the mining of an area over an inactive area of the farm used for agriculture within the GPS coordinates as listed in the table below:

Table 6: GPS Coordinates of Site Alternative 1 (preferred and only site alternative)

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	31°22'22.76"S	22°51'55.84"E	-31.372988	22.86551
B	31°22'30.09"S	22°51'58.55"E	-31.375024	22.866264
C	31°22'45.20"S	22°52'01.15"E	-31.379223	22.866987
D	31°22'49.48"S	22°52'02.37"E	-31.380411	22.867326
E	31°22'50.61"S	22°51'56.49"E	-31.380726	22.865692
F	31°22'55.56"S	22°51'45.97"E	-31.382101	22.862769
G	31°22'56.91"S	22°51'44.75"E	-31.382475	22.862431
H	31°22'59.40"S	22°51'43.31"E	-31.383168	22.86203
I	31°23'01.32"S	22°51'43.27"E	-31.383701	22.862019
J	31°23'01.99"S	22°51'43.58"E	-31.383886	22.862106
K	31°23'06.27"S	22°51'45.68"E	-31.385074	22.86269
L	31°23'07.48"S	22°51'41.93"E	-31.38541	22.861647
M	31°23'03.25"S	22°51'39.83"E	-31.384235	22.861064
N	31°23'02.08"S	22°51'43.25"E	-31.383912	22.862013
O	31°23'01.39"S	22°51'42.89"E	-31.38372	22.861914
P	31°22'59.34"S	22°51'42.93"E	-31.383149	22.861925
Q	31°22'56.83"S	22°51'44.39"E	-31.382454	22.86233
R	31°22'55.26"S	22°51'45.85"E	-31.382017	22.862736
S	31°22'50.30"S	22°51'56.38"E	-31.380639	22.865662
T	31°22'46.47"S	22°51'55.18"E	-31.379576	22.865327
U	31°22'45.29"S	22°52'00.79"E	-31.379246	22.866885
V	31°22'30.19"S	22°51'58.17"E	-31.375052	22.866157
W	31°22'22.75"S	22°51'55.45"E	-31.372985	22.865403

Figure 5: Satellite view showing the position of Site Alternative 1 (red and green polygon) with the viable access road (yellow line) within the surrounding landscape.

(b) Type of Activity to be Undertaken

The proposed activity is open-cast mining of dolerite using controlled blasting, excavation, crushing, and screening. Alternative methods such as surface stripping or non-blasting extraction were evaluated but deemed impractical due to the hardness of dolerite and inefficiency in material recovery.

(c) Design or Layout of the Activity

Two minor layout configurations were initially assessed:

- Layout 1 (Preferred): Centralised quarry pit with southern processing and stockpile area adjacent to the access road.
- Layout 2: Relocation of processing area northward.

Layout 1 was selected as it reduces haul distances, minimises erosion risk, and confines activity to the least sensitive zone. Buffer areas of 20–30 m were maintained around the footprint for safety and rehabilitation.

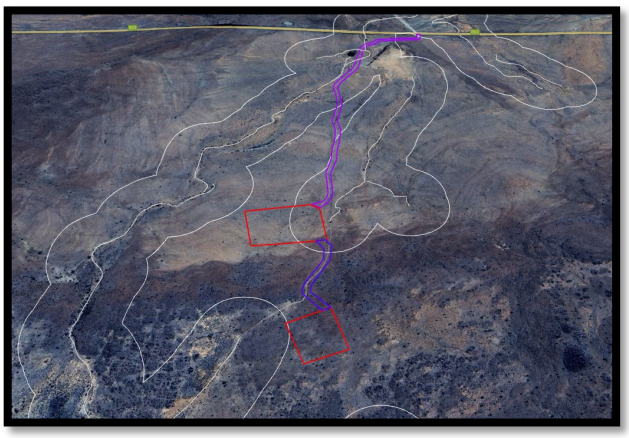


Figure 6: Satellite view showing the position of Site Alternative 2 (red polygons) with the viable access road (purple line) within the surrounding landscape.

(d) Technology to be Used

The preferred technology includes:

- Controlled blasting using qualified blasting contractors;
- Mobile crushing and screening units powered by diesel generators;
- Front-end loaders and excavators for material movement; and tipper trucks for off-site transport.

- Alternative options, such as static crushing plants or electric power supply, were excluded due to their greater infrastructure requirements, higher cost, and larger environmental footprint.

(e) Operational Aspects of the Activity

A phased mining approach (1–1.5 ha active at a time) will be adopted to limit disturbance and facilitate progressive rehabilitation.

Dust suppression, spill control, and noise management measures will be applied continuously.
Operations will be managed according to the approved Environmental Management Programme (EMPr), ensuring environmental performance monitoring and compliance with DMPR and NEMA requirements.

(f) The Option of Not Implementing the Activity (No-Go Alternative)

The No-Go Alternative would avoid environmental disturbance but would also forfeit socio-economic benefits, including:

- Local job creation and skills development;
- Increased availability of locally sourced aggregate for infrastructure projects; and
- Contribution to municipal economic growth targets as per the Ubuntu IDP (2023/24).
- The mineral resource on this land cannot be used by the applicant.
- The diversification of aggregate sources, which would result in rising product costs, will not be advantageous to the residents or enterprises in the vicinity of the application area.
- The mineral resource on this land cannot be used by the applicant.

In the broader context, the No-Go option would maintain the land's current low-value agricultural use but offer no tangible social or economic benefits to the local community. In light of this, the no-go alternative was not deemed to be the preferred alternative.

Conclusion

The process of evaluating alternatives confirmed that Site Alternative 1 in its current configuration represents the Best Practicable Environmental Option (BPEO).
It achieves an optimal balance between:

- Efficient mineral extraction and environmental protection;

- Economic feasibility and social responsibility; and
- Operational practicality and regulatory compliance.

The final site layout (refer to Appendix 4: Site Plan) therefore reflects a carefully considered configuration that minimises the disturbed area, reduces haul distances, and ensures full alignment with environmental and socio-economic objectives.

ii) Details of the Public Participation Process Followed

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

During this public participation process the relevant stakeholders and I&AP's will be informed of the project by means of an advertisement in Media 24 and Victoria West Rekord on 9 January 2026, and four on-site notices will be placed at visible and accessible locations within the project area, including one on the farm boundary fence. while the remaining three on-site notices will be installed at suitable high-visibility points.

A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 16 February 2026) was sent to the landowner, neighbouring landowners, stakeholders and other I&AP that may be interested in the project. The comments received on the DBAR will be incorporated into the final Basic Assessment Report (FBAR) to be submitted to the DMPR for consideration. The following I&AP's and stakeholders will be informed of the project:

Table 7: List of the I&AP's and stakeholders that were notified of the proposed project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Surrounding landowners & lawful occupiers: • Bester Familie Trust – Landowner – Portion 1 of Farm Vingerfontein 162 • Ockert Johannes Malan – Landowner – Portion 2 of Farm Vingerfontein 162 • Winterberg Trust – Remaining Extent of Farm Hetties Hope No 129 • Pieter Olwage Wannenburg – Portion 3 of Farm Rietgat No 132,	• Department of Economic Development and Tourism; • Department of Roads and Public Works • Department of Agriculture, Land Reform and Rural Development • Department of Agriculture, Environment Affairs, Rural Development and Land Reform • Department of Water and Sanitation; • Department of Labour • Pixley ka Seme District Municipality;

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
• Pieter Olwage Wannenburg – Portion 13 of Farm Rietgat No 132 • Adriaanskuil Trust – RE of Portion 1 Farm Melton Wold No 158 • Ockert Johannes Malan – Farm Vingerfontein No 162 • PHL Trust & Engela Francina Swart (deceased) – Portion 3 of Farm Vingerfontein No 162 • Ockert Johannes Malan – Portion 4 of Farm Vingerfontein No 162 • Ockert Johannes Malan – Portion 5 of Farm Vingerfontein No 162 • Marlene Truter – Farm No 166 • Marlene Truter – Farm No 167 • Winterberg Trust – Portion 3 of Farm No 167	• Ubunto Local Municipality; • Ubunto Local Municipality - Ward 3 • South African Heritage Resources Agency; • Eskom
I&AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD	
• Any comments received on the draft BAR will be incorporated into the final BAR.	

Table 8: Table comparing the required methods with the public participation process of this project.

Requirements in terms of NEMA regulation 41	public participation process followed
• Regulation 41(2)(a): *Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-* *(i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and* (ii) *Any alternative site.* • Regulation 41(3): *A notice, notice board or advertisement referred to in sub regulation (2) must—*	Notice boards in English were fixed at the following conspicuous and public accessible areas: • Entrance to the farm/site. • And three other suitable high-visibility points. All the notice boards that were placed complied with the requirements of Regulation 41(3) as presented in Appendix E2 attached to this document. The notices were printed on boards of 60 x 42 cm in Arial font of sufficient size.

Requirements in terms of NEMA regulation 41	public participation process followed
(a) *give details of the application or proposed application which is subjected to public participation; and* (b) *state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application.* *(ii) the nature and location of the activity to which the application relates.* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the application or proposed application may be made.* Regulation 41(4): *A notice board referred to in sub regulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and* (b) *display the required information in lettering and in a format as may be determined by the competent authority.*	
Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken.* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be*	(i) The Landowner (and Applicant) signed an agreement regarding this project and is kept apprised of the EIA (BA) process. To date, no additional comments were received. (ii) The surrounding landowner will be invited to comment on the project and the DBAR. (iii) The Ward Councillor of Ward 3 will be invited to comment on the project and DBAR.

Requirements in terms of NEMA regulation 41	public participation process followed
undertaken and to any alternative site where the activity is to be undertaken. (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area.* *(iv) the municipality which has jurisdiction in the area.* *(v) any organ of state having jurisdiction in respect of any aspect of the activity.* *(vi) any other party as required by the competent authority;*	(iv) Both the Ubuntu Local Municipality and Pixley ka Seme District Municipality will be invited to comment on the project and DBAR. (v) As listed in Table 7 the relevant state departments and entities will be invited to comment on the project and DBAR.
▪ Regulation 41(2)(c): *Placing an advertisement in-* *(i) One local newspaper; or* *(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.*	▪ The project and availability of the DBAR was advertised in Media24 and Victoria West Rekord on 9 January 2026 in English.
▪ Regulation 41(2)(d): *Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken…*	Not applicable, as the proposed activity will not extend beyond the boundaries of the metropolitan or district municipality in which it will be undertaken.
▪ Regulation 41(2)(e): *Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—* *(i) illiteracy.* *(ii) disability; or* (iii) *any other disadvantage.*	▪ Not applicable to this application

Requirements in terms of NEMA regulation 41	public participation process followed
• Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, sub regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d) …*	• Not applicable to this application.
• Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and* (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	• The DBAR containing all relevant facts in respect of the application will be available to potential I&APs for perusal and commenting over a 30-days commenting period. The DBAR will be available on the company (Greenmined) website. I&AP's will be invited to contact the EAP should additional information be required.
• Regulation 41(7): *Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.*	• Not applicable to this project.

iii) Summary of issues raised by I&APs

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

Table 9: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**				
Landowner/s					
Bester Familie Trust – Landowner – Portion 1 of Farm Vingerfontein 162	X	The landowner is aware of the mining permit application and formal consent is currently being negotiated.			
Ockert Johannes Malan – Landowner – Portion 2 of Farm Vingerfontein 162	X	The landowner is aware of the mining permit application and formal consent is currently being negotiated.			
Lawful occupier/s of the land					
N/A					
Landowners or lawful occupiers on adjacent properties	**X**				
Winterberg Trust – Remaining Extent of Farm Hetties Hope No 129	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Pieter Olwage Wannenburg – Portion 3 of Farm Rietgat No 132	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Pieter Olwage Wannenburg – Portion 3 of Farm Rietgat No 132,	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Pieter Olwage Wannenburg – Portion 13 of Farm Rietgat No 132	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Adriaanskuil Trust – RE of Portion 1 Farm Melton Wold No 158	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
• Ockert Johannes Malan – Farm Vingerfontein No 162					
• PHL Trust & Engela Francina Swart (deceased) – Portion 3 of Farm Vingerfontein No 162					
• Ockert Johannes Malan – Portion 4 of Farm Vingerfontein No 162					
• Ockert Johannes Malan – Portion 5 of Farm Vingerfontein No 162					
• Marlene Truter – Farm No 166					
• Marlene Truter – Farm No 167					
• Winterberg Trust – Portion 3 of Farm No 167					
Municipal councillor					
Ubunto Local Municipality - Ward 3	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Municipality					
Ubunto Local Municipality	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Pixley ka Seme District Municipality	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Roads and Public Works	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Eskom	X	Any comments received on the draft BAR will be incorporated into the final BAR			
Communities	N/A	No community were identified within the study area.			
Dept. Land Affairs					
Department of Agriculture, Land Reform and Rural Development	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Traditional Leaders	N/A				
Dept. Environmental Affairs					
Department of Agriculture, Environment Affairs, Rural Development and Land Reform	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Other Competent Authorities affected					
Department of Labour	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Water and Sanitation	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

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

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

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

PHYSICAL ENVIRONMENT

GEOGRAPHY AND SETTING

The proposed quarry site is located approximately 30 km west of Victoria West within the Ubuntu Local Municipality (Ward 3) and Pixley ka Seme District Municipality, Northern Cape Province. The mining footprint (5 ha) falls on Portions 1 and 2 of the farm Vingerfontein 162, an area historically used for low-intensity livestock grazing.

TOPOGRAPHY

The topography is gently undulating, typical of the Nama Karoo Plateau. The site lies between 1 230 m and 1 260 ma.m.s.l., characterised by low dolerite ridges and shallow valleys. The quarry area occupies a slightly elevated dolerite rise, providing a stable base for surface mining. Slopes gently descend southwards, supporting ephemeral runoff during rainfall events. No permanent drainage lines or wetlands traverse the footprint.

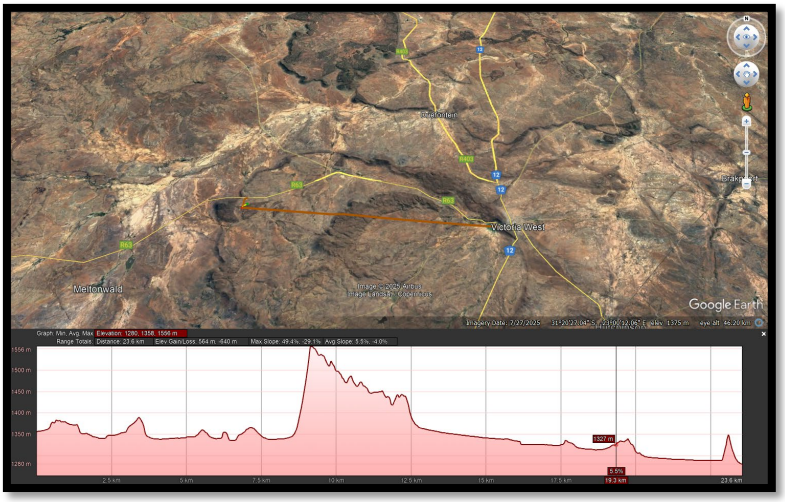


Figure 7: Elevation profile showing the topography between the proposed mining footprint (brown line) and the town of Victoria West. (Image obtained from Google Earth).

GEOLOGY AND SOILS

The area is underlain by Jurassic dolerite intrusions of the Karoo Dolerite Suite, part of the Karoo Supergroup. The dolerite is a dark, fine-grained igneous rock suitable for aggregate production. Soils are shallow, stony lithosols, weakly developed and low in organic matter. The A-horizon is typically less than 300 mm deep, with limited agricultural potential. Land capability is rated non-arable, supporting only extensive grazing. Topsoil conservation is critical to rehabilitation due to its scarcity.

CLIMATE AND WIND

The Victoria West region experiences a semi-arid continental climate.

Rainfall:

Mean annual precipitation of 250–350 mm, concentrated in summer (Nov–Mar).

Temperature:

Summer maxima frequently exceed 35 °C, winter minima may drop below 0 °C.

Evaporation:

High annual evaporation (~2 000–2 400 mm).

Wind:

According to Windfinder and SAWS regional data (Beaufort West station), prevailing winds are from the west to northwest, occasionally shifting southwest. Wind speed averages 15–25 km/h, with gusts exceeding 40 km/h during dry frontal systems. Strong winds contribute to potential dust generation, which will be managed through dust suppression, reduced haul speeds, and progressive rehabilitation.

VISUAL CHARACTERISTICS

The proposed quarry site is located in an area of gently undulating plains with isolated dolerite ridges typical of the Great Karoo landscape. The visual quality of the area is moderately sensitive, reflecting a rural setting dominated by grazing farmland with minimal built infrastructure.

Existing visual receptors are limited to the farmstead and occasional road users on the R63, situated over 1.5 km from the proposed quarry footprint.

AIR AND NOISE QUALITY

The Victoria West region experiences low background air pollution due to the absence of industrial development. The main contributors to local dust are windblown soil, gravel road traffic, and agricultural activities.

GEOLOGY AND SOIL

The proposed mining area is underlain by Karoo Supergroup shales and sandstones, intruded by a dolerite sill the target resource for extraction. The dolerite is a fine to medium-grained, dark-grey igneous rock, valued for its hardness and durability, making it suitable for road and concrete aggregate.

Soils overlying the dolerite are typically shallow, stony, and calcareous, belonging to the Mispah and Glenrosa soil forms, with low agricultural potential. The area is characterised by rocky outcrops and sparse vegetation, confirming its limited arability. Topsoil depths range between 100–300 mm, and material suitable for stripping will be stockpiled and reused during rehabilitation.

The shallow and rocky nature of the soil reduces erosion susceptibility, though disturbance from earthworks will expose some loose material.

Figure 8: Geology map of the area around the proposed quarry (blue polygon). (Image obtained from the Council for Geoscience)

HYDROLOGY

The area falls within the Orange Tributaries catchment (Quaternary Catchment D61G), part of the Lower Orange Water Management Area. According to Mucina and Rutherford (2012), rainfall occurs mainly during autumn and summer, with a peak in

March. The mean annual precipitation ranges from approximately 180 mm in the west to 430 mm in the east.

No perennial rivers, wetlands, or drainage lines occur within or near the 500 m buffer zone of the proposed quarry footprint. The nearest surface drainage feature is a non-perennial tributary located over 800 m southwest of the site, outside the area of influence.

Groundwater occurs at shallow depths (20–30 m), stored mainly in fractured dolerite and sandstone aquifers. The proposed quarrying operations are not anticipated to extend to depths that would intersect the regional groundwater table.

The project area forms part of an arid Karoo landscape characterised by several small, ephemeral drainage lines that originate along the surrounding ridges and hills and flow northwards toward a lower lying plain and an artificial impoundment. These features only carry water following rainfall events and do not constitute perennial or seasonally flowing watercourses. The ecological assessment confirms that no rivers, wetlands, or significant drainage features occur within the mining footprint or the 500 m surrounding area, with only a few minor drainage lines intersected by the proposed access road. These systems are naturally shallow and intermittent, and their ecological function is limited to localised runoff conveyance. The absence of riparian or wetland habitat is consistent with the regional climatic pattern, where annual rainfall averages approximately 200–240 mm, and runoff is highly episodic.

The site is located within an arid Karoo landscape where annual rainfall is low and highly variable, typically ranging between 200–240 mm, with runoff occurring only after rainfall events. Field verification confirmed that no perennial rivers, wetlands, or seasonal streams occur within the proposed quarry footprint or within 500 m of the site. However, several small ephemeral drainage lines traverse the broader area and are intersected by the proposed access road. These features function only during rainfall events and do not constitute wetlands or active stream channels but are still recognised as watercourses under the National Water Act and therefore require appropriate stormwater and erosion-control measures.

Based on the absence of perennial or seasonally flowing water bodies and because no activities are proposed within regulated aquatic features,

The ecological assessment confirms that no natural wetlands, rivers, or regulated watercourses occur within the quarry or stockpile footprint, and only small ephemeral drainage lines occur along the proposed access road alignment. These features carry water only after rainfall events and do not trigger Section 21(c) or 21(i) water uses.

Nevertheless, appropriate stormwater and erosion-control measures will be implemented to maintain natural flow patterns, particularly where the access road intersects these minor drainage features.

Water for dust suppression will be sourced from an authorised abstraction point, and any new abstraction required will trigger a Water Use Authorisation under the National Water Act. Although the project does not inherently require a license for watercourse alteration, the applicant will apply for a Water Use Authorisation to ensure that all water-related activities associated with the project are legally compliant and formally recognised by the Department of Water and Sanitation.

Table 10: Aquatic characteristics of the greater study area

Water Management Area	Lower Orange Water Management Area
Sub Water Management Area	Orange Tributaries Sub-Water Management Area
Quaternary Catchment	D61G
FEPA Status	NFEPA river - 26_N_U

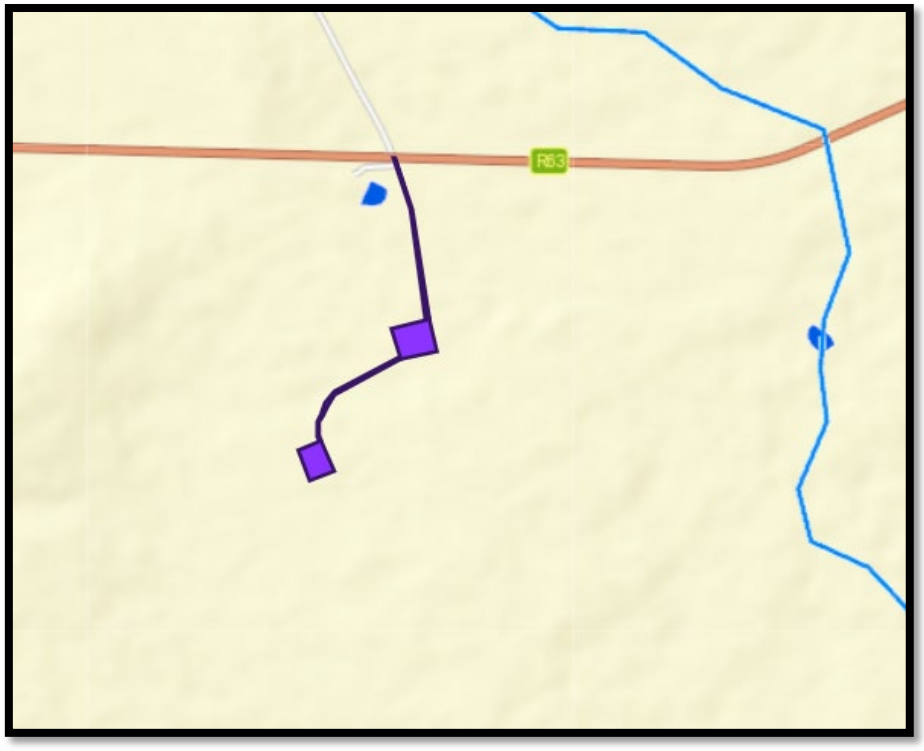


Figure 9: Map showing the proposed mining footprint (purple polygon) approximately 1.6km from the NFEPA river (Image obtained from BGIS)

BIOLOGICAL ENVIRONMENT

MINING AND BIODIVERSITY

(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, it does not fall over and area of any specified for risk of mining therefore the risk is seen to be insignificant. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are of moderate biodiversity value."* The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

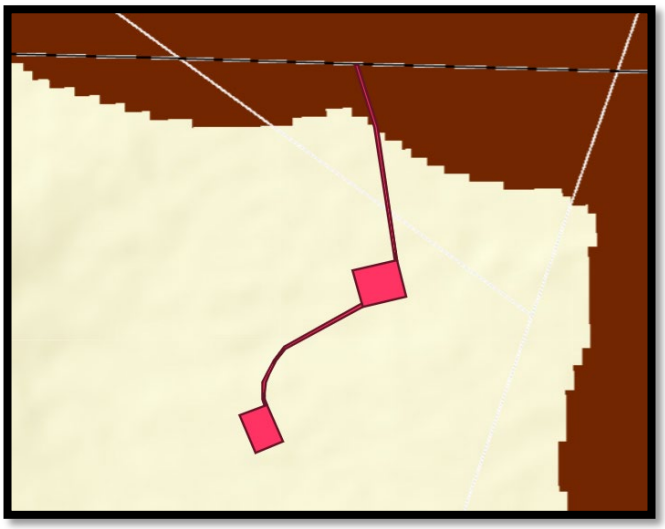


Figure 10: The Mining and Biodiversity importance map with the proposed mining footprint indicated by the dark pink polygon. Dark brown – high biodiversity importance, high risk for mining, Light brown – moderate biodiversity importance, moderate risk for mining, (image obtained from the BGIS Map Viewer – Mining Guidelines).

BIODIVERSITY CONSERVATION AREAS

The 2024 Northern Cape Biodiversity Spatial Plan (NCBSP) shows that the proposed mining footprint and all relevant areas, overlaps with a Critical Biodiversity Area One area. The category is described to areas that must remain in good ecological condition to meet biodiversity targets for ecosystems, species and ecological processes. This area is important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of a landscape.

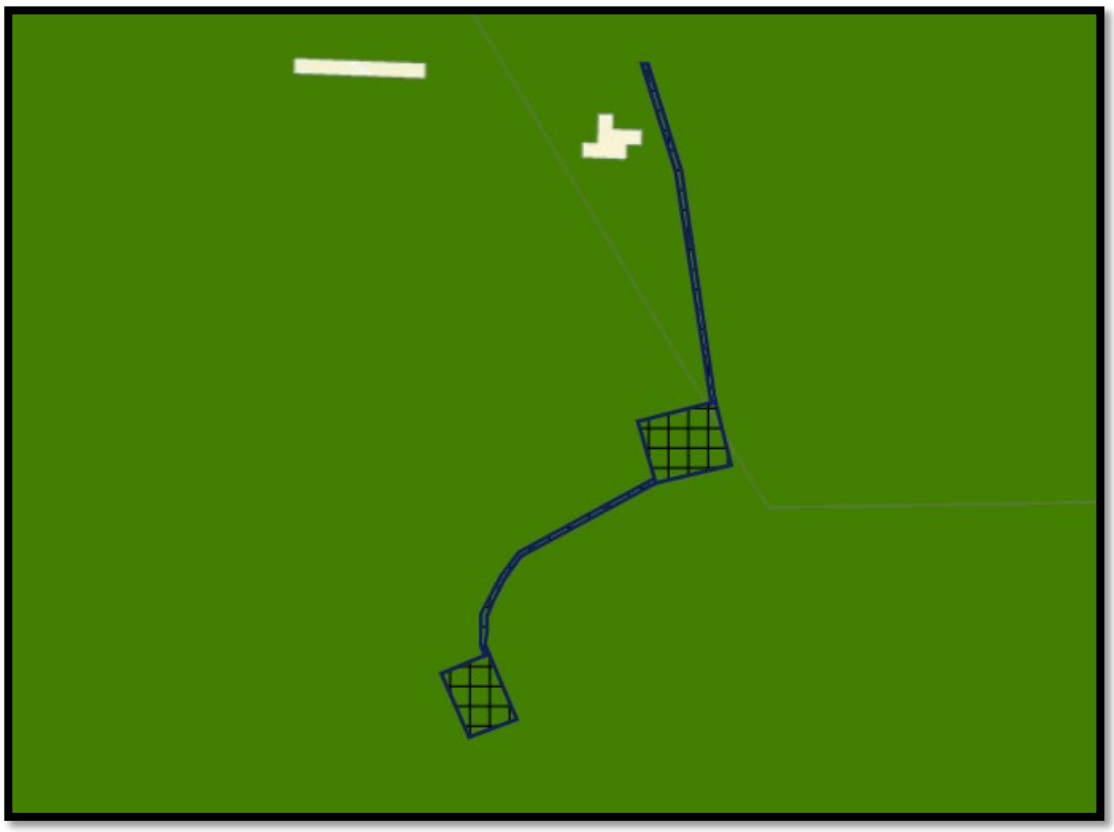


Figure 11: Northern Cape Biodiversity Spatial Plan showing the mining area (blue polygon). (Image obtained from BGIS Map Viewer – 2024 Northern Cape Biodiversity Spatial Plan).

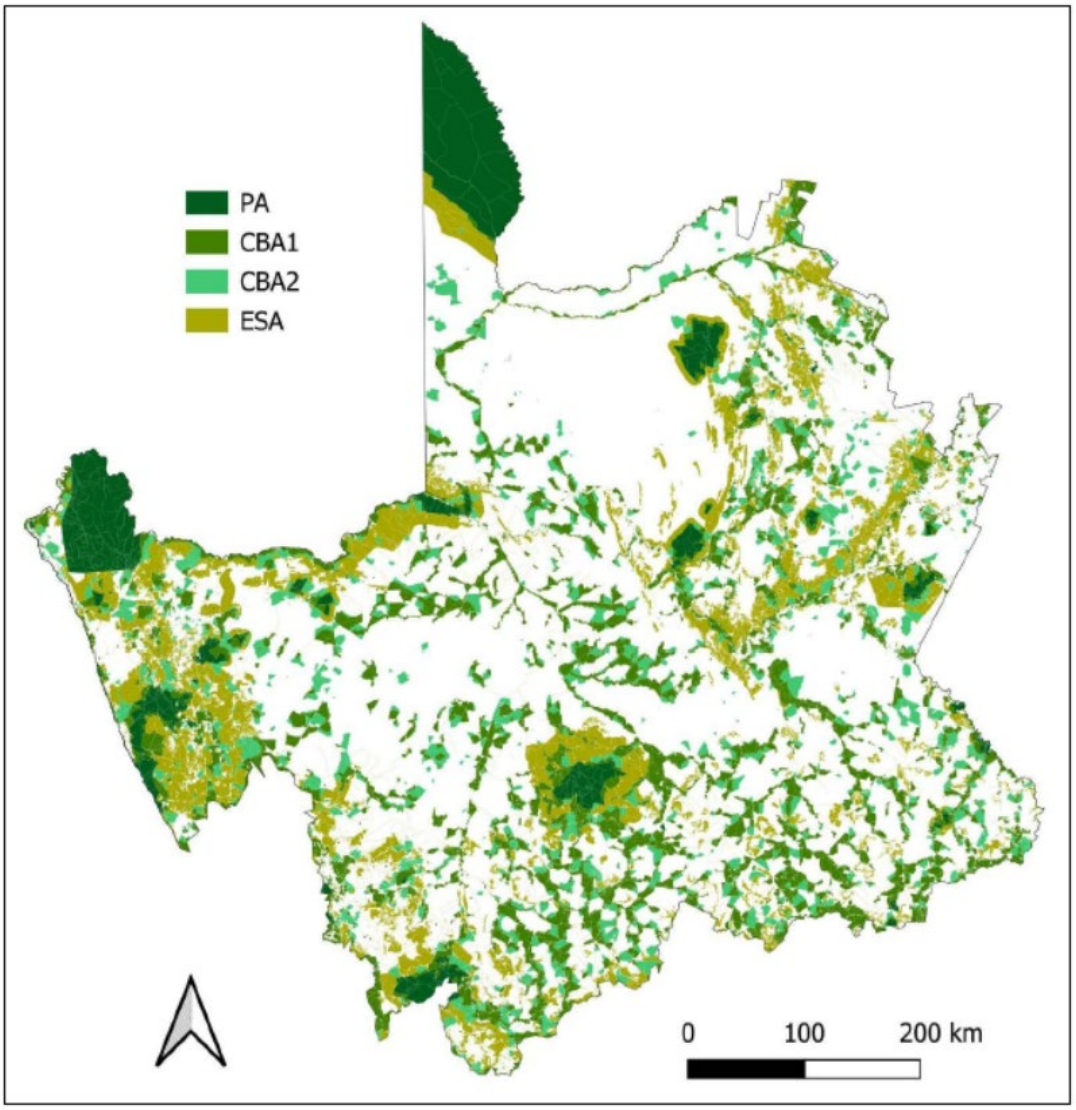


Figure 12: NC BSP - CBA 2024 (map obtained from BGIS)

GROUNDCOVER

According to Mucina and Rutherford (2012) the vegetation type of the surrounding natural areas is known as the NKu 4 Eastern Upper Karoo. The vegetation landscape is mixture of flat and gentle sloping plains (interspersed with hills and rocky areas of Upper Karoo Hardeveld in the west, Besemkaree Koppies Shrubland in the northeast and Tarkastad Montane Shrubland in the southeast), dominated by dwarf *microphyllous shrubs*, with 'white' grasses of the genera *Aristida* and *Eragrostis* (these become prominent especially in the early autumn months after good summer rains). The grass cover increases along a gradient from southwest to northeast.

Some of the important taxa Tall Shrubs: *Lycium cinereum (d), L. horridum, L. oxycarpum.* Low Shrubs*: Chrysocoma ciliata (d), Eriocephalus ericoides subsp. ericoides (d), E. spinescens (d), Pentzia globosa (d), P. incana (d), Phymaspermum parvifolium (d), Salsola calluna (d), Aptosimum procumbens, Felicia muricata, Gnidia polycephala, Helichrysum dregeanum, H. lucilioides, Limeum aethiopicum, Nenax*

microphylla, Osteospermum leptolobum, Plinthus karooicus, Pteronia glauca, Rosenia humilis, Selago geniculata, S. saxatilis. Succulent Shrubs: Euphorbia hypogaea, Ruschia intricata. Herbs*: Indigofera alter¬nans, Pelargonium minimum, Tribulus terrestris. Geophytic Herbs: Moraea pallida (d), Moraea polystachya, Syringodea bifucata, S. concolor.* Succulent Herbs*: Psilocaulon coriarium, Tridentea jucunda, T. virescens. Graminoids: Aristida congesta (d), A. diffusa (d), Cynodon incompletus (d), Eragrostis bergiana (d), E. bicolor (d), E. lehmanniana (d), E. obtusa (d), Sporobolus fimbriatus (d), Stipagrostis ciliata (d), Tragus koelerioides (d), Aristida adscensionis, Chloris virgata, Cyperus usitatus, Digitaria eriantha, Enneapogon desvauxii, E. scoparius, Eragrostis curvula, Fingerhuthia africana, Heteropogon contortus, Sporobolus ludwigii, S. tenellus, Stipagrostis obtusa, Themeda triandra, Tragus berteronianus.*

Endemic Taxa Succulent Shrubs: *Chasmatophyllum rouxii, Hertia cluytiifolia, Rabiea albinota, Salsola tetrandra.* Tall Shrub: *Phymaspermum scopa¬rium. Low Shrubs: Aspalathus acicularis subsp. planifolia, Selago persimilis, S. walpersii*.

Conservation Least threatened. Target 21%. Statutorily conserved in Mountain Zebra and Karoo National Parks as well as in Oviston, Commando Drift, Rolfontein and Gariep Dam Nature Reserves. About 2% of the unit has been transformed, largely due to building of dams (Gariep, Grassridge, Killowen, Kommandodrift, Kriegerspoort, Lake Arthur, Modderpoort, Schuil Hoek, Vanderkloof, Victoria West, Wonderboom and Zoetvlei). *Medicago laciniata* is a common and widespread alien plant. Erosion is moderate (60%) and high (38%). Veld managers perceive much of the Eastern Upper Karoo to be experiencing changes in species composition requiring high-priority action (Hoffman et al. 1999).

Remarks This vegetation type has the largest mapped area of all vegetation units. The regions between Colesberg (Northern Cape) and Springfontein (Free State) fall within a broad ecotone were grassy Eastern Upper Karoo grades into Xhariep Karroid Grassland.

As per the Ecological Assessment the vegetation on site falls within the Eastern Upper Karoo (NKu4) and is in good, largely natural condition with moderate diversity. Several micro-habitats occur, including rocky ridges, shallow soils, and ephemeral drainage lines. No alien or invasive plant species were recorded during the survey. The site contains an unusually high number of protected succulent and geophytic species, several of which have high conservation value and will require translocation prior to disturbance.

Ground cover across the proposed mining footprint is naturally low, which is characteristic of the arid Eastern Upper Karoo vegetation type. According to the ecological assessment, the sparse cover is an inherent feature of the region's climate, shallow soils and extensive surface rock, and therefore reflects an unmodified, intact ecological condition rather than degradation. The vegetation structure is dominated by scattered dwarf karroid shrubs and a patchy but persistent grass layer, with no loss of soil-stabilising vegetation noted. Although grazing by livestock occurs, it has not reduced ground cover beyond moderate levels, and no bare-soil expansion associated with overgrazing was observed. As recorded on page 34 of the assessment, percentage ground cover is considered natural for the region and indicative of a landscape that remains ecologically functional and largely undisturbed.

Figure 13: National vegetation cover map showing the mining area within the Eastern Upper Karoo least threatened terrestrial ecosystem (NKu) (light pink) (Image obtained from BGIS Map Viewer – National Vegetation Map).

The ecological assessment recorded numerous protected plant species on the site, including:

- *Albuca crispa*
- *Aloe broomii*
- *Stomatium rouxii*
- *Anacampseros filamentosa*

- *Trichodiadema setulifolium*
- *Crassula deltoidea*
- *Euphorbia caterviflora*
- *Haworthiopsis venosa subsp. tessellata*
- *Pachypodium succulentum*
- *Pelargonium obtratanifolium (specially protected)*
- *Duvalia corderoyi*
- *Euphorbia arida*
- *Adromischus trigynus*
- *Ceropegia filiformis*

A permit is required for removal or handling of these species. Uncommon and high-value species must be translocated to adjacent undisturbed habitats under specialist supervision before site clearing begins

FAUNA

The faunal environment on and around the proposed mining footprint remains largely intact, reflecting the predominantly natural condition of the surrounding Eastern Upper Karoo landscape. The ecological assessment recorded abundant signs of common mammal species such as Steenbok, Porcupine and Common Molerat, indicating active use of the area and functioning ecological processes. Although historical and ongoing livestock grazing has modified the mammal assemblage particularly through the long-term reduction of larger ungulates and some carnivores the habitat still supports a diversity of widespread generalist species, with the potential for occasional presence of species of higher conservation value, including Hedgehog, Black-footed Cat and Brown Hyena. Importantly, the assessment confirms that the specialised riparian habitat required for the Critically Endangered Riverine Rabbit is absent, resulting in a low sensitivity for this species. Reptiles, including Leopard Tortoise and Rock Monitor, are also present, aligning with the rocky, arid conditions of the site. Given the extensive natural areas surrounding the 5 ha footprint, the anticipated impact on fauna is considered moderate, provided that recommended mitigation measures are implemented.

- Mammals

Mammal activity on the site is evident and reflects a largely intact ecological system despite long-term grazing pressures in the region. The assessment recorded abundant signs of common and adaptable species such as Steenbok, Porcupine and Common Molerat, all of which are well suited to the natural Eastern Upper Karoo habitat. While historical stock farming has reduced populations of larger ungulates and carnivores

over time, and the use of jackal-proof fencing has influenced predator dynamics, the area still supports a functioning mammal community with the potential for occasional use by Near Threatened or Vulnerable species such as Southern African Hedgehog, Brown Hyena and Black-footed Cat. Habitat conditions confirm that the site does not provide suitable dense riparian vegetation required for the Critically Endangered Riverine Rabbit, and the sensitivity for this species is therefore considered low. Because the development footprint is small (5 ha) relative to the extensive surrounding natural habitat, any displacement of mammals is expected to be temporary and localised, with overall impacts assessed as moderate, provided that species-protection measures and pre-clearance checks are implemented.. According to the NCBSP, several threatened mammals have potential habitat within the Upper Karoo region, including the Riverine Rabbit (*Bunolagus monticularis*), a Critically Endangered species associated with drainage lines and dense Karoo shrubland. Although suitable habitat within the disturbed quarry area is limited, field verification will be required to confirm presence or absence.

- Avifauna

Bird diversity is moderate, reflecting the open shrubland landscape. Species such as Karoo korhaan (*Eupodotis vigorsii*), larks (*Calendulauda spp*.), and rock kestrels (*Falco rupicolus*) are expected to occur. The NCBSP lists 22 threatened bird species in the province, but none are endemic to the Victoria West region or specifically dependent on the Upper Karoo Shrubland habitat. The site is not part of an Important Bird and Biodiversity Area (IBA), and impacts on avifauna are expected to be localised and temporary.

- Reptiles and Amphibians

The rocky dolerite substrate provides favourable microhabitats for reptiles such as Karoo girdled lizard (*Cordylus polyzonus*), Namaqua sand lizard (*Pedioplanis namaquensis*), and Karoo whip snake (*Psammophis notostictus*). The NCBSP (2024) identifies the Karoo padloper (*Chersobius boulengeri*), a Vulnerable tortoise species, as a reptile of conservation concern within the broader Upper Karoo region. Amphibians are sparse due to the lack of permanent surface water; only species tolerant of arid conditions, such as the common platanna (*Xenopus laevis*), may occur opportunistically after rainfall.

- Invertebrates

The semi-arid Karoo supports a diverse but understudied assemblage of terrestrial invertebrates, including beetles, ants, termites, and arachnids, which play important

roles in soil turnover and nutrient cycling. No invertebrate species of special concern are recorded in the provincial datasets for this region.

- Sensitivity and Impact Assessment

Although situated in a mapped CBA1, the local faunal sensitivity is assessed as low to moderate, given the limited vegetation structure, absence of surface water, and ongoing agricultural disturbance. Potential impacts from the quarry operation include:

- Temporary displacement of small terrestrial fauna;
- Noise and vibration effects during blasting; and
- Localised habitat loss within the 5 ha footprint.

These effects are reversible and manageable through standard mitigation and rehabilitation measures.

- Mitigation and Management:
  - To minimise faunal impacts, the following actions will be implemented:
  - Pre-clearance surveys before site establishment to identify and relocate fauna;
  - Restricting disturbance to the approved footprint;
  - No hunting or trapping by site personnel;
  - Noise and dust suppression during blasting and crushing operations; and
  - Progressive rehabilitation using indigenous vegetation to facilitate recolonisation.

All impacts are expected to be localised, short-term, and reversible, provided that mitigation measures are implemented. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low-speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

The proposed mining footprint is located on privately owned farmland that has experienced light agricultural use such as livestock grazing, but the geological outcrops within the footprint have not been significantly disturbed and retain their natural surface condition. This allowed the Heritage Impact Assessment to identify three highly significant rock art sites (VF001–VF003) as per Heritage Impact Assessment attached as Appendix M3 directly within the proposed quarry area.

The South African Heritage Resources Agency (SAHRA) maintains a national Palaeontological Sensitivity Map (PSM) to guide developers, heritage authorities, and specialists in identifying areas where palaeontological resources may occur and where specialist input may be required at the outset of a project. According to the PSM, the broader area is rated as having very low palaeontological sensitivity, which is consistent with the PIA findings that no fossils were observed during field assessment and that the underlying dolerite and weathered sedimentary units are unlikely to preserve significant fossil material.

When the footprint of the earmarked mining area is placed on the PSM, the SAHRIS palaeo-sensitivity map (see https://sahris.org.za/map/palaeo) the project lies on high sensitivity (red) rocks and on sands and gravel of unknown palaeosensitivity (no - colour) (as presented in the figure below).

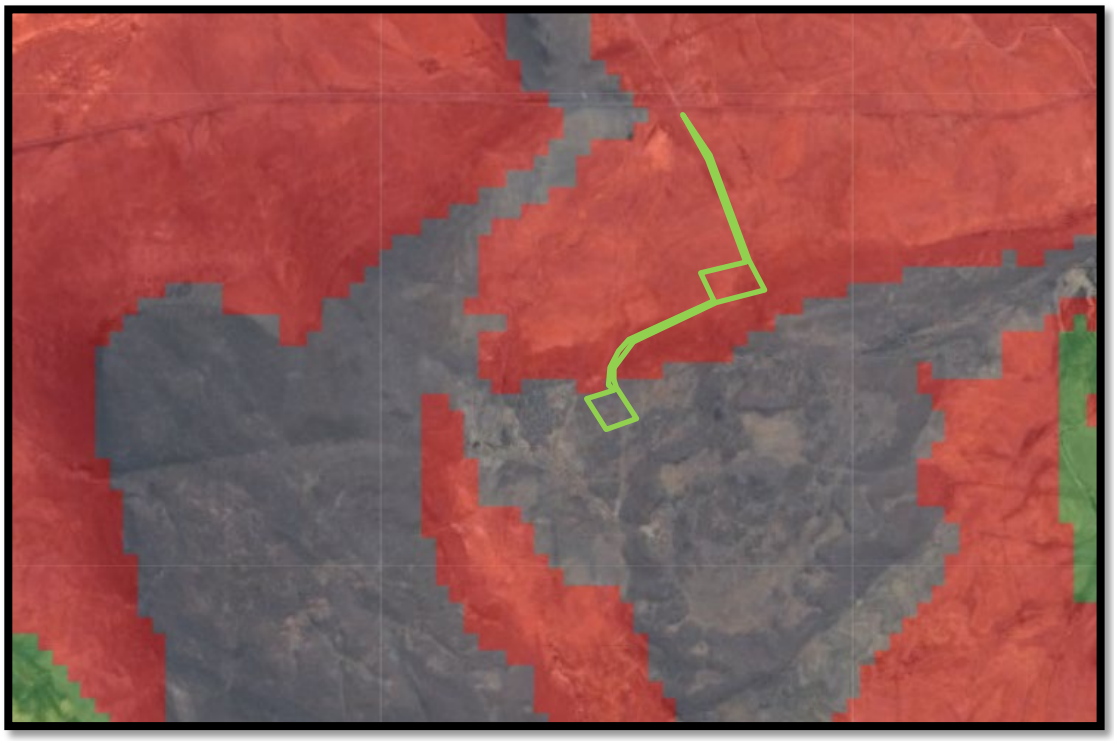


Figure 14: Screenshot from the SAHRIS palaeo-sensitivity map showing the location of the proposed mining area (green polygon) Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero. (Source: https://sahris.sahra.org.za/map/palaeo).

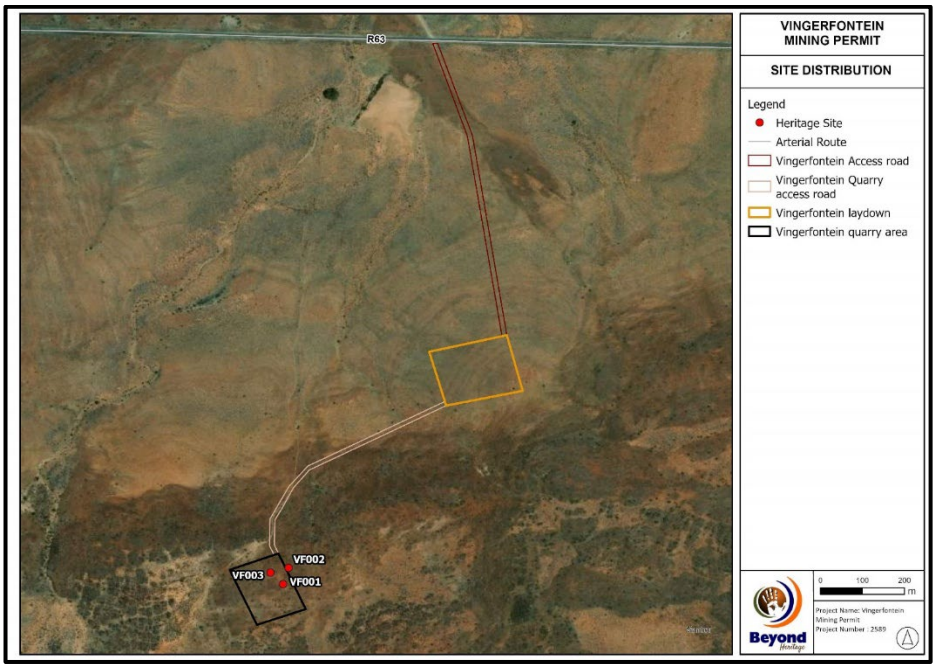


Figure 15: Rock Art - Site distribution map within the Project area as per the Heritage Impact Assessment – Appendix M3.

Figure 16: (Figure 0.16. Large rock panels at VF001.) as per the Heritage Impact Assessment – Appendix M3

Figure 17: (Figure 7.7. Human figures noted at VF001) as per the Heritage Impact Assessment – Appendix M3

Figure 18: (Figure 7.8. Inscriptions at VF002) as per the Heritage Impact Assessment – Appendix M3

Figure 19: (Figure 7.9. Rock art panel at VF002 with animals and bicycles depicted) as per the Heritage Impact Assessment – Appendix M3

Figure 20: (Figure 7.10 Rock art panel at VF002 with animals and bicycles depicted) as per the Heritage Impact Assessment – Appendix M3

Figure 21: (Figure 7.11. Rock art panel at VF002 with animals (horses) depicted) as per the Heritage Impact Assessment – Appendix M3

Figure 22: (Figure 7.12. Rock art panel at VF002 with an ox wagon depicted) as per the Heritage Impact Assessment – Appendix M3

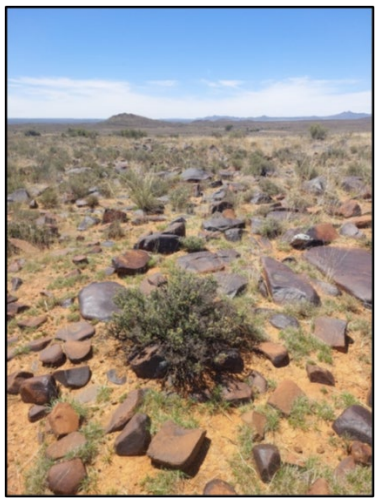


Figure 23: (Figure 7.13. General site conditions at VF003) as per the Heritage Impact Assessment – Appendix M3

Figure 24: (Figure 7.14. Rock art panel at VF003 with animals depicted) as per the Heritage Impact Assessment – Appendix M3

Figure 25: (Figure 7.15. Inscriptions at VF003) as per the Heritage Impact Assessment – Appendix M3

Figure 26: (Figure 7.16. Figures with rifles at VF003) as per the Heritage Impact Assessment – Appendix M3

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Ubuntu Local Municipality Integrated Development Plan – 2023/24)

The project falls under the jurisdiction of the Ubuntu Local Municipality, which encompasses Victoria West, Loxton, and Richmond. According to the 2023/24 Ubuntu Local Municipality Integrated Development Plan (IDP):

The Ubuntu Local Municipality, located within the Pixley ka Seme District of the Northern Cape, encompasses the towns of Victoria West, Richmond, and Loxton, as well as smaller settlements such as Merriman and Hutchinson. The municipality covers approximately 21 835 km², with a predominantly rural character and an economy centred on agriculture, tourism, and small-scale services. Understanding the socio-economic context is essential to evaluate how proposed mining activities, such as the proposed quarry, will align with local development priorities, contribute to economic upliftment, and mitigate potential social impacts. The municipality has a population of approximately 19 000 people.

The economy is dominated by agriculture, small-scale trade, and government services, with high unemployment (≈30%).

Infrastructure development and road maintenance are key municipal priorities due to the regional role of Victoria West as a transport and service hub.

The proposed quarry will support local economic objectives by:

Supplying aggregate material for municipal and provincial infrastructure projects;

Creating temporary employment opportunities (approx. 10–15 people); and Supporting small local enterprises through transport, security, and maintenance contracts.

The project’s scale and location ensure compatibility with surrounding rural land uses and contribute positively to local socio-economic upliftment without causing resettlement or displacement.

Population and Household Profile

The total population of Ubuntu Municipality was recorded at 18 603 in the 2011 Census, an increase from 16 375 in 2001, representing an annual growth rate of 1.6%. Updated Census data (2022) are still being processed, and these figures remain the official baseline.

Municipality	Census 2001	Census 2011
Ubuntu Municipality	16 375	18601
Growth rate (%)		1.6

Source: StatsSA 2011

*Figure 27: Population Growth (*Ubuntu *Local Municipality Integrated Development Plan – 2023/24).*

Towns	2001	2011
Victoria west		7611
Richmond		2841
Loxton		921
Other		7230
Total		**18 603**

*Figure 28: Population town (*Ubuntu *Local Municipality Integrated Development Plan – 2023/24).*

Persons	2001	%	2011
African	2748	16.8	3963
Colored	11912	72.7	12973
Indian	23	0.1	96
White	1693	10.3	1410
Other			
Total	16375		18603

*Figure 29: Population by Group (*Ubuntu *Local Municipality Integrated Development Plan – 2023/24).*

Town	Population 2011	Households 2011	% Household	% Population in DM
Victoria West	7611		7.07%	7.75%
Richmond	2841		0.72%	0.62%
Loxton	921		3.83%	4.16%
Others				
Ubuntu Municipality	**18 603**	5129	2.46%	1.82%

*Figure 30: Population Density (*Ubuntu *Local Municipality Integrated Development Plan – 2023/24).*

Households	2001	2011
Total households	4163	5129
Average households' size	3.8	3.6
Formal dwelling percentage	93.0%	87.6%
Total Backlogs	1200	1820

Economic Profile

The Ubuntu region is largely agriculture-based, with livestock (sheep, goats, cattle) and game farming forming the economic backbone. Wool and meat production dominate the export and local markets respectively. Game biltong and hunting also contribute significantly to local economic activity.

Employment:

- General unemployment: 29.1% (2011)
- Youth unemployment (15–34 years): 34.8%
- Key employment constraints include limited job creation, low literacy, and insufficient entrepreneurship support.

Despite these challenges, the municipality's IDP identifies small-scale mining, tourism diversification, and infrastructure development as key economic enablers. Projects such as the proposed quarry align with local objectives to expand employment, supply materials for infrastructure, and stimulate secondary economic activity (transport, maintenance, and retail).

Municipality	Employed	Total %	Unemployment	Total %	Discouraged work-seeker	Total %	Not Economically Active
Ubuntu	5028	27	2064	11	507	3	3774
Umsobomvu	6117	22	3018	11	1188	4	7491
Emthanjeni	9864	23	3831	9	1203	3	11559
Kareeberg	2856	24	951	8	456	4	3030
Renosterberg	2616	24	957	9	324	3	2796
Thembelihle	3861	25	1533	10	687	4	3777
Siyathemba	5370	25	1728	8	765	4	5787
Siyancuma	7947	21	3120	8	1422	4	10575
TOTAL	43659		17202		6552		

Figure 31: Unemployment: District Context (Information extracted the Ubuntu Local Municipality Integrated Development Plan – 2023/24) - Source: Cencus 2011

Economic Development and Urban Renewal.

The IDP emphasises Local Economic Development (LED) as a strategic objective.To create an environment that promotes development of the local economy and facilitates job creation.

Urban Renewal Priorities (2023–2027):

- Upgrading of Victoria West's central business district and access roads;
- Redevelopment of the Apollo Theatre cultural precinct;
- Support for emerging farmers through commonage land access;
- Promotion of tourism activities (bird watching, mountain walking, star gazing, and local festivals);
- Strengthening municipal enterprise partnerships for youth and women empowerment.

Mining-related infrastructure projects are considered compatible with these renewal objectives, provided that rehabilitation and community participation are well managed.

Education

Education levels reflect gradual improvement over time, though challenges persist, particularly in access to tertiary learning and skills development.

Municipality	No Schooling (%)		Matric (%)		Higher Education(%)	
	2001	2011	2001	2011	2001	2011
Ubuntu LM	30.6	16.4	12.2	18.7	8.0	6.0

Figure 32: Education: District Context (Information extracted the Ubuntu Local Municipality Integrated Development Plan – 2023/24) - Source: Cencus 2011

Overall, the socio-economic environment presents high potential for positive local economic impact, provided that community engagement, local hiring, and responsible environmental management are prioritised.

(b) Description of the current land uses

The proposed quarry is situated on Portions 1 and 2 of the farm Vingerfontein 162, approximately 30 km west of Victoria West, within the Ubuntu Local Municipality (Ward 3) and the Pixley ka Seme District Municipality, Northern Cape Province.

The site lies within a predominantly rural agricultural landscape that forms part of the Nama-Karoo biome, characterised by extensive livestock grazing and scattered dryland cultivation. Land ownership in the area consists of privately held farms varying in size from 2 000 ha to 8 000 ha.

The application area (5 ha) falls within a portion of land currently zoned and utilised for agricultural purposes, primarily extensive grazing of sheep and cattle. The surface is a rocky dolerite outcrop with sparse shrub and grass cover and limited soil depth. Although the land is registered as agricultural, the specific area earmarked for mining has very low agricultural potential due to:

- Shallow, stony lithosols (< 300 mm);
- Minimal vegetation cover;
- Low carrying capacity for livestock; and
- Limited water availability.

As such, it is classified as non-arable grazing land and has not been used for intensive cultivation or irrigation. Occasional grazing occurs when livestock are rotated between camps, but no permanent agricultural infrastructure (such as fencing, water troughs, or cultivated fields) exists within the mining footprint.

The area surrounding the quarry is undeveloped farmland, with the nearest homestead located approximately 1.8 km south-southeast of the proposed mining area. No dwellings, boreholes, or agricultural buildings occur within or immediately adjacent to the 5 ha footprint.

The site and its surroundings are currently used for extensive livestock farming, which remains the dominant land use in the district. The immediate mining footprint is disturbed, rocky, and of low agricultural value, making it well suited for limited open-cast extraction. Given the small scale of the proposed activity, the project will not alter the overall agricultural character or rural land-use identity of the area, and the site can be readily rehabilitated for future grazing upon closure.

The main land use of the surrounding properties is agricultural. The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the proposed site:

Table 11: Land uses and/or prominent features that occur within 500 m radius of S1.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**		Predominantly undeveloped dolerite outcrop with sparse Karoo shrubland and grasses.
Low density residential		**NO**	None within 500 m; nearest farmhouse ±1.8 km southeast.
Medium density residential		**NO**	None in the surrounding rural landscape.
High density residential		**NO**	No urban development; Victoria West lies ±6 km southeast.
Informal residential		**NO**	No informal dwellings present.
Retail commercial & warehousing		**NO**	Not applicable – nearest facilities are in Victoria West.
Light industrial		**NO**	None observed.
Medium industrial		**NO**	None within 500 m
Heavy industrial		**NO**	None within the district.
Power station		**NO**	None in the vicinity.
High voltage power line		**NO**	No overhead transmission lines cross the site.
Office/consulting room		**NO**	None; rural grazing area.
Military or police base / station / compound		**NO**	None nearby.
Spoil heap or slimes dam		**NO**	None; site has not been previously mined
Quarry, gravel or quarry		**NO**	Proposed dolerite quarry (this application). No existing pits nearby.
Dam or reservoir		**NO**	None within 500 m; no surface water features identified.
Hospital/medical centre		**NO**	None; services located in Victoria West.
School/ crèche		**NO**	None within 5 km.
Tertiary education facility		**NO**	None in the municipality.
Church		**NO**	None within the site vicinity.
Old age home		**NO**	None
Sewage treatment plant		**NO**	Located in Victoria West, >6 km away.
Train station or shunting yard		**NO**	Nearest railway infrastructure near Victoria West town.
Railway line		**NO**	No rail infrastructure within 500 m.
Major road (4 lanes or more)		**NO**	R63 provincial road (two-lane) approximately 1.5 km from site.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Airport		**NO**	Victoria West Airstrip >5 km south-east.
Harbour		**NO**	Not applicable (inland area).
Sport facilities		**NO**	None.
Golf course		**NO**	None.
Polo fields		**NO**	None.
Filling station		**NO**	None within 6 km.
Landfill or waste treatment site		**NO**	None within 500 m.
Plantation		**NO**	None.
Agriculture	**YES**		Extensive grazing of sheep and cattle on surrounding farms. No cultivation in the immediate area.
River, stream or wetland	**YES**		No rivers, streams, or wetlands occur within 500 m of the proposed quarry footprint. The ecological assessment confirmed that the project area is situated in an arid landscape where no perennial or seasonal watercourses are present. However, several small ephemeral drainage lines which only flow briefly following rainfall events do occur within the broader project area and are intersected by the proposed access road. These features do not meet the criteria for wetlands or active stream channels but are recognised as minor watercourses for purposes of erosion control and stormwater management, and appropriate mitigation measures have been included in the EMPr.
Nature conservation area		**NO**	None within 10 km.
Mountain, hill or ridge	**YES**		Low dolerite ridges forming part of the natural terrain.
Museum	**YES**	**NO**	None within the vicinity.
Historical building	**YES**	**NO**	None recorded.
Protected Area	**YES**	**NO**	No protected or formally conserved land within 10 km.
Graveyard	**YES**	**NO**	None identified.
Archaeological site	**YES**	**NO**	None recorded during site verification; low sensitivity area.
Other land uses (describe)		**NO**	None – predominantly rural grazing land.

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The proposed quarry area exhibits a gently undulating topography typical of the central Karoo landscape. The site is positioned on a low dolerite rise within a semi-arid plain at an elevation of approximately 1 200–1 250 m above sea level. The terrain slopes mildly to the southeast toward ephemeral drainage lines that only flow during heavy rainfall. There are no steep slopes or erosion gullies within the 4.9ha mining footprint, indicating a stable landform suitable for shallow quarrying activities.

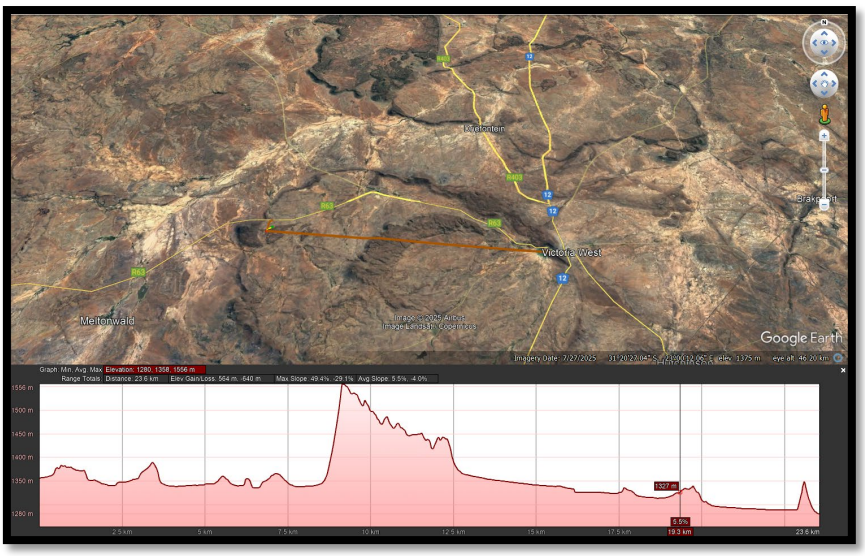


Figure 33: Elevation profile of the proposed mining footprint (Image obtained from Google Earth).

SITE SPECIFIC VISUAL CHARACTERISTICS

The visual character of the area is rural and expansive, dominated by natural grass and shrub vegetation, distant low ridges, and open agricultural rangeland. The quarry footprint will not be visible from Victoria West (±6 km away) due to intervening topography. The nearest receptor is a farmhouse located approximately 1.8 km to the southeast. Given this setting, the visual sensitivity is considered low, and the visual impact will be localised and temporary, mitigated by concurrent rehabilitation and contour shaping. Following successful rehabilitation of the site upon closure of the mine, no lasting visual impact is anticipated.

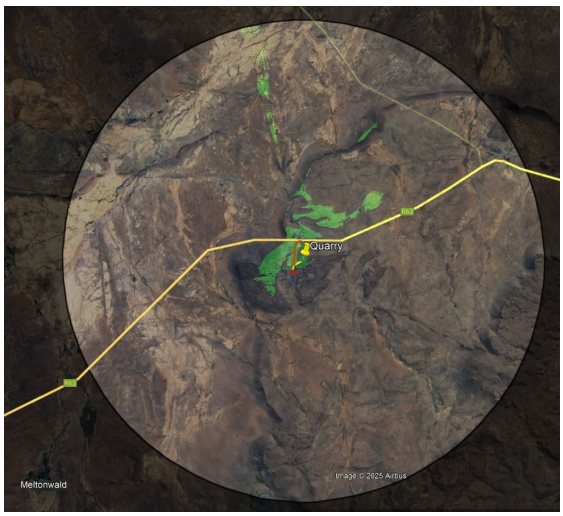


Figure 34: Viewshed of the proposed mining footprint where the green shaded areas show the positions from where the mining area (Proposed mining area) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The ambient air quality in the area is generally good, owing to the absence of industrial emissions or dense settlements. Dust emissions are mainly limited to seasonal windblown dust and traffic on gravel roads. Mining operations may generate temporary dust and noise from drilling, blasting, and hauling, but these are expected to remain within acceptable limits due to the site's distance from receptors.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act. The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

Noise impacts will be managed through limited operating hours and adherence to SANS 10103 noise standards.

Overall, the areas air and noise quality are maintained at favourable levels, but development projects will require careful planning and monitoring to avoid significant impacts on the local environment and community well-being.

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance.

SITE SPECIFIC GEOLOGY AND SOIL

The site is underlain by dolerite intrusions associated with the Karoo Supergroup, forming a hard, durable rock suitable for aggregate production. Soils are typically shallow, stony, and weakly developed on dolerite, with limited agricultural potential (classified as low sensitivity in the Screening Report). Topsoil thickness varies from 100–300 mm and will be stripped and stockpiled for rehabilitation.

SITE SPECIFIC HYDROLOGY

The site is located within an arid Karoo landscape characterised by low and variable rainfall, with mean annual rainfall for the Victoria West area reported at approximately 200–240 mm. Surface runoff in the area is episodic and occurs primarily in response to rainfall events. Field verification and the specialist ecological assessment confirmed

that no perennial rivers, wetlands, or seasonally flowing watercourses occur within the proposed quarry footprint or within a 500 m radius of the site.

Several small, shallow drainage features occur within the broader area and are intersected by the proposed access road. These features are ephemeral in nature and convey surface runoff only following rainfall events. They do not constitute wetlands or permanently flowing stream channels. However, such features are recognised as watercourses in terms of the National Water Act and were assessed accordingly by the specialist.

The ecological assessment, together with the associated watercourse risk assessment, confirmed that no natural wetlands, rivers, or regulated watercourses occur within the quarry or stockpile footprint, and that interactions with watercourses are limited to minor ephemeral drainage lines along the access road alignment. The specialist further assessed the nature, extent, and location of the proposed activities in relation to these drainage features and concluded that, with appropriate design and mitigation measures in place, the proposed development will not result in the impeding or diversion of flow (Section 21(c)) or the alteration of the bed, banks, or characteristics of a watercourse (Section 21(i)).

On the basis of this specialist input, the proposed activities do not trigger water uses in terms of Section 21(c) or Section 21(i) of the National Water Act. Notwithstanding this conclusion, appropriate stormwater management and erosion-control measures will be implemented to maintain existing drainage patterns, particularly at points where the access road intersects these minor drainage features.

Water required for dust suppression will be sourced from an existing authorised abstraction point. Should any additional abstraction or other regulated water use be required, the necessary authorisation will be obtained in accordance with the National Water Act to ensure compliance with the Department of Water and Sanitation.

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

According to the Northern Cape Biodiversity Spatial Plan (NCBSP, 2024), the proposed mining footprint is classified as an Other Natural Area (ONA) and does not fall within a Critical Biodiversity Area (CBA). ONA landscapes represent natural or near-natural areas that retain ecological function but are not required to meet provincial biodiversity targets. The vegetation unit underlying the site is NKu 4 Eastern Upper Karoo, a semi-arid shrubland dominated by dwarf microphyllous shrubs, white grasses (*Aristida* and *Eragrostis spp*.), and rocky dolerite outcrops. The terrain comprises

mudstones and sandstones of the Beaufort Group with intruding Jurassic dolerite sills, supporting shallow Mispah and Glenrosa soils typical of the Upper Karoo Hardeveld.

Although the national Screening Tool assigned a Very High terrestrial biodiversity sensitivity to the area, the ecological assessment confirmed that this reflects the broader National Protected Area Expansion Strategy (NPAES) focus area and not the presence of site-specific irreplaceable biodiversity features. Field verification found no suitable habitat for Riverine Rabbit (*Bunolagus monticularis*) and no individuals were recorded, as the species requires dense riparian shrubland absent from the site. While rocky microhabitats in the region may support Karoo Padloper (*Chersobius boulengeri*), none were observed within the proposed footprint, and potential impacts can be mitigated through pre-construction walk-throughs and fauna relocation procedures.

The proposed mining footprint does not overlap with any area of moderate biodiversity importance or associated moderate mining risk. Only a small portion of the access road intersects such an area when overlaid on the Mining and Biodiversity Map. According to the Mining and Biodiversity Guidelines, areas of intermediate biodiversity importance are described as having “moderate biodiversity value.” The Guidelines further state that environmental screening, the Environmental Impact Assessment (EIA), and specialist studies should confirm the presence and significance of biodiversity features. These findings should then be used to establish a site-specific basis for applying the mitigation hierarchy and guiding regulatory decision-making.

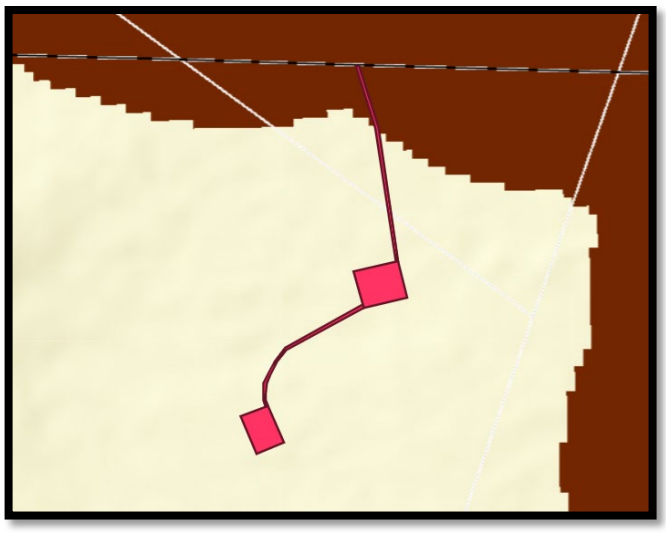


Figure 35: The Mining and Biodiversity importance map with the proposed mining footprint indicated by the dark pink polygon. Dark brown – high biodiversity importance, high risk for mining, Light brown – moderate biodiversity importance, moderate risk for mining, (image obtained from the BGIS Map Viewer – Mining Guidelines).

The field assessment therefore verifies that the site supports moderate biodiversity sensitivity, driven primarily by the presence of protected plant species and small

ephemeral drainage lines, rather than the presence of threatened fauna or irreplaceable ecological features. These findings refine the initial desktop sensitivity and establish the site-specific basis for applying the mitigation hierarchy within the EIA process.

SITE SPECIFIC GROUNDCOVER

Site-specific observations confirm that ground cover across the proposed mining footprint is naturally low, reflecting the arid climate, shallow soils and high proportion of surface rock typical of the Eastern Upper Karoo. The ecological assessment notes that this low ground cover is not an indication of degradation, but rather characteristic of an intact karroid shrubland system where vegetation is inherently sparse and discontinuous. The area supports a mosaic of dwarf karroid shrubs interspersed with open patches and a patchy but functioning grass layer dominated by *Aristida*, *Fingerhuthia* and *Eragrostis* species. These conditions were observed consistently across the quarry site, stockpile area and access road alignment. No evidence of extensive bare-soil expansion or vegetation loss associated with overgrazing was recorded, and livestock impacts were considered moderate and not severe enough to alter ground cover patterns. As confirmed on page 34 of the ecological assessment, percentage ground cover is regarded as natural for the region and remains unmodified and intact, supporting the overall evaluation of the vegetation as being in good ecological condition.

SITE SPECIFIC FAUNA

The site-specific faunal assessment confirmed that the proposed mining footprint and its surroundings still support a functioning assemblage of fauna typical of the Eastern Upper Karoo. Numerous signs of small to medium mammals were recorded, including tracks, droppings and foraging evidence of Steenbok (*Raphicerus campestris*), Porcupine (*Hystrix africaeaustralis*), and Common Molerat (*Cryptomys hottentottus*), indicating regular use of the area. Scat analysis also suggested the presence of a small insectivorous mammal, potentially the Southern African Hedgehog (*Atelerix frontalis*), a Near Threatened species. Reptile remains were documented for Leopard Tortoise and Rock Monitor, both common and widespread in this habitat. Although the broader landscape may support conservation-important species such as Brown Hyena, Black-footed Cat, and Karoo Padloper, no individuals or active dens/burrows were detected within the proposed development footprint. Importantly, the site lacks the dense riparian scrub required by the Riverine Rabbit, confirming *very low habitat suitability* for this species. Given the small footprint relative to extensive natural habitat surrounding the site, the fauna present are expected to disperse readily, and the overall site-specific faunal sensitivity is assessed as moderate, driven primarily by

general habitat value rather than the confirmed presence of threatened species. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low-speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

According to the National Screening Tool, the archaeological and cultural heritage theme for the area was initially identified as Low sensitivity, while the palaeontology theme was flagged as Very High sensitivity. However, the Heritage Impact Assessment (HIA) undertaken for the project determined that the archaeological screening outcome did not accurately reflect on-site conditions. The field-based investigation identified three rock art engraving sites (VF001–VF003) located directly within the proposed quarry footprint, as documented in Appendix M3: Heritage Impact Assessment.

The engravings comprise animal figures, human forms, geometric motifs, and historic-period inscriptions. Based on their characteristics, these were initially interpreted as representing cultural expressions associated with San hunter-gatherers, Khoekhoe pastoralists, and later colonial-period groups, and were therefore assessed as Grade IIIA heritage resources of high significance, owing to their aesthetic, scientific, historical, and cultural value.

No built heritage resources, graves, stone-walled structures, or historical farmsteads older than 60 years were identified within or adjacent to the proposed mining area. Apart from the identified rock art sites, no additional archaeological material such as stone tools, pottery, or middens was observed during the detailed survey.

With respect to palaeontology, the Palaeontological Impact Assessment (PIA) confirmed that although the broader region forms part of the fossil-bearing Beaufort Group, the quarry footprint itself is underlain predominantly by igneous dolerite, which is non-fossiliferous and has thermally altered surrounding sediments. Consequently, the palaeontological sensitivity of the site is assessed as Low, and the likelihood of encountering fossil material is considered minimal.

Given that both a full HIA and PIA have been completed, submission of a Notification of Intent to Develop (NID) is not required. The completed specialist assessments will instead be submitted directly to the South African Heritage Resources Agency (SAHRA) for review in terms of Section 38(8) of the National Heritage Resources Act.

At this stage, it is noted that the engraved dolerite boulders are large in size and exhibit existing fracturing, which may limit the feasibility of successful relocation without damage. A suitably qualified rock art specialist will therefore be consulted to assess the technical feasibility, risks, and heritage implications of potential mitigation options. In addition, the landowner has indicated that the engravings were created by his father; however, this information has not yet been independently verified and will be assessed by the appointed specialist. The specialist's findings may influence the final assessment of significance and the recommended management approach, and will be confirmed in the Final Basic Assessment Report (FBAR).

A Heritage Chance Find Procedure will be implemented to ensure that, should any archaeological material or fossil heritage be unexpectedly exposed during excavation, work in the affected area is halted immediately and SAHRA and a suitably qualified specialist are notified.

Although the presence of the rock art sites necessitates careful management, the implementation of mitigation measures outlined in the HIA and EMPr — including avoidance where feasible, detailed recording and documentation, and any controlled mitigation measures authorised under a SAHRA permit — is expected to reduce impacts on heritage resources to an acceptable and manageable level, subject to confirmation in the FBAR.

SITE SPECIFIC INFRASTRUCTURE

The site currently has no built infrastructure. Temporary site infrastructure for the quarry will include a crushing and screening plant, diesel storage area, containerised office and workshop, chemical toilets, weighbridge, salvage yard, and on-site generators for power. No permanent electricity or water connections are required, and all wastewater will be contained and removed from site by licensed service providers.

During the environmental impact assessment process, the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant a site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

(d) Environmental and current land use map.
(Show all environmental and current land use features)

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

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

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

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place during site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	2	1	1.6	5	2	3.5	**5.6**				

Loss of agricultural land for duration of mining

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	4	1	2.3	5	5	5	**11.5**				

Visual intrusion as a result of site establishment during site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	2	1	1.6	4	3	3.5	**5.6**				

Potential impact on fauna within the footprint area during site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Potential impact on vegetation and listed and/or protected plant species during site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
1	4	1	2	1	2	1.5	**3**				

Dust nuisance due to site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	3	3.5	**9.1**				

Potential impact on archaeological artefacts due to site establishment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	5	5	4	1	1	1	**4**				

New job opportunities as a result of the mining operation (Positive Impact)

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: High			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
4	4	5	4.6	5	5	5	**23**				

CONSTRUCTION OF SITE ACCESS ROAD:

Visual intrusion caused by construction of site access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	1	1	1.6	4	1	2.5	**4**				

Loss of stockpiled topsoil during construction of access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	1	1	1	4	1	2.5	**4**				

Dust nuisance as a result of the construction of access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	1	2	1.6	4	4	4	**6.6**				

Noise nuisance generated by earthmoving machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	1	2	1.6	4	4	4	**6.6**				

Potential erosion of denuded areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	4	2	3	**6.9**				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	1	1	1.6	4	4	4	**6.4**				

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by stripping and stockpiling of topsoil and/or overburden.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	4	4	4	**10.4**				

Loss of stockpiled topsoil during mining and stockpiling

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	4	4	**10.4**				

Dust nuisance as a result of the disturbance of soil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	2	2.3	4	4	4	**10.4**				

Noise nuisance generated by earthmoving machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	2	2.3	4	4	4	**9.2**				

Potential impact on local fauna due to disturbance and loss of available habitat

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	4	4	4	**9.2**				

Potential erosion of denuded areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	4	2	3	**6.9**				

Loss of stockpiled material due to ineffective storm water control

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	4	2	3	**6.9**				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	4	4	4	**9.2**				

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion as a result of excavation and from loading and vehicles transporting the material

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	4	5	4.5	**11.7**				

Dust nuisance due to excavation and from loading and vehicles transporting the material

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Noise nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Unsafe working environment for employees

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Soil contamination from hydrocarbon spills and/or littering

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Potential impact on areas of palaeontological concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance				
							Low	Low-Medium	Medium	Medium-High	High
							1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Facilitation of erosion due to mining activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	2	3	7.8				

DRILLING AND BLASTING ACTIVITIES

Visual intrusion as a result of drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	4	3	3.5	**9.1**				

Dust nuisance due to drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	3	3.5	**9.1**				

Noise nuisance as a result of drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low – Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	3	3.5	**9.1**				

Unsafe working environment for employees

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	3	3.5	**9.1**				

Soil contamination from hydrocarbon spills and/or littering as a result of drilling

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	3	3.5	**9.1**				

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Noise nuisance stemming from operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Visual intrusion as a result of operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Potential contamination of environment due to improper waste management

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4.5	**11.7**				

Overloading of trucks impacting road infrastructure

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	5	4	**11.7**				

Degradation of the access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	2	3	4	5	4.5	**13.5**				

CUMULATIVE IMPACTS:

Long-term habitat modification.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	2	1	1.6	4	3	3.5	**5.6**				

Increased risk of invasive species.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
3	3	1	2.3	4	4	4	**9.2**				

Impact on existing infrastructure as a direct result of the mining operation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	4	4	4	**10.4**				

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	1	3	4	5	4.5	**13.5**				

Erosion of returned topsoil after rehabilitation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	2	3	**7.8**				

Infestation of the reinstated areas by weeds and invader plant species

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	4	4	**10.4**				

Potential impact associated with litter/waste left at the mining area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	4	4	4	**10.4**				

Return of the mining area to landscape feature upon closure (Positive Impact)

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
3	5	1	3	5	5	5	**15**				

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

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

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

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

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

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

The table below will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 12: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

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

Table 13: Criteria for the rating of duration.

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

Determination of Extent/Spatial Scale

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

Table 14: Criteria for the rating of extent / spatial scale.

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

Determination of Overall Consequence

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

Table 15: Example of calculating overall consequence.

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

Determination of Likelihood:

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

Determination of Frequency

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

Table 16: Criteria for the rating of frequency.

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

Determination of Probability

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

Table 17: Criteria for the rating of probability.

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

Overall Likelihood

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

Table 18: Example of calculating overall likelihood.

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

Determination of Overall Environmental Significance:

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

Table 19: Determination of overall environmental significance.

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

Qualitative description or magnitude of Environmental Significance

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

Table 20: Description of environmental significance and related action required.

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

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

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

Medium-High — Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.

Medium — Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, in case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.

Low-Medium — Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.

Low — Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of

positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.

Insignificant — There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

The environmental assessment evaluated the initial quarry layout (Site Alternative 1, S1) and a feasible alternative layout (S2) to determine which configuration would best minimise ecological disturbance, heritage impacts, and operational constraints. The alternatives were assessed in terms of biodiversity sensitivity, heritage resource occurrence, terrain, geological suitability, hydrology, visibility, and proximity to receptors.

Site Alternative 1 (S1) the preferred 5 ha footprint, is located on a naturally rocky dolerite rise with shallow soils and moderate ecological sensitivity, supporting intact Eastern Upper Karoo vegetation. The specialist ecological assessment confirmed that although the vegetation is natural and largely undisturbed, the footprint avoids areas of particularly high conservation concern and allows impacts to be managed to low significance with standard mitigation.

The Heritage Impact Assessment (Appendix M3) identified three high-significance rock art sites (VF001–VF003) located within or immediately adjacent to the proposed quarry footprint, requiring strict management under the National Heritage Resources Act. Although these sites fall directly within the area of potential impact, the layout of Site Alternative 1 (S1) allows for heritage mitigation through the establishment of avoidance buffers or, where avoidance is not feasible, the controlled relocation of affected engraved boulders under a SAHRA-issued Section 35 permit. In contrast, the alternative layout (S2) would position mining activities closer to concentrations of sensitive heritage features, increasing both the likelihood and severity of irreversible cultural loss. Accordingly, S1 remains the preferred option from a heritage risk-management perspective.

From a palaeontological perspective, the PIA recorded no fossils at the site and verified a Low palaeontological sensitivity, despite the Screening Tool's "Very High" designation. No fatal-flaw fossil risks influence the selection of S1, and impacts remain low provided a Chance-Find Procedure is implemented.

Operationally, S1 provides a compact, accessible footprint with suitable dolerite exposure for aggregate production, minimal need for new access routes, and favourable topography for

stormwater management. In contrast, S2 would require additional earthworks, greater vegetation clearance, and larger-scale visual modification.

Positive Aspects of the Selected Layout (S1)

- Located on shallow, rocky terrain already limiting agricultural use.
- Avoids higher-sensitivity vegetation mapped in adjacent areas.
- Allows heritage resources to be buffered or mitigated without requiring full redesign.
- Requires limited linear infrastructure, reducing fragmentation.
- Enables phased mining and concurrent rehabilitation to minimise cumulative impacts.
- Ensures low palaeontological risk with standard chance-find procedures.

Negative Aspects / Mitigation Requirements:

- Presence of nearby rock art engravings requires strict SAHRA-governed mitigation.
- Natural vegetation will still be cleared, though impacts remain manageable.
- Visual alteration of the dolerite rise will occur but remains localised.
- Dust, noise and traffic impacts must be managed through standard operational controls.

Comparison with Alternative Layout (S2)

- S2 intersects more sensitive ecological and heritage areas, increasing potential high-significance impacts.
- S2 offers poorer access conditions and would require greater vegetation and soil disturbance.
- S2 yields no operational advantage over S1 and introduces additional compliance risks.

Conclusion

The comparative evaluation shows that Site Alternative 1 provides the Best Practicable Environmental Option (BPEO), balancing ecological protection, heritage management, operational viability, and rehabilitation potential. With the prescribed mitigation measures, the environmental and community impacts of S1 are considered low to moderate and acceptable.

Alternative Layouts Considered

Alternative	Description	Advantages	Disadvantages
Alternative 1 – Western Relocation	Move quarry ~200 m west into lower terrain.	Less visible from the R63.	Closer to ephemeral drainage; higher erosion and stormwater risks; longer haul route.
Alternative 2 – Eastern Relocation	Shift ~150 m east onto flatter terrain.	Easier truck access and turning area.	Closer to grazing land; higher soil erosion potential.
No-go Alternative	No mining activities undertaken.	Avoids all biophysical impacts.	Loss of local employment; forgoes infrastructure material supply; no land-use diversification.

The initial layout remains the preferred option due to its low environmental sensitivity, efficient site access, and compatibility with existing land use.

Project-Associated Positive Impacts

Positive Impact	Description / Anticipated Benefit
Employment Creation	Temporary and semi-skilled job opportunities for local residents during site establishment, operations, and rehabilitation.
Local Economic Stimulation	Procurement of services, fuel, catering, transport, and minor maintenance from Victoria West businesses.
Infrastructure Support	Provision of affordable construction material to regional infrastructure and road-upgrade projects in Ubuntu LM.
Land-Use Diversification	Introduces controlled mineral extraction as a complementary land use within an agricultural setting.
Land Rehabilitation	The phased mining approach (1–1.5 ha at a time) allows for progressive rehabilitation, returning the site to its previous grazing condition post-closure.
Skills Transfer	On-site training in basic machinery operation, safety, and environmental compliance enhances local workforce capacity.

Potential Negative Impacts

The following subsections detail possible negative impacts per project phase, including proposed mitigation measures to reduce or eliminate significance.

Site Establishment and Infrastructure Development

Potential Impact	Description
Alteration of agricultural sense of place	Introduction of mining equipment may temporarily change the rural landscape character.
Loss of agricultural land	5 ha temporarily excluded from grazing during mining.
Visual intrusion	Machinery and site clearing visible from short-range vantage points.
Impact on fauna and flora	Disturbance to local fauna and loss of sparse vegetation.
Impact on listed/protected species	Low likelihood; field verification will confirm presence of any protected plants.
Dust nuisance	Earthworks and vehicle movement may generate dust.

Archaeological disturbance	Low potential; chance-find protocol to be implemented.

Construction of Site Access Road

Potential Impact	Description
Visual intrusion	Access road construction may cause minor visual disruption.
Loss of topsoil	Poor stockpiling management may lead to soil loss.
Dust nuisance	Movement of vehicles on gravel surface during dry periods.
Noise nuisance	Operation of graders and compactors may increase ambient noise.
Erosion	Denuded areas vulnerable to water erosion during rainfall.
Hydrocarbon contamination	Accidental fuel or oil leaks from construction machinery.

Stripping and Stockpiling of Topsoil / Overburden

Potential Impact	Description
Visual intrusion	Temporary exposure of bare surfaces and stockpiles.
Loss of topsoil	Ineffective stockpile management may reduce soil viability.
Dust emissions	Disturbance of dry soil during stripping.
Noise	Machinery operations during topsoil removal.
Faunal disturbance	Loss of microhabitats and displacement of small mammals/reptiles.
Erosion	Wind and water erosion of stripped surfaces.
Hydrocarbon contamination	Fuel or oil leaks from loading equipment.

Excavation, Loading, and Hauling

Potential Impact	Description
Visual intrusion	Quarry face and haulage visible from nearby properties.
Dust and noise	Generated by drilling, blasting, and hauling activities.
Worker safety	Increased risk due to machinery and blasting operations.
Hydrocarbon contamination	Spillage from machinery during operation or refuelling.
Palaeontological disturbance	Chance exposure of fossil-bearing strata during excavation.
Erosion	Destabilisation of quarry edges and haul road surfaces.

Processing, Stockpiling, and Transporting

Potential Impact	Description
Dust nuisance	From screening, crushing, and loading operations.
Noise	From crushers and conveyor systems.
Visual intrusion	Dust plumes and movement of machinery.
Waste contamination	Improper waste disposal or spillage.
Road degradation	Increased wear on the R63 and access road.

Cumulative Impacts

Potential Impact	Description
Long-term habitat modification	Alteration of natural vegetation over time.
Invasive species	Potential colonisation of disturbed soil by alien species.
Infrastructure stress	Incremental damage to rural roads due to truck traffic.

Sloping and Landscaping During Rehabilitation

Potential Impact	Description
Safety risk	Un-sloped areas may pose collapse hazards.
Erosion of replaced topsoil	Poor slope stabilisation or insufficient vegetation.
Weed infestation	Disturbed soil may promote invader species establishment.
Litter/waste residuals	Improper site cleanup after closure.

The initial site layout offers the most sustainable and least intrusive configuration for the quarry. It balances environmental protection, operational practicality, and community benefit through:

- Careful siting on a low-sensitivity dolerite rise;
- Progressive rehabilitation to restore grazing potential; and
- Socio-economic enhancement via local employment and service procurement.

While short-term impacts, particularly dust, noise, and visual disturbance, are inevitable, they are temporary, localised, and reversible with effective mitigation. Overall, the project's positive socio-economic outcomes outweigh its manageable environmental impacts, supporting its suitability for authorisation subject to EMPr compliance and ongoing monitoring.

Therefore, the preferred initial site layout offers the most balanced configuration between environmental protection and economic viability.

Through careful siting, progressive rehabilitation, and strict implementation of the EMPr, the project's overall environmental impact will remain low to moderate, while the positive socio-economic benefits to the Ubuntu Local Municipality, such as employment, service contracts, and local aggregate supply, will be significant.

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

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

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

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area:

Rehabilitation of the proposed mining site will prioritize stabilizing and preparing disturbed areas for potential agricultural use or natural regrowth, considering the minimal topsoil available. Key elements of this plan are as follows:

Rehabilitation Process:

The operation will proceed in staged sections of approximately 1–1.5 hectares, with each section undergoing rehabilitation immediately after completion of mining activities in that area. Earthmoving equipment will handle in-situ material during operations, ensuring that disturbed areas are minimized. Given the rocky, low-topsoil nature of the site, topsoil recovery will be limited to stripping whatever minimal soil can be recovered from the rocky terrain. This soil will be stockpiled temporarily for later redistribution.

- Topsoil Redistribution:

Although the site lacks substantial topsoil, any minimal amount of soil material recovered will be returned to its original depth after profiling the excavated areas with acceptable contours and erosion control measures. This redistribution will help stabilize the soil, reduce erosion, and foster natural regrowth or future agricultural use.

- Erosion Control and Profiling:

Excavated areas will be contoured and graded to prevent erosion and promote natural water flow. These erosion control measures will also help prevent sediment runoff into nearby areas and support the overall stability of the rehabilitated sections.

- Waste Management:

No waste material will be allowed to be deposited within the excavated areas. This will help maintain the integrity of the rehabilitated landscape and prevent any contamination that could hinder vegetation growth or future agricultural use.

- Future Land Use Preparation:

This rehabilitation approach is tailored to prepare the land for either future agricultural use or natural regrowth, aligning with the site's existing land use and minimal soil resources. By focusing on stabilization and basic soil restoration, the site will be left in a condition that allows for flexible land use options post-rehabilitation.

- This staged approach will ensure that each section is rehabilitated to acceptable standards before moving on to the next, facilitating a controlled, orderly rehabilitation process with ongoing oversight and soil management as required.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and be always kept in good condition.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of new areas may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure, the mining area must be rehabilitated in accordance with approved closure objectives, focusing on stability, safety, and visual integration with the surrounding landscape, without implying backfilling of excavated areas.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB’s (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.

- The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.
- Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- Loads must be flattened to prevent spillage during transportation on public roads.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM: AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

Noise Handling:

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM: AQA, 2004, SANS 10103:2008.
- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers. If at all possible, the generators must be placed as far away from the nearby land users as practicable. Also, to reduce vibration noise, all generators must be set up on a level surface or footing.
- Best practice measures shall be implemented to minimize potential noise impacts.

GEOLOGY AND SOIL

Topsoil Management:

Potential loss or degradation of topsoil due to the rocky terrain, limited soil availability, and the need to ensure that disturbed areas can be rehabilitated effectively once mining activities cease. Inappropriate topsoil handling could compromise post-mining land capability and long-term vegetation recovery.

The proposed mining footprint is characterised by shallow, coarse-textured soils typical of the Eastern Upper Karoo. Although natural topsoil is limited in depth and fertility, it remains a critical resource for rehabilitation.

- Disturbance during stripping, loading, and stockpiling presents several risks:
- Loss of soil structure and fertility through compaction, erosion, or desiccation;
- Mixing of topsoil with subsoil or waste material, reducing seed-bank viability;
- Wind erosion during dry conditions; and
- Loss of stored topsoil if stockpiles are poorly located or inadequately protected.

If unmanaged, these impacts could delay revegetation, increase erosion potential, and result in non-compliance with DMPR closure objectives. Therefore, any available topsoil should be managed as follows if practically possible. To safeguard the limited soil resource and support successful rehabilitation, the following measures will be implemented:

- The upper 300 mm of the soil must be stripped and stockpiled before mining if and were available.
- Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil must be stripped and stockpiled separately during site preparation and replaced over disturbed areas on completion.
- Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed and inactive areas.
- Topsoil heaps may not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm or to a depth that is practical and aligns with the original and/or surrounding conditions, over the rehabilitated area upon closure of the site.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of

year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.

- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

To minimise soil erosion, protect ephemeral drainage features, and maintain natural hydrological processes, the following mitigation measures—derived directly from the ecological specialist report must be implemented:

Vegetation Clearing, Soil Stabilisation & Topsoil Control:

- Clearing of vegetation must be strictly limited to the approved mining footprint and associated infrastructure. No expansion beyond the minimum operational area may occur.
- Topsoil must be stripped, stored separately, and stockpiled on flat, stable areas within the disturbed footprint. Stockpiles must be protected from wind and water erosion through berming and temporary vegetative cover where feasible.
- Rehabilitation and re-spreading of topsoil must occur as soon as practical following completion of each mining phase to reduce exposure time and erosion risk.
- Post-clearing areas must be stabilised using brush-packing or other erosion-control methods recommended for semi-arid Karoo environments.

Stormwater Diversion & Protection of Drainage Lines

- Natural flow paths must not be obstructed or altered. Runoff from undisturbed catchments must be allowed to pass safely around the mining area.
- Mechanical diversion structures (e.g., berms, contour banks, trenches) must be installed to direct clean stormwater around disturbed areas and prevent concentrated flow from entering excavations.
- Ephemeral drainage lines intersected by the access road must be crossed using low-impact structures such as drifts, culverts, or armored crossings to prevent channel incision and sediment mobilisation (Ecological Assessment recommendation).
- No dumping of spoil, rubble, or soil may occur within or adjacent to drainage lines.
- Erosion Prevention Within the Mining Area
- The outflow of runoff from the quarry excavation must be tightly controlled to prevent downslope erosion. Temporary berms and interceptor drains must be placed at strategic exit points where overflow may occur.

- Roads, haul routes, and disturbed areas must be inspected regularly for signs of rilling, gully formation, or sediment displacement. Problem areas must be stabilised immediately and rechecked after the next rainfall event.
- All erosion issues identified must be addressed within 48 hours and monitored thereafter to ensure long-term success.

Sediment Control

- Silt traps, sediment fences, gabions, or geotextile barriers must be installed downslope of disturbed areas, particularly where there is potential for sediment to migrate into ephemeral drainage lines.
- Sediment traps must be cleared and maintained regularly to preserve functionality and avoid blockage that could divert flows into sensitive areas.

Stormwater Management Requirements (DWS Best Practice)

- Mining operations must comply with the Department of Water and Sanitation's Best Practice Guidelines for small-scale mining:
  Clean-water system:
- All uncontaminated stormwater must be kept separate from operational areas and routed along natural flow paths into existing drainage channels.
  Dirty-water system:
- All water contaminated by mining activities (processing areas, vehicle movement zones, workshops) must be collected in a separate containment system.
- Dirty water must not be allowed to mix with clean water under any circumstances.
  Stormwater plan:
- A stormwater management plan must apply throughout the full life cycle of the mine and must incorporate variability across wet and dry hydrological years.
- Stakeholder and regulatory requirements must be included in the stormwater planning process.

Pollution Prevention Measures

- All polluting activities (fuel storage, vehicle maintenance, equipment wash bays) must be confined to designated workshop or service areas built on impermeable, bunded surfaces.
- Fuel and chemical storage must occur in secure bunded facilities capable of holding 110% of total stored volume. Bunds must include a sump and must be covered to exclude rainwater.
- Drip trays and spill kits must be available and used during refuelling, servicing, and operation of machinery.
- Any spills must be cleaned immediately, with contaminated material disposed of lawfully.

Management of Vegetation Removal:

To minimise impacts on natural vegetation, protected plant species, and ecosystem function within the Eastern Upper Karoo vegetation type, the following mitigation measures derived directly from the specialist ecological assessment must be implemented:

General Clearing and Footprint Control

- The mining boundaries must be clearly demarcated before any clearing begins, and all operations must remain strictly within the approved footprint.
- Areas outside the demarcated mining footprint must be treated as no-go zones, and all staff must be briefed accordingly during site induction.
- Clearing of vegetation must be limited to essential operational areas only. No blanket clearing or expansion beyond the approved footprint is permitted.
- Vegetation removal must be minimised and phased, following the mining sequence to reduce the area exposed at any one time.
- Specialist-Required Measures for Protected Plants (as per ecological report)
- A pre-construction botanical walk-through by a qualified botanist is required to:
- Identify protected succulents and geophytes present within the footprint;
- Flag individuals requiring permits for removal or translocation;
- Recommend site-specific micro-avoidance where feasible (e.g., clusters of high botanical value).
- Protected species may only be removed, handled, or translocated under valid permits issued by the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform.
- Translocated plants must be relocated to appropriate nearby habitat or a designated temporary holding nursery under the botanist's direction.

Soil and Habitat Protection

- The ECO must provide supervision during all vegetation clearing, particularly during site establishment when most disturbance occurs.
- Topsoil must be stripped and stockpiled separately on stable, level ground for later use in rehabilitation.
- Brush-packing using cleared vegetation should be applied to exposed soils to reduce erosion and promote natural regeneration.
- Where practical, rocky microhabitats, which provide important refuge for small fauna and rare plant species, must not be unnecessarily disturbed or removed.

Movement and Access Control

- All vehicles must remain on existing or demarcated roads.

- No unauthorised driving through natural veld is permitted, as this can cause soil compaction, vegetation trampling and spread of invasives.
- Construction laydown areas must be placed within already-disturbed zones where possible.

Fire Prevention

- No open fires are allowed on site under any circumstances, as the vegetation type is extremely fire-sensitive.
- Firebreaks must not be created through clearing unless formally authorised; natural vegetation must remain intact outside the footprint.

Rehabilitation of Cleared Areas

- Progressive rehabilitation must be implemented, reinstating topsoil and stabilising areas as soon as mining steps move forward.
- Rehabilitation timing must coincide with favourable seasonal conditions (preferably late summer/autumn) to improve vegetation establishment.
- Monitoring of rehabilitated areas must continue for a minimum of 12 months to ensure successful regrowth and early detection of erosion or invasive species.

Management of Invasive Plant Species:

- To prevent the establishment and spread of invasive alien species during and after mining, the following mitigation must be implemented:

General Management Requirements

- An Invasive Plant Species Management Plan (Appendix I) must be implemented throughout all phases of the mining activity to ensure compliance with NEM:BA regulations for Category 1a and 1b invasive species.
- Alien plant control must take place continuously throughout the life of the project, with quarterly inspections and additional inspections after rainfall events, when alien plants typically germinate.

Prevention of Alien Introduction and Spread

- No planting, importing, or sowing of alien species may occur for landscaping, dust suppression, rehabilitation or any other purpose.
- Transport vehicles must avoid driving through vegetated areas to reduce seed transfer.

Early Detection and Rapid Response (EDRR)

- Disturbed areas (e.g., stockpiles, road verges, cleared ground, drainage-line crossings) must be monitored monthly for early germination of alien species.
- Any invasive plants detected must be removed immediately before seed set, using the most appropriate mechanical or chemical method.
- The ECO must maintain a log of invasive species observations, control actions, and follow-up monitoring results.

Stockpile & Disturbance Area Control

- All topsoil, overburden, and material stockpiles must be kept free of invasive plant species at all times.
- Stockpiles must be inspected regularly and cleared of alien plants following rainfall.
- Rehabilitation areas must be prioritised for alien control, particularly during the first 12 months after revegetation.

Control Methods

- Mechanical removal (uprooting, felling, cutting) must be used where feasible to avoid unnecessary herbicide use in a semi-arid ecosystem.
- Where chemical control is required, a registered Pest Control Officer (PCO) must apply herbicides in accordance with product labels and environmental safety requirements.

- Removed alien vegetation must be disposed of safely to prevent resprouting or seed dispersal burning is not allowed on site, so plant material must be dried, bagged, and removed to a designated disposal area.

Integration with Stormwater & Erosion Management

- Areas with altered drainage patterns (e.g., berms, diversion channels) are high-risk sites for alien germination and must be checked frequently.
- Sediment traps and drainage lines must be cleared of invasive seedlings as part of routine maintenance.

Rehabilitation Interface

- Invasive species management must be integrated with progressive rehabilitation to ensure that cleared areas are stabilised quickly and monitored for alien regrowth.
- Natural regeneration must be encouraged through brush-packing and topsoil return, reducing habitat openings that favour alien establishment.
  Performance Monitoring
- The effectiveness of alien plant control measures must be evaluated twice annually and reported in the ECO's compliance reports.
- Failure to manage invasive species may trigger corrective actions, including increased frequency of clearing and additional ECO oversight.

FAUNA

Protection of Fauna:

- Site access should be controlled, and no unauthorised persons should be allowed onto the site.
- Any fauna directly threatened by the associated activities should be removed to a safe location by a site manager.
- The collection/trapping, hunting, or poisoning of any animals at the site is strictly forbidden. Signs must be put up to enforce this. Personnel should not be allowed to wander off demarcated areas.
- Fires must not be allowed on site.
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel, and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. All vehicles should adhere to a low-speed limit (40 km/h) to avoid collisions with susceptible species.

- Construction vehicles must be limited to a minimal footprint on site (no movement outside of the earmarked footprint).
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons.
- Ensure that cables and connections are insulated successfully to reduce electrocution risk.
- Use environmentally friendly chemical products.
- No litter, food or other foreign material may be thrown or left around the site.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

Issues Raised / Identified by Specialist Assessments

- The presence of three high-significance rock art engraving sites (VF001–VF003) located within the proposed quarry footprint, assessed as Grade IIIA heritage resources.
- The location of these sites within the operational footprint, rendering avoidance impracticable.
- The large size and fractured condition of the engraved dolerite boulders, which may limit the feasibility of successful relocation without damage.
- The potential presence of undiscovered subsurface archaeological material, although no such material was observed during the surface survey.
- The risk of disturbance, damage, or loss of heritage resources as a result of site clearance, blasting, excavation, and vehicle movement.
- The risk of irreversible heritage loss should mitigation be undertaken without appropriate SAHRA authorisation and specialist oversight.
- Uncertainty regarding the origin and authorship of the engravings, noting the landowner's indication that the engravings were created by his father, which requires independent specialist verification.

Mitigation Measures

- **Avoidance:**
  Avoidance buffers will be implemented where feasible; however, due to the location of the rock art sites within the quarry footprint, complete avoidance is not considered achievable.

- Specialist assessment:
  A suitably qualified rock art specialist will be appointed to assess the significance, condition, and feasibility of mitigation options, including retention, relocation, or other management approaches. The findings of this assessment will be reported in the Final Basic Assessment Report (FBAR).
- Permitting and approval:
  Where avoidance is not possible, a Workplan must be submitted to SAHRA for review and approval prior to any mitigation actions. All mitigation measures will be subject to the issuing of a Section 35 Permit in terms of the National Heritage Resources Act.
- Documentation and recording:
  Prior to any disturbance, a professional archaeologist must undertake comprehensive documentation, including mapping, detailed descriptions, high-resolution photography, and any additional recording required by SAHRA.
- Mitigation options (subject to SAHRA approval):
  Depending on specialist findings and SAHRA's decision, mitigation may include:
- Retention and protection in situ, where practicable;
- Controlled relocation of engraved boulders to an approved repository, museum, or designated heritage site, where technically feasible; or
- Controlled destruction, as a last resort, where relocation or preservation is not feasible, subject to prior documentation and explicit authorisation by SAHRA under a Section 35 Permit.
- Chance finds:
  A Heritage Chance Find Procedure will be implemented. Should any archaeological or palaeontological material be uncovered during excavation, work in the affected area will cease immediately, and SAHRA and a qualified specialist will be notified.

LAND USE

<u>Loss of agricultural land for duration of mining:</u>

The project area forms part of an extensive grazing system used intermittently for livestock and marginal dryland cropping.

Mining will result in the temporary unavailability of this land for agricultural purposes during the operational phase.

The key risks include:

- Temporary loss of agricultural productivity on the mined footprint;
- Alteration of the agricultural sense of place and visual character of the farm;
- Soil compaction and reduced fertility, hindering post-mining agricultural recovery; and
- Potential long-term land capability reduction if rehabilitation is ineffective.
- However, given the limited arable potential, small scale of the footprint, and phased mining approach, the overall agricultural loss is localised and reversible.

Management of the Access Road:

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the access road and crisscrossing of tracks through undisturbed and inactive areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- Overloading of the trucks must be prevented, and proof of load weights must be filed and be available for auditing by relevant officials.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at a workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.
- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMPR) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.

- Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.
- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilets must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the wastewater and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

Storage/Handling of Hazardous Substances/Chemicals:

- Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.

- All tanks for fuel/used oil must have additional containment in the form of an impermeable bund wall and foundation, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.
- The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump.

Management of health and safety risks:

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).

ix) Motivation where no alternative sites were considered.

An alternative layout, Site Alternative 2 (S2), was also explored but found unsuitable. S2 posed increased environmental risks, with higher potential for disturbances and insufficient mineral quality and quantity to support the project's objectives. While technically feasible, the development of S2 would lead to significant ecological disruption without providing substantial benefits over S1, thus rendering it impractical. Although the position of Site Alternative 2 will still allow the development of quarry on the property, it is believed that the impact associated with this site alternative is of higher significance without the need or motivation justifying it.

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

The preferred development location and final site layout for the proposed quarry have been determined through a detailed assessment of environmental sensitivities, technical feasibility,

operational efficiency, and landowner requirements. The aim of the site selection process was to identify a footprint that ensures maximum resource extraction efficiency while maintaining minimal environmental disturbance and compatibility with surrounding land uses.

Motivation for the Selected Location

The final proposed ±4.9-hectare quarry footprint is situated on a naturally occurring dolerite outcrop on the farm Vingerfontein 162, an area historically subjected to livestock grazing but still supporting largely intact Eastern Upper Karoo vegetation. The selected location offers several advantages for reducing environmental impact, including:

- A stable and accessible dolerite outcrop of suitable quality for aggregate production;
- Low visual prominence from public roads and neighbouring dwellings due to surrounding topography;
- Natural low shrubland vegetation typical of the Eastern Upper Karoo, which, although in good ecological condition, consists of naturally sparse dwarf shrubs and patchy grasses characteristic of this arid system; and
- Proximity to an existing gravel access track, minimising the need for new linear infrastructure and associated disturbance.

This positioning avoids unnecessary expansion of the disturbance footprint into undisturbed areas, confines activities to a compact and geologically suitable site, and reduces broader landscape fragmentation while allowing for efficient project access and management.

Consideration of Alternatives

During the site planning phase, various layout and location alternatives were investigated, including:

- Relocating the quarry to an adjacent dolerite outcrop further north and east;
- Positioning the processing and laydown areas on flatter terrain closer to the R63; and
- Consolidating access and stockpile areas to reduce soil disturbance.

These alternatives were evaluated based on environmental sensitivity mapping, operational practicality, and landowner preference. The assessment found that:

- Alternative outcrop areas overlapped more sensitive biodiversity features or were closer to ephemeral drainage lines;

- Relocation would require longer access roads, leading to greater soil erosion potential and increased dust generation; and
- The selected area presented the best balance between resource quality, accessibility, and environmental manageability.

Environmental and Operational Justification

Although the national Screening Tool initially flagged the area as having Very High terrestrial biodiversity sensitivity due to its location within a National Protected Area Expansion Strategy (NPAES) focus area, the ecological assessment confirmed that the site is not a Critical Biodiversity Area (CBA) but is instead mapped as an Other Natural Area (ONA) in the 2024 Northern Cape Biodiversity Spatial Plan. The selected quarry footprint is compact, geologically suitable, and situated within a natural but moderately sensitive area where impacts can be effectively managed through appropriate mitigation.

By confining all mining activities and infrastructure to this discrete ±5 ha footprint and applying a phased mining and rehabilitation approach, the project will:

- Minimise the disturbance of natural vegetation and ecological processes;
- Reduce edge effects and avoid unnecessary expansion into adjacent natural areas;
- Permit concurrent rehabilitation to stabilise soils and restore vegetation structure; and
- Maintain ecological connectivity across the broader landscape by avoiding key habitat features and ephemeral drainage lines.
- From an operational perspective, the layout enhances safety and logistical efficiency by ensuring that:
- Haulage routes are short, direct, and contained within the demarcated footprint;
- Machinery movement remains strictly limited to approved working areas;
- Blasting and processing activities are positioned safely away from public roads and dwellings; and stormwater can be managed in a manner that protects nearby ephemeral drainage lines and does not alter the natural flow regime.

The preferred quarry location and layout therefore represent the Best Practicable Environmental Option (BPEO). This configuration:

- Confines the environmental footprint to the smallest feasible area;
- Minimises the need for new access infrastructure by utilising existing tracks;
- Reduces visual and noise impacts due to natural topographical screening; and
- Enables progressive rehabilitation and long-term land capability restoration.

Overall, the final layout provides a balanced and defensible solution that meets operational requirements while aligning with the principles of sustainable development, ecosystem protection, and responsible land-use planning as set out in Section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998).

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

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

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

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium **5 - 9.9**	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	4	1	2.3	5	5	5	**11.6**				

Loss of agricultural land for duration of mining

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	4	1	2.3	5	5	5	**11.6**				

Visual intrusion as a result of site establishment

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	2	1	1.6	4	3	3.5	**5.6**				

Potential impact on fauna within the footprint area

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Potential impact on vegetation and listed and/or protected plant species

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Dust nuisance due to site establishment

							Significance				
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Low 1 - 4.9	Low-Medium 5 - 9.9	Medium 10 - 14.9	Medium-High 15 – 19.9	High 20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	1	1.6	4	3	3.5	**5.6**				

Potential impact on archaeological artefacts

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	5	5	4	1	1	1	**4**				

New job opportunities as a result of the mining operation (Positive Impact)

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
4	4	5	4.6	5	5	5	**23**				

CONSTRUCTION OF SITE ACCESS ROAD:

Visual intrusion caused by construction of site access road

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	3	1	2.3	4	2	3	**6.9**				

Loss of stockpiled topsoil during construction of access road

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	2	1	1.5	**3.9**				

Dust nuisance as a result of the construction of access road

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Noise nuisance generated by earthmoving machinery

							Significance				
			Consequence				Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Potential erosion of denuded areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	5	5	4	1	1	1	**4**				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by stripping and stockpiling of topsoil and/or overburden.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	2	1	1.6	4	3	3.5	**5.6**				

Loss of stockpiled topsoil during mining and stockpiling

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
1	1	1	1	1	1	1	**1**				

Dust nuisance as a result of the disturbance of soil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Noise nuisance generated by earthmoving machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low -Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	4	4	4	**9.2**				

Potential impact on local fauna due to disturbance and loss of available habitat

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	2	2	2	2	2	**4**				

Potential erosion of denuded areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Loss of stockpiled material due to ineffective storm water control

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	2	2	2	**4.6**				

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Visual intrusion as a result of excavation and from loading and vehicles transporting the material

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	3	1	2.3	4	5	4.5	**10.35**				

Dust nuisance due to excavation and from loading and vehicles transporting the material

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Noise nuisance as a result of the mining activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Unsafe working environment for employees

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	3	2	2.5	**5.75**				

Soil contamination from hydrocarbon spills and/or littering

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	1	1.6	3	3	3	**5**				

Potential impact on areas of palaeontological concern

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Facilitation of erosion due to mining activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

DRILLING AND BLASTING ACTIVITIES

Visual intrusion as a result of drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	3	1	2.3	4	2	3	**6.9**				

Dust nuisance due to drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	4	4	4	**9.2**				

Noise nuisance as a result of drilling and blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	4	2	3	**6.9**				

Unsafe working environment for employees

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	3	3	3	**6.9**				

Soil contamination from hydrocarbon spills and/or littering as a result of drilling

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	2	4	3	**7.8**				

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	4	3	**6.9**				

Noise nuisance stemming from operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	4	3	**6.9**				

Visual intrusion as a result of operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	4	3	**6.9**				

Potential contamination of environment due to improper waste management

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Overloading of trucks impacting road infrastructure

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Degradation of the access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

CUMULATIVE IMPACTS:

Long-term habitat modification.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low - Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	2	1	1.6	4	3	3.5	**5.6**				

Increased risk of invasive species.

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	1	2.3	2	2	2	**4.6**				

Impact on existing infrastructure as a direct result of the mining operation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	4	1	2.3	2	2	2	**4.6**				

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Erosion of returned topsoil after rehabilitation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Infestation of the reinstated areas by weeds and invader plant species

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Potential impact associated with litter/waste left at the mining area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	2	2	**4.6**				

Return of the mining area to landscape feature upon closure (Positive Impact)

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
3	5	1	3	5	5	5	**15**				

j) Assessment of each identified potentially significant impact and risk

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

Table 21: Assessment of each identified potentially significant impact and risk

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If mitigated.
Demarcation of site with visible beacons.	No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment & Operational Phase	N/A	Control through management and monitoring.	N/A
Site establishment and infrastructure development.	Alteration of the agricultural sense of place.	The impact may affect the agricultural opportunities of the property.	Site Establishment- and Decommissioning phase	Medium	Control & Remedy: Proper housekeeping and storm water management.	Medium
Site establishment and infrastructure development.	Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment-, Operational- and Decommissioning phase	Medium	Control: Implementing soil- and storm water management.	Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Visual intrusion as a result of site establishment. • Visual intrusion caused by construction of site access road • Visual intrusion as a result of excavation and from loading and vehicles transporting the material • Visual intrusion as a result of drilling and blasting activities • Visual intrusion caused by mining activities.	The visual impact may affect the aesthetics of the landscape.	• Site Establishment- and Operational phase	• Low-Medium • Medium • Medium • Medium • Medium	<u>Control & Stop:</u> Implementing good management practices.	• Low-Medium • Low - Medium • Medium • Low - Medium • Low - Medium
• Site establishment and infrastructure development.	• Potential impact on vegetation and listed and/or protected plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium	<u>Control:</u> Noise suppression methods and proper housekeeping.	• Low
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Potential impact on fauna within the footprint area. • Potential impact on local fauna due to distrubance and loss of available habitat.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low • Low-Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low • Low
• Site establishment and infrastructure development	• Dust nuisance due to site establishment	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and	• Low - Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Stripping and stockpiling of topsoil and overburden. • Excavation, Loading and Hauling to the processing plant			Decommissioning Phase			
	• Noise nuisance as a result of the mining activities	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low
	• Unsafe working environment for employees	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - medium
	• Soil contamination from hydrocarbon spills and/or littering	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - Medium
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	• Potential impact on archaeological artefacts. • Potential impact on areas of palaeontological concerns.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	• Low • Low	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	• Low • Low
• Construction of Access Road	• Visual intrusion caused by construction of site access road	The visual impact may affect the aesthetics of the landscape.	Site establishment phase	• Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	• Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Loss of stockpiled topsoil during construction of access road	This will impact on the biodiversity of the receiving environment.	Site establishment phase	Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	Low – Medium
	Dust nuisance as a result of the construction of access road	This will impact on the biodiversity of the receiving environment.	Site establishment phase	Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	Low
	Noise nuisance generated by earthmoving machinery	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	Low
	Potential erosion of denuded areas	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	Low
	Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Low-Medium	Control & Stop: Implementing good management practices, as well as the chance-find protocol	Low
Site establishment and infrastructure development.	New job opportunities as a result of the mining operation (+)	Contribution to the socio-economic status of the area.	Operational Phase	Medium-High	Control: Proper site management.	Medium-High
Drilling and Blasting	Health and safety risk posed by blasting activities	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Low - Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Dust nuisance caused by blasting activities	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Low - Medium
	Noise nuisance as a result of blasting	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Low - Medium
Processing, Stockpiling and transporting of material	Dust nuisance generated at the processing plant	This will impact on the biodiversity of the receiving environment	Operational Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low
	Noise nuisance stemming from operation of the processing plant	This will impact on the biodiversity of the receiving environment	Operational Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low
	Potential contamination of environment due to improper waste management	This will impact on the biodiversity of the receiving environment	Operational Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low
	Overloading of trucks impacting road infrastructure	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Degradation of the access road	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low-Medium
Sloping and landscaping during rehabilitaition	Safety risk posed by un-sloped areas	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low
	Erosion of returned topsoil after rehabilitation	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low
	Infestation of the reinstated areas by weeds and invader plant species	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low
	Potential impact associated with litter/waste left at the mining area	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low
Cumulative Impacts	Long-term habitat modification.	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low - Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	• Increased risk of invasive species.	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	• Low - Medium
	• Impact on existing infrastructure as a direct result of the mining operation	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	• Low - Medium

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

k) Summary of specialist reports.

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

Table 22: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
The screening report for an environmental authorisation, as required in terms of the 2014 NEMA EIA Regulations on portion of Portion 1 and 2 of the farm Vingerfontein 162, Victoria West, Northern Cape Province. The report identified the following list of specialist assessment for inclusion in the assessment report: • Agricultural Impact Assessment • Archaeological and Cultural Heritage Impact Assessment • Palaeontology Impact Assessment • Terrestrial Biodiversity Impact Assessment • Aquatic Biodiversity Impact Assessment • Hydrology Assessment • Noise Impact Assessment • Radioactivity Impact Assessment • Traffic Impact Assessment • Geotechnical Assessment • Socio-Economic Assessment • Plant Species Assessment • Animal Species Assessment Power Construction (Pty) Ltd (hereafter referred to as the applicant) appointed Greenmined Environmental (Pty) Ltd as the environmental impact assessment practitioner (EAP) to undertake the EIA associated with the mining permit application. In light of this Greenmined would like to respond as follows to the list of required specialist studies:			

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Agricultural Impact Assessment	Not required. The screening tool identified a *low sensitivity* for the Agricultural Theme (see page 7 of the screening report). The area is characterised by disturbed grazing land with limited agricultural potential. The proposed 5 ha footprint will have an insignificant effect on agricultural productivity.	N/A	Section iv(a) – Baseline Environment: Land Use
Archaeological and Cultural Heritage Impact Assessment	The Heritage Impact Assessment identified three high-significance rock art engraving sites (VF001–VF003) attached as appendix M3 located within or immediately adjacent to the proposed quarry footprint, requiring formal protection and management under the National Heritage Resources Act. The specialist recommends that avoidance is the preferred mitigation, with protective buffers established around each site to prevent disturbance from mining operations, vehicle movement, blasting, or material stockpiling. Where avoidance is not feasible, a SAHRA-approved mitigation programme undertaken under a Section 35 permit must be completed prior to any impact. This may include detailed documentation, mapping, high-resolution photography, tracing, and, if required, the controlled relocation of engraved boulders. A comprehensive chance-find procedure must be enforced throughout all project phases to ensure that any newly uncovered archaeological material or human remains are immediately secured and assessed by a professional archaeologist before work continues. With these measures in place, the specialist concludes that heritage impacts can be reduced to an	X	Section v – Specialist Inputs; Appendix M3

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	acceptable and manageable level, and that no fatal-flaw heritage constraints prevent the proposed development.		
Palaeontology Impact Assessment	The National Web-Based Environmental Screening Tool identified the application area as having Very High palaeontological sensitivity, based on the regional presence of the fossil-bearing Beaufort Group formations within the Karoo Basin. However, the Palaeontological Impact Assessment (PIA) undertaken for the project refined this sensitivity rating through field verification. The specialist confirmed that the proposed quarry footprint is underlain almost entirely by igneous dolerite, which is non-fossiliferous, and no fossil material was observed during the site inspection. Weathered sedimentary rocks present on the farm are limited and of low fossil potential. As a result, the palaeontological sensitivity of the footprint itself is assessed as Low, and the specialist concluded that no further palaeontological studies are required prior to development. Despite the low likelihood of fossil occurrence, the specialist emphasises that isolated or deeply buried fossil remains can occasionally occur in Beaufort Group terrain. Therefore, the implementation of a Palaeontological Chance-Find Procedure is mandatory. If any bone fragments, teeth, plant impressions, or other possible fossil material are uncovered during vegetation clearing, excavation, or blasting, all work in	X	Section v – Specialist Inputs; Appendix M3

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	the immediate area must cease. The ECO must notify a qualified palaeontologist to assess the find, and work may only resume once clearance is granted. With the application of this procedure, the PIA concludes that the potential palaeontological impact of the proposed quarry is very low and fully manageable, and does not pose a constraint to the development.		
Terrestrial Biodiversity Impact Assessment (Including Flora & Fauna)	Although the Screening Tool triggered a Very High terrestrial biodiversity sensitivity for the site—primarily due to its inclusion within a National Protected Area Expansion Strategy (NPAES) focus area and the potential presence of conservation-important species such as *Bunolagus monticularis* (Riverine Rabbit) and *Chersobius boulengeri* (Karoo Padloper) the specialist assessment has verified that the actual site conditions do not reflect these elevated risks. The field survey confirmed that the footprint consists of natural Eastern Upper Karoo vegetation in good condition, but lacks the dense riparian scrub required by Riverine Rabbit, resulting in a low likelihood of the species occurring on-site. While the rocky ridges provide habitat that could be suitable for Karoo Padloper, no individuals were observed, and the small 5 ha disturbance area is not expected to compromise regional habitat availability. Despite these refinements to the desktop sensitivity, the specialist recommends that mitigation remain precautionary: protected plant species must be identified and translocated, ephemeral drainage lines must be safeguarded, alien invasive species must be controlled proactively, and a	X	Section iv(a) – Baseline Environment: Biological Environment; Appendix M2

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	pre-construction walk-through must be undertaken to ensure no sensitive fauna particularly tortoises or small mammals are harmed during clearing. These measures ensure that the project remains aligned with biodiversity best practice while addressing the sensitivities that initially triggered the compulsory specialist assessment.		
Aquatic Biodiversity Impact Assessment	Not required. The site does not contain any watercourses or wetlands, and the screening tool indicates *low sensitivity* for the Aquatic Theme (see page 9).	N/A	Section iv(a) – Hydrology
Hydrology Assessment	Not required. No drainage lines or surface water features occur within or adjacent to the footprint. Existing erosion control and stormwater measures will be sufficient.	N/A	Section iv(a) – Hydrology
Noise Impact Assessment	Not required. Operations are small-scale and remote from receptors (>2 km). Impacts are addressed through operational noise mitigation (use of mufflers, limited hours).	N/A	Section viii – Mitigation Measures
Radioactivity Impact Assessment	Not required. The project involves extraction of dolerite, a non-radioactive rock type. No potential for radiological exposure exists.	N/A	Section iv(a) – Geology

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Traffic Impact Assessment	Not required. The proposed haulage will use existing gravel and regional routes (R63) with low traffic volumes. Effects can be managed through standard road safety measures.	N/A	Section viii – Mitigation Measures
Geotechnical Assessment	Not required. Dolerite is a competent material; no slope stability concerns are expected. The area is already disturbed by historical farming activity.	N/A	Section iv(a) – Geology & Soil
Socio-Economic Assessment	Not required. The socio-economic context was comprehensively assessed using data from the *Ubuntu Local Municipality IDP (2023/24)*. The project's impacts are positive, contributing to local employment.	N/A	Section iv(a) – Socio-Economic Environment
Plant Species Assessment	Incorporated into the *Terrestrial Biodiversity Assessment*. The flora will be assessed by the appointed biodiversity specialist.	X	Section iv(a) – Biological Environment
Animal Species Assessment	Incorporated into the *Terrestrial Biodiversity Assessment*. The fauna component will focus on species of conservation concern, as identified in the screening report.	X	Section iv(a) – Biological Environment

l) Environmental impact statement

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

The key findings of the Environmental Impact Assessment (EIA) for the proposed mining permit area (5 ha) indicate that, with the implementation of appropriate mitigation and management measures, the project can proceed with low residual environmental risk and a positive socio-economic contribution to the local area.

The EIA process was undertaken in accordance with the National Environmental Management Act, 1998 (Act 107 of 1998) and the EIA Regulations, 2014 (as amended). It assessed potential impacts on the physical, biological, socio-economic, and heritage environments, as well as the cumulative effects of the proposed activity.

Site Context and Layout

The proposed mining area is situated on disturbed farmland located approximately 15 km southeast of Victoria West in the Northern Cape Province, within the Ubuntu Local Municipality. The site comprises gently undulating terrain dominated by doleritic outcrops and shallow rocky soils. Land use in the vicinity includes low-intensity livestock grazing and limited dryland agriculture.

The proposed site layout and infrastructure placement have been planned to utilise previously disturbed areas, avoiding intact natural vegetation as far as possible. The 5 ha footprint will be mined in phases of 1–1.5 ha , with concurrent rehabilitation undertaken before progressing to the next section. This phased approach significantly reduces cumulative disturbance and improves post-mining recovery potential.

Mining Activities

The operation entails the open-cast extraction of dolerite using mechanical loading and occasional controlled blasting. Material will be processed on site using a mobile crushing and screening plant and stockpiled before being hauled offsite by tipper trucks via the R63.

The mining methodology ensures that disturbed areas remain limited at any one time and that stripped topsoil is preserved for rehabilitation. No permanent infrastructure or bulk fuel storage exceeding EIA thresholds will be established. The operation will rely on diesel-powered mobile equipment, with power generated by small, compliant generators when required.

Geology and Soils

The underlying geology comprises dolerite of the Karoo Supergroup, providing a stable and competent material for aggregate production. The overlying soils are shallow, skeletal and poorly developed, with limited agricultural potential. Topsoil is scarce and will be managed as a valuable rehabilitation resource.

All stripped topsoil will be stockpiled in low berms (<2 m) on level ground and vegetated or roughened to prevent erosion. This phased management will preserve soil integrity for future reapplication.

Hydrology

The site lies within the Lower Orange Water Management Area, specifically in the D32B Quaternary Catchment, with low hydrological sensitivity. No rivers, drainage lines, wetlands, or artificial impoundments occur within 500 m of the proposed mining footprint.

Stormwater management will follow a clean/dirty water separation principle, and all runoff will be diverted around disturbed areas to prevent erosion and siltation. Any water required for dust suppression will be sourced from authorised off-site sources and transported to the site as needed.

Biodiversity and Groundcover

According to the 2024 Northern Cape Biodiversity Spatial Plan (NCBSP), the proposed mining footprint overlaps with a Critical Biodiversity Area 1 (CBA1), which requires maintenance in a natural or near-natural state to support regional ecological processes. The vegetation type is classified as Upper Karoo Shrubland, characterised by low-growing shrubs, hardy grasses, and scattered succulents.

Field observations and aerial imagery confirm that the site has been moderately disturbed by historic agricultural use and grazing, resulting in reduced species diversity and partial transformation of the groundcover. Despite its CBA1 classification, the site no longer supports pristine ecological conditions.

A Terrestrial Biodiversity Assessment, including plant and animal species surveys, will be undertaken to confirm the presence of any conservation-important flora or fauna (such as *Bunolagus monticularis* – Riverine Rabbit, and *Chersobius boulengeri* –

Karoo Padloper). The assessment will guide site-specific mitigation and rehabilitation measures.

Fauna

The area supports typical arid-zone fauna such as small antelope, reptiles, rodents, and birds adapted to semi-desert conditions. Large fauna are largely absent due to long-term agricultural disturbance and lack of water sources. The proposed activity will not result in significant habitat loss due to the small footprint and phased mining approach.

During site establishment, faunal pre-clearance inspections will be conducted to relocate any burrowing or slow-moving species. The EMPr includes measures to prevent fauna injury or entrapment, enforce a no-hunting policy, and manage waste to avoid attracting scavengers.

Site-Specific Infrastructure

- The site will include the following temporary infrastructure and facilities:
- Access and haul roads (approx. 1.2 km in total)
- A mobile crushing and screening plant
- Small laydown area and site office (container)
- Vehicle parking area
- Ablution facilities (chemical toilets)
- Temporary topsoil and product stockpiles

All infrastructure will be contained within the demarcated mining footprint. No permanent buildings, power lines, or bulk storage facilities will be constructed. Upon closure, all infrastructure will be dismantled and removed, and the site will be rehabilitated to blend with the surrounding land.

Heritage and Palaeontology

The National Screening Tool initially identified the project area as having Very High palaeontological sensitivity and Medium archaeological sensitivity, prompting the commissioning of a Heritage Impact Assessment (HIA) and a Palaeontological Impact Assessment (PIA). These specialist studies have now verified the actual on-site sensitivity. The HIA identified three high-significance rock art engraving sites (VF001–VF003) located within or immediately adjacent to the proposed quarry footprint. These engravings represent multi-period cultural traditions and require formal protection and

management under the National Heritage Resources Act (Act 25 of 1999). The specialist recommends avoidance where possible or SAHRA-approved mitigation such as detailed recording or controlled relocation under permit if avoidance cannot be achieved.

The PIA refined the Screening Tool's "Very High" palaeontological sensitivity and confirmed that the quarry footprint is underlain predominantly by igneous dolerite, which is non-fossiliferous. No fossil material was recorded during the field assessment, and the site is therefore considered to have Low palaeontological sensitivity. No additional palaeontological studies are required; however, a Palaeontological Chance-Find Procedure must be implemented as a precautionary measure.

Together, the heritage and palaeontology assessments conclude that provided all recommended mitigation measures, avoidance buffers, SAHRA permitting requirements, and chance-find procedures are implemented the project poses manageable, low-to-moderate residual risks to archaeological and palaeontological resources.

Air Quality and Noise

Dust generation is expected during excavation, hauling, and crushing but will remain localised. The small scale of operations, combined with active dust control (wet suppression, load covering, and reduced vehicle speeds), ensures compliance with the National Dust Control Regulations (2013).

Noise will primarily result from mobile equipment and intermittent blasting. However, due to the remote location (>2 km from receptors), the noise impact is expected to be negligible. Blasting will be infrequent, controlled, and subject to safety clearance procedures.

Socio-Economic Environment

The project area falls within the Ubuntu Local Municipality, characterised by low population density, high unemployment, and an economy dominated by agriculture and government services.

The proposed project will generate short- to medium-term employment for local residents, prioritising unskilled and semi-skilled labour. It will also contribute to regional infrastructure development through aggregate supply to local road and construction projects.

No permanent negative socio-economic impacts are anticipated. Instead, the project aligns with the municipality's Integrated Development Plan (IDP 2023/24), which prioritises local job creation, infrastructure development, and rural economic upliftment.

Cumulative Impacts

Cumulative impacts were evaluated with respect to regional mining, agriculture, and road infrastructure. Given the project's small footprint and phased operation, cumulative effects on biodiversity, air quality, and traffic are expected to be low.

Rehabilitation measures and strict compliance with the EMPr will further minimise the project's contribution to cumulative environmental change.

Overall, the findings of the EIA indicate that:

The proposed mining activity is environmentally feasible, provided that recommended mitigation and management measures are implemented.

Most pre-mitigation impacts are low to medium in significance, and all residual impacts post-mitigation are low.

The operation supports the principles of sustainable development under the National Environmental Management Act, contributing to local economic development while safeguarding ecological integrity and environmental quality.During the environmental impact assessment process, the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant a site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the project include:

- Possible work opportunities to local residents.
- Return of the mining area to its previous state upon closure of the project; and
- Diversification of the land use of the property.

Table 23:Potential negative impacts with a low-medium or higher significance/risk.

POTENTIAL IMPACT	SIGNIFICANCE (AFTER MITIGATION)
Loss of agricultural land for duration of mining	Medium
Loss of agricultural land for duration of mining	Medium
Visual intrusion as a result of site establishment.	Low-Medium
Dust nuisance due to site establishment	Low-Medium
Visual intrusion caused by construction of site access road.	Low-Medium
Visual intrusion caused by stripping and stockpiling of topsoil and/or overburden	Low-Medium
Noise nuisance generated by earthmoving machinery	Low-Medium
Visual intrusion as a result of excavation and from loading and vehicles transporting the material	Medium
Unsafe working environment for employees	Low-Medium
Visual intrusion caused by construction of site access road	Low-Medium
Loss of stockpiled topsoil during construction of access road.	Low
Loss of stockpiled topsoil during mining and stockpiling	Low

POTENTIAL IMPACT	SIGNIFICANCE (AFTER MITIGATION)
• Dust nuisance generated at the processing plant	• Low-Medium
• Visual intrusion as a result of operation of the processing plant	• Low - Medium
• Overloading of trucks impacting road infrastructure	• Low – Medium
• Degradation of the access road	• Low – Medium
• Long-term habitat modification.	• Low – Medium
• Increased risk of invasive species.	• Low – Medium
• Impact on existing infrastructure as a direct result of the mining operation	• Low – Medium

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

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

Table 24: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	**Stabilize and Contour Landform** Ensure that the post-mining landscape is safe, stable, and blends with the surrounding natural environment. Design landforms to facilitate natural water flow and prevent water pooling or erosion. **Facilitate Agricultural and Ecological Restoration** Prepare the site for potential low-potential agricultural use or natural regrowth. Reintroduce vegetation that reflects local indigenous flora to promote biodiversity recovery. **Control and Manage Erosion** Implement grading, profiling, and scarification measures to reduce erosion risks. Stabilize soil and control sediment runoff into nearby areas. **Redistribute Topsoil Strategically**	Effectively restoring the mined area to allow the return of land use to agricultural purposes.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		Maximize the recovery and redistribution of available topsoil to support vegetation regrowth and ecosystem restoration. **Ensure Compliance with Regulatory Standards** Fulfil the DMPR's closure requirements, including the removal of mining equipment, stockpiles, and waste. Align rehabilitation activities with section 44 of the Mineral and Petroleum Resources Development Act (MPRDA, 2002). **Monitor and Manage Invasive Species** Eradicate Category 1a and 1b invasive species as per NEM regulations throughout the rehabilitation process. **Ensure Progressive Rehabilitation** Conduct phased rehabilitation in sections of 1 to 1.5 hectares, enabling continuous oversight and adjustments to achieve closure objectives. On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). • On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		surface condition. Where applicable/possible return topsoil to its original depth over the area.	
VISUAL CHARACTERISTICS Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Store mining equipment in a dedicated area when not in use. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. • Contain excavations to the approved footprint of the permitted area. • Upon closure, the mining area must be rehabilitated in accordance with approved closure objectives, focusing on stability, safety, and visual integration with the surrounding landscape, without implying backfilling of excavated areas.	• Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase and minimise the residual impact after closure.
AIR AND NOISE QUALITY Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Install water sprayers at the crusher plant to alleviate dust generation from the transfer points.	• Dust prevention measures are applied to minimise the impact.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end. • Weekly remove compacted dust from the crusher plant to eliminate the dust source. • Flatten loads to prevent spillage during transportation on public roads. • Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM: AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	
AIR AND NOISE QUALITY Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM: AQA 2004, SANS 10103:2008.	• Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Implement best practice measures to minimise potential noise impacts.	
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. • Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed and inactive areas. • Ensure that topsoil heaps do not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Keep temporary topsoil stockpiles free of invasive plant species. • Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. • Divert storm- and runoff water around the stockpile area to prevent erosion. • Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. • Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion.	• Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• The ephemeral drainage lines crossing the new access road must be protected. • Disturbance to these watercourses must be minimised and restricted to the road footprint. • Erosion-control measures (e.g., berms, stone packing, contouring) must be installed at all crossings. • Post-construction stabilisation must be undertaken to prevent gullying or sedimentation.	• Impact on the environment caused by stormwater discharge is avoided and erosion is managed.
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of vegetation removal.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• A pre-construction botanical walk-through must be conducted by a qualified botanist or ecologist to identify, tag, and map all protected and uncommon plant species. • Where such species fall within the disturbance footprint, the required Northern Cape Nature Conservation Act permits must be obtained prior to removal or translocation. • Protected and uncommon succulent and geophytic species including *Albuca crispa, Aloe broomii, Stomatium rouxii, Anacampseros filamentosa, Trichodiadema setulifolium, Crassula deltoidea, Euphorbia caterviflora, Haworthiopsis venosa subsp. tessellata, Pachypodium succulentum, Pelargonium abrotanifolium, Duvalia corderoyi, Euphorbia arida*,	• Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		Adromischus trigynus, Ceropegia filiformis and others must be carefully excavated and translocated to suitable receiving areas under specialist supervision. • No translocation, removal, or disturbance of any plant may occur without explicit approval from the ECO and necessary permits. • The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. • Blanket clearing of vegetation must be limited to the proposed footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Clearing of vegetation should be minimized and avoided where possible. • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • The appointed ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. • No plant species, whether native or exotic, should be brought into, ore removed from, the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • No fires must be allowed on-site. • The area outside the mining footprint must be declared a no-go zone, with all staff briefed and signage provided. • Vegetation clearing must be avoided or minimised wherever possible, especially along sensitive microhabitats such as rocky outcrops and shallow-soil areas. • Under no circumstances may indigenous vegetation outside the approved footprint whether primary or secondary be disturbed or fragmented. • Groundcover must be protected wherever practical, recognising that the naturally low groundcover of the	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		Eastern Upper Karoo is unmodified and ecologically intact. • The appointed ECO must supervise all vegetation clearing and any activities with potential to cause ecological damage, especially during site establishment. • All vehicles and machinery must remain strictly on demarcated access roads and service tracks. • No plant material, seeds, cuttings, or whole plants (native or exotic) may be removed from or introduced to the site.	
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of invasive plant species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. • Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose. • Keep all stockpiles (topsoil & overburden if any) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas. • A comprehensive invasive alien plant monitoring and eradication programme must be implemented for the duration of mining.	• Mining area is kept free of invasive plant species.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Special attention must be given to the early detection and removal of *Prosopis glandulosa*, a high-risk invader in the region. • Weed control must comply with the Conservation of Agricultural Resources Act and NEMBA Alien and Invasive Species Regulations.	
FAUNA Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• A pre-clearance faunal walk-through must be conducted to relocate reptiles, small mammals, tortoises and other fauna. • Open excavations must be inspected daily to remove and safely release any trapped animals. • Only trained, legally authorised personnel may capture and relocate snakes or potentially dangerous animals. • No hunting, trapping, persecuting or collecting of fauna is permitted. • Rehabilitation of the quarry must avoid vertical faces or drop-offs that could trap wildlife; slopes must be recontoured to allow safe entry and exit. • Site access should be controlled, and no unauthorised persons should be allowed onto the site. • Any fauna directly threatened by the associated activities should be removed to a safe location by a site manager. • The collection/trapping, hunting, or poisoning of any animals at the site is strictly forbidden. Signs must be put up to enforce this. Personnel should not be allowed to wander off demarcated areas. • Fires must not be allowed on site. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel, and oil spills that	• Disturbance to fauna is minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. All vehicles should adhere to a low-speed limit (40 km/h) to avoid collisions with susceptible species. • Construction vehicles must be limited to a minimal footprint on site (no movement outside of the earmarked footprint). • All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. • Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. • Ensure that cables and connections are insulated successfully to reduce electrocution risk. • Use environmentally friendly chemical products. • No litter, food or other foreign material may be thrown or left around the site.	
CULTURAL AND HERITAGE ENVIRONMENT	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Confine all mining and associated activities strictly to the approved development footprint. • Implement avoidance buffers around identified rock art sites (VF001–VF003) wherever feasible.	• Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
Archaeological, heritage and palaeontological aspects.	Compliance to be monitored by the Environmental Control Officer.	• If avoidance is not possible, apply to SAHRA for a Workplan and Section 35 permit to record or relocate rock art prior to disturbance. • Enforce a Heritage & Palaeontology Chance-Find Procedure during all project phases. • If archaeological materials (stone tools, pottery, engravings, structures) are uncovered: o Stop work immediately and secure the find in situ. o Notify supervisor → senior on-site Manager → ECO. o ECO must contact a professional archaeologist, who will notify SAHRA. o Work may only resume once SAHRA issues written approval. • If human remains are encountered: o Cease all work in the vicinity. o Leave remains undisturbed and secure. o Notify the archaeologist and SAHRA immediately for lawful handling instructions. • If fossils or potential fossil material are discovered:	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		○ Stop work and notify the ECO. ○ ECO must contact a qualified palaeontologist for assessment. ○ Resume work only once authorised by the specialist/SAHRA. ○ Maintain detailed records of all heritage or palaeontological finds and mitigation actions.	
LAND USE Loss of agricultural land for duration of mining.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement erosion control strategies during and after mining to preserve soil quality and prevent runoff that could impact surrounding fields. • Following the completion of mining, replant crops or groundcover promptly to stabilize the soil, restore agricultural productivity, and maintain the visual landscape consistent with the surrounding farmland.	• Mining has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Management of the access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Divert storm water around the access road to prevent erosion. • Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed and inactive areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. • Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.	• The access road remains accessible to the landowner and lawful occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. • If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.	• Wastes are appropriately handled and safely disposed of at recognised waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMPR) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. File proof. • Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. • Handle biodegradable refuse as indicated above. • Encourage re-use or recycling of waste products. • Do not bury or burn waste on the site. • Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilets (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates. • Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Do not discharge water containing waste into the natural environment. • Implement measures to contain the wastewater and safely dispose thereof. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. • Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
GENERAL Storage/handling of hazardous substances/chemicals.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Place chemical storage areas on level ground to prevent offsite migration of any spilled product. • Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. • Control access to the chemicals/substances and implement a notification system of an appropriate staff member. • Ensure that the storage area is out of the 1:100-year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. • Maintain a Hazardous Substances Register and keep Safety Data Sheets (SDS) current for all chemicals used on site. • Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the	• The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. • Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. • Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump.	
GENERAL Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that workers have access to the correct PPE as required by law. • Locate sanitary facilities within 100 m from any point of work. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	• Employees work in a healthy and safe environment.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

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

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

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, desktop studies as well as the specialist study. No uncertainty regarding the proposed project or the receiving environment could be identified.

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

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

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

ii) Conditions that must be included in the authorisation

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

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for a five-year period to correspond with the validity of the mining permit.

r) Undertaking

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

The undertaking required to meet the requirements of this section is provided at the end of the EMPR and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The total environmental provision of R 685 600 was derived from the mitigation and rehabilitation cost estimates outlined in the Financial and Technical Competence Report. The calculation combines the quarterly environmental management costs including dust suppression, stormwater control, access road maintenance, monitoring, and compliance activities with the once-off final rehabilitation costs. As shown in Table 3.1 of the report, Quarter 1 carries a cost of R 260 100, while Quarters 2 to 6 each carry a cost of R 85 100, resulting in a total of R 685 600 for the full operational and rehabilitation cycle. This amount represents the full financial provision required to manage environmental impacts and implement final closure and rehabilitation measures attached as Appendix H – Financial and Technical Competence Report.

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

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

Power Construction (Pty) Ltd will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix H to this report.

t) Specific Information required by the competent Authority

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

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

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

The following potential impacts were identified that may impact on socio-economic conditions of directly affected persons:

- **Visual intrusion associated with the proposed mining activities:**

  The viewshed analysis indicated that the proposed mining operation for aggregate will have a low visual impact. Although the mining area will be visible from the public road (R63), approximately 1.5 km away, the temporary nature and small scale of the excavation activities mean that the impact will be

minimal. The mining will involve equipment similar to that used in farming operations, further blending into the agricultural landscape. Following successful rehabilitation of the site upon closure of the mine, no lasting visual impact is anticipated.

- **Dust nuisance caused as a result of the proposed mining activities:**

  The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

- **Noise nuisance as a result of mining activities:**

  The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

- **Employment opportunities and socio-economic impact:**

  The proposed labour component of the activity will be five or six employees. The operation will contribute to the local economy in the area, both directly and through the multiplier effect that its continued presence will create.

  Equipment and supplies will be purchased locally, and wages are spent at local businesses, generating both jobs and income in the area. Although the employees are not resident on the site, they will be from the surrounding community.

- **Compliance Management:**

  Should the MP application be approved, compliance with the mitigation measures and conditions approved as part of the EMPR and the Environmental Authorisation (EA) will be compulsory to the Permit Holder as both the EMPR and EA are legally binding documents. In terms of Section 34 of the NEMA EIA Regulations, 2014 (as amended 2017) the holder of an EA must: “(a) ensure that the compliance with the conditions of the environmental authorisation and the EMPR, and where applicable the closure plan, I audited; and (b) submit an environmental audit report to the relevant competent authority”. The regulations further stipulate that the environmental audit report (EAR) must be prepared by an independent person with the relevant environmental auditing expertise; provide verifiable findings on the level of performance against and compliance

with the provisions of the requisite EA, EMP and Closure Plan, and the ability of the measures contained in the EMPR and Closure Plan to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking. Within 7 days of the date of submission of an EAR to the competent authority (DMPR) the holder of the EA must notify all potential and registered I&AP's of the submission of that report and make such report immediately available to anyone on request, and on a publicly accessible website.

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

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

In accordance with the National Heritage Resources Act (NHRA), 1999 (Act No. 25 of 1999), an assessment has been undertaken to determine whether the proposed mining activities on Portions 1 and 2 of the farm Vingerfontein 162, Victoria West, will impact any component of the national estate as defined under Section 3(2) of the Act. Section 3(2) includes archaeological sites, palaeontological sites, cultural landscapes, places of aesthetic or historical value, geological features, and graves and burial grounds.

Investigation and Assessment Findings

The National Screening Tool initially identified the project area as having Medium archaeological and Very High palaeontological sensitivity, triggering the need for specialist studies. A Heritage Impact Assessment (HIA) and a Palaeontological Impact Assessment (PIA) were therefore completed by qualified specialists, and the results are attached as Appendix 2.19.2.

Archaeology and Cultural Heritage

Contrary to the Screening Tool's broad classification, the HIA identified three high-significance rock art engraving sites (VF001–VF003) located within or immediately adjacent to the proposed quarry footprint. These engravings—including animal figures, human forms, geometric motifs, and historic-period markings—are considered heritage resources of high local and regional significance (Grade IIIA). No graves, historical structures, or built heritage features were found within the footprint.

Palaeontology

The PIA refined the Screening Tool sensitivity from “Very High” to Low palaeontological sensitivity, confirming that the quarry footprint is underlain predominantly by igneous dolerite, which is non-fossiliferous, and no fossil material was observed during the site inspection. While the broader Beaufort Group formation is fossil-bearing, the probability of encountering fossils within the proposed footprint is low, though isolated finds may still occur.

Mitigation and Management Measures

All mitigation and management requirements identified by the HIA and PIA are incorporated into Sections 2.5.3, 2.11.6, and 2.12 of this report and summarised below:

Avoidance of identified rock art sites (VF001–VF003) through protective buffers where feasible.

Where avoidance is not possible, a SAHRA-approved Workplan and Section 35 permit must be obtained for detailed documentation, recording, and, if necessary, controlled relocation of engraved dolerite boulders.

Implementation of a mandatory Heritage and Palaeontological Chance-Find Procedure:

Immediate cessation of work upon discovery of archaeological material, human remains, or potential fossils.

Securing the find in situ and notifying the ECO, archaeologist/palaeontologist, and SAHRA.

Resumption of work only after written clearance from SAHRA.

Training of all site personnel in basic heritage awareness and chance-find reporting.

ECO oversight of all vegetation clearing, earthworks, and blasting activities to prevent accidental disturbance of heritage features.

Evaluation of Potential Impact on the National Estate

Based on the combined results of the specialist studies:

The proposed mining activity poses a potential impact on archaeological components of the national estate, specifically the three identified rock art sites of high significance.

These impacts are considered manageable, provided the required SAHRA-approved mitigation and avoidance measures are implemented.

Palaeontological impacts are assessed as very low, with only a small residual risk of fossil finds, which is fully mitigated by the Chance-Find Procedure.

The project does not affect any declared heritage sites, graves, built structures, or protected cultural landscapes.

With full compliance to specialist recommendations and the NHRA, the proposed development is not expected to cause significant or irreversible harm to the national estate as defined in Section 3(2) of the Act.

The relevant mitigation and management measures are fully reflected in Sections 2.5.3, 2.11.6, and 2.12 of this DBAR, and the Heritage Impact Assessment and Palaeontological Impact Assessment are attached as Appendix 2.19.2.

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

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

In accordance with the requirements of Section 24(4)(a) and (b) of the National Environmental Management Act (NEMA), the Environmental Assessment Practitioner (EAP) managing this application Greenmined Environmental (Pty) Ltd has undertaken a comprehensive investigation to ensure that the proposed activity has been assessed in terms of the environmental, social, and economic factors that may be affected by the development.

This includes an evaluation of the need and desirability of the project, a comparison of feasible alternatives, and a review of potential mitigation and management measures aimed at promoting sustainable development, as required by Section 24(4)(b)(i) of the Act.

Proof of Investigation

The EAP confirms that:

A detailed environmental screening and site sensitivity analysis was conducted using the National Screening Tool (as required by Regulation 16 of the 2014 EIA Regulations, as amended).

The environmental attributes of the proposed site were evaluated through desktop studies, site visits, and stakeholder consultation, addressing the physical, biological, heritage, socio-economic, and cultural environments.

The Draft Basic Assessment Report (DBAR) includes a thorough assessment of impacts associated with the project activities, including potential cumulative effects, as required by Regulation 23(2)(e).

Specialist studies were commissioned where relevant, including:

Archaeological and Cultural Heritage Impact Assessment

Palaeontological Impact Assessment

Ecological Assessment (including flora and fauna)

The results of these investigations will inform the final mitigation measures and the Environmental Management Programme (EMPr).

The EAP further confirms that all interested and affected parties (I&APs) were notified in accordance with Regulation 41 of the EIA Regulations, and the public participation process followed the procedural requirements set out in Regulation 39 to 44.

Motivation Regarding Alternatives

As required by Regulation 22(2)(h), alternatives were identified and assessed to determine the most environmentally, technically, and economically feasible option. These included:

Location alternatives:

The applicant assessed potential areas on the same property and surrounding farmland. The preferred site was selected based on its prior disturbance, proximity to access routes (R63), and low agricultural potential, thus avoiding undisturbed or ecologically sensitive areas.

Layout alternatives:

Alternative configurations were considered for the positioning of the haul road, laydown area, and processing plant. The final layout was selected to minimise surface disturbance, maintain safe vehicle movement, and allow phased rehabilitation.

Technology and operational alternatives:

Various extraction methods were considered, including mechanical ripping and blasting. Controlled blasting was selected as the most efficient and lowest-impact option given the hardness of the dolerite material. The use of mobile crushers and screeners avoids the need for permanent plant structures.

No-go alternative:

The no-go option was considered and represents the environmental baseline condition. While this option avoids all environmental impacts, it would also eliminate the associated socio-economic benefits, such as local employment, supply of aggregate for infrastructure development, and economic contribution to the Ubuntu Local Municipality. The no-go alternative is therefore not preferred.

Based on the detailed environmental investigation and consideration of alternatives, it is concluded that:

The preferred site and operational method represent the Best Practicable Environmental Option (BPEO), balancing environmental protection and economic feasibility.

The proposed activity complies with the intent of Section 24(4)(a) and (b) of NEMA, ensuring that potential impacts have been identified, assessed, and mitigated to acceptable levels.

The EAP’s written motivation and supporting documentation substantiating that no reasonable or feasible alternative sites or methods exist for this specific activity are attached to this report as Appendix 4.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Sonette Smit of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix K as required.

b) Description of the Aspects of the Activity

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

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

c) Composite Map

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

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

d) Description of impact management objectives including management statements

i) Determination of closure objectives.

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

The decommissioning phase will focus on restoring the 4.9 hectare quarry progressively, with rehabilitation occurring in sections of 1 to 1.5 hectares as mining proceeds. The primary closure objective is to render the site safe and suitable for agricultural use. With no buildings or infrastructure requiring demolition, rehabilitation will concentrate on stabilizing the landform and ensuring adequate drainage. The existing access road will be adapted as a drainage pathway to prevent water accumulation within the excavation area, guiding water flow naturally according to the surrounding topography.

In accordance with the DMPR's minimum closure objectives, the decommissioning will also involve clearing the processing area, removing stockpiled materials, site infrastructure, and equipment, and landscaping the disturbed areas. Since restoring

the quarry to its original topography with fill material is impractical, the rehabilitation plan is to create a modest landscape feature. Unlike quarry benching, which is unnecessary in a quarry, the area will be contoured to blend with the natural landscape. Due to the limited topsoil, rehabilitation will prioritize redistribution of any available soil material. (see Appendix L for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry;
- Removing all stockpiled material (which will not be further required by the landowner);
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil (available soil) and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will revert back to its previous state. The current state of the area is inactive previously used for agriculture (cattle grazing).

The applicant will comply with the minimum closure objectives as prescribed by the DMPR and detailed below:

- Rehabilitation of the excavated area:

Rehabilitation of the proposed mining site will prioritize stabilizing and preparing disturbed areas for potential agricultural use or natural regrowth, considering the minimal topsoil available. Key elements of this plan are as follows:

Rehabilitation Process:

The operation will proceed in staged sections of approximately 1–1.5 hectares, with each section undergoing rehabilitation immediately after completion of mining activities in that area. Earthmoving equipment will handle in-situ material during operations, ensuring that disturbed areas are minimized. Given the rocky, low-topsoil nature of the site, topsoil recovery will be limited to stripping whatever minimal soil can be recovered from the rocky terrain. This soil will be stockpiled temporarily for later redistribution.

Topsoil Redistribution:

Although the site lacks substantial topsoil, any minimal amount of soil material recovered will be returned to its original depth after profiling the excavated areas with acceptable contours and erosion control measures. This redistribution will help stabilize the soil, reduce erosion, and foster natural regrowth or future agricultural use.

Erosion Control and Profiling:

Excavated areas will be contoured and graded to prevent erosion and promote natural water flow. These erosion control measures will also help prevent sediment runoff into nearby areas and support the overall stability of the rehabilitated sections.

Waste Management:

No waste material will be allowed to be deposited within the excavated areas. This will help maintain the integrity of the rehabilitated landscape and prevent any contamination that could hinder vegetation growth or future agricultural use.

Future Land Use Preparation:

This rehabilitation approach is tailored to prepare the land for either future agricultural use or natural regrowth, aligning with the site's existing land use and minimal soil resources. By focusing on stabilization and basic soil restoration, the site will be left in a condition that allows for flexible land use options post-rehabilitation.

This staged approach will ensure that each section is rehabilitated to acceptable standards before moving on to the next, facilitating a controlled, orderly rehabilitation process with ongoing oversight and soil management as required.

- Rehabilitation of plant, office, and service areas:

Unless otherwise agreed to in writing by the landowner, all stockpiled material must be removed from the site during the decommissioning phase, the area ripped, and the topsoil (available soil as described above) returned to its original depth to provide a growth medium.

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

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora (not applicable to this application).

Photographs of the plant, office and service areas, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMPR Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMPR Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

- Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area, and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

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

.

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

As no washing is proposed for this project, the applicant will exclusively use water for dust suppression purposes on the access road when needed. Approximately 90 000 litre water/day will be needed during the dry months. The water will be sourced from authorised on site source.

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

As previously stated, although the project does not inherently require a license for watercourse alteration, the applicant will apply for a Water Use Authorisation to ensure that all water-related activities associated with the project are legally compliant and formally recognised by the Department of Water and Sanitation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As per the Risk Matrix Assessment (please see Appendix M1). The assessment process indicated low-risk impacts, it's crucial to note that it was conducted without on-site verification. Given the potential for unforeseen ecological consequences, particularly regarding vegetation disturbance, water quality degradation, and sediment runoff, a cautious approach is necessary.

The site is located within an arid Karoo landscape where annual rainfall is low and highly variable, typically ranging between 200–240 mm, with runoff occurring only after rainfall events. Field verification confirmed that no perennial rivers, wetlands, or seasonal streams occur within the proposed quarry footprint or within 500 m of the site. However, several small ephemeral drainage lines traverse the broader area and are intersected by the proposed access road. These features function only during rainfall events and do not constitute wetlands or active stream channels but are still recognised as watercourses under the National Water Act and therefore require appropriate stormwater and erosion-control measures.

Based on the absence of perennial or seasonally flowing water bodies and because no activities are proposed within regulated aquatic features,

As previously indicated, the ecological assessment confirms that no natural wetlands, rivers, or regulated watercourses occur within the quarry or stockpile footprint, and only small ephemeral drainage lines occur along the proposed access road alignment. These features carry water only after rainfall events and do not trigger Section 21(c) or 21(i) water uses. Nevertheless, appropriate stormwater and erosion-control measures will be implemented to maintain natural flow patterns, particularly where the access road intersects these minor drainage features.

Water for dust suppression will be sourced from an authorised abstraction point, and any new abstraction required will trigger a Water Use Authorisation under the National Water Act.

.

iv) Impacts to be mitigated in their respective phases

Table 25: Impact to be mitigated in their respective phases

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons.	Site Establishment phase	5 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining of aggregate is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998	Beacons need to be in place throughout the life of the activity.
Site establishment and infrastructure development.	Site Establishment & Operational Phase	5 ha	**<u>Loss of agricultural land for duration of mining:</u>** According to the landowner, the agricultural potential of the study area (S1) is of lower significance and therefore he supports the proposed mining operation. The proposed mining area will revert back to its previous state upon closure. The	Use of agricultural land must be managed in accordance with the: • CARA, 1983 Closure Plan (Appendix L)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			mining area in its original state and again used for agricultural purposes.		
• Site establishment and stockpiling of topsoil and overburden	Site Establishment & Operational Phase	5 ha	**Visual Mitigation** • The site must have a neat appearance and be kept in good condition at all times. • Mining must be contained to the boundaries of the permitted area. • Mining equipment must be stored neatly in dedicated areas when not in use. • The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area. • The excavation must be contained in within the approved footprint of the permitted area. • Upon closure, the mining area must be rehabilitated in accordance with approved closure objectives, focusing on stability, safety, and visual integration with the surrounding landscape, without implying backfilling of excavated areas.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998	Throughout the site establishment-, and operational phase.
• Site establishment and infrastructure development. • Cumulative Impacts	Site Establishment phase	5 ha	**Management of vegetation removal:** • The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. • Blanket clearing of vegetation must be limited to the proposed footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Plan	Throughout the site establishment phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Clearing of vegetation should be minimized and avoided where possible. • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • The appointed ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. • No plant species, whether native or exotic, should be brought into, ore removed from, the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • No fires must be allowed on-site. • A pre-construction botanical walk-through must be undertaken by a suitably qualified botanist or ecologist to identify, tag, and map all protected succulent and geophytic species within the disturbance footprint. • The necessary Northern Cape Nature Conservation Act permits must be obtained prior to removal or handling of protected species.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• All affected protected and uncommon species such as *Albuca crispa, Aloe broomii, Stomatium rouxii, Anacampseros filamentosa, Trichodiadema setulifolium, Crassula deltoidea, Euphorbia caterviflora, Haworthiopsis venosa subsp. tessellata, Pachypodium succulentum, Pelargonium abrotanifolium, Duvalia corderoyi, Euphorbia arida, Adromischus trigynus, Ceropegia filiformis*, etc. must be carefully excavated and translocated to suitable undisturbed habitat under specialist supervision. • Translocation must occur before any ground disturbance or topsoil stripping begins.		
• Site establishment. • Sloping and landscaping upon closure of the mining area.	Site Establishment- and Decommissioning phase	±5 ha	**<u>Topsoil Management:</u>** The proposed mining site lacks significant topsoil, as it is characterized by a rocky terrain previously. Due to the minimal natural topsoil layer, any rehabilitation efforts will not involve extensive topsoil replacement. Instead, rehabilitation will focus on redistributing whatever minimal soil material can be stripped during mining operations. This approach ensures that the disturbed areas are stabilized and prepared for future agricultural use or natural vegetation, while adhering to the limited soil resources available on-site. Therefore, any available topsoil should be managed as follows if practically possible: • Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			plan must be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed and inactive areas. • Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil to its previous natural state and at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		
• Site establishment. • Screening, stockpile, and	Site Establishment-, Operational- and Decommissioning phase	±1 ha	• Management of Invader Plant Species: • An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
transporting material from site. • Sloping and landscaping upon closure of the mining area.			10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: • The plants can be uprooted, felled or cut off and can be destroyed completely. • The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide. • A continuous invasive alien species monitoring and eradication programme must be implemented, with specific focus on *Prosopis glandulosa*, which has a high colonisation risk in disturbed Karoo environments. • Weed inspections must be conducted regularly during construction and operation, with immediate removal of Category 1 and 2 invasive species in compliance with CARA and NEMBA.	• Invasive Plant Species Management Plan (Appendix I)	
• Site establishment. • Mining of dolerite	Site Establishment- and Operational phase	5 ha	**<u>Protection of fauna</u>** • Site access should be controlled, and no unauthorised persons should be allowed onto the site. • Any fauna directly threatened by the associated activities should be removed to a safe location by a site manager. • The collection/trapping, hunting, or poisoning of any animals at the site is strictly forbidden. Signs	Fauna must be managed in accordance with the: • NEM:BA 2004	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			must be put up to enforce this. Personnel should not be allowed to wander off demarcated areas. • Fires must not be allowed on site. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel, and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. All vehicles should adhere to a low-speed limit (40 km/h) to avoid collisions with susceptible species. • Construction vehicles must be limited to a minimal footprint on site (no movement outside of the earmarked footprint). • All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. • Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. • Ensure that cables and connections are insulated successfully to reduce electrocution risk. • Use environmentally friendly chemical products. • No litter, food or other foreign material may be thrown or left around the site.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• A pre-clearing faunal walk-through must be completed by a qualified specialist to ensure reptiles, small mammals, tortoises, and other fauna are safely relocated before vegetation removal begins. • Daily inspection of open excavations must occur to rescue any trapped fauna. • No harm, persecution, hunting, trapping or intentional killing of wildlife is permitted. • Any dangerous fauna (e.g., venomous snakes) must only be handled by certified specialists.		
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	Site Establishment, & Operational Phase.	5 ha	**Archaeological, Heritage and Palaeontological Aspects:** • All mining, vegetation clearing, blasting, and infrastructure development must be strictly confined to the approved development footprint to avoid unnecessary disturbance of heritage-sensitive areas. • If any archaeological material is discovered (including stone tools, pottery, rock engravings, historical artefacts, or structural remains) during pre-construction, construction, operational, or closure phases: o Work in the immediate area must stop immediately, and the find must be left in situ and secured. o The discoverer must notify their supervisor, who must inform the senior on-site Manager. o The senior on-site Manager must: o Assess and demarcate the immediate no-go area; o Confirm the required extent of work stoppage; o Notify the Environmental Control Officer (ECO) without delay.	Cultural/heritage aspects on site must be managed in accordance with the: NHRA, 1999	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ The ECO must contact a professional archaeologist, who will: o Visit the site to assess the find; o Provide an expert recommendation; o Notify SAHRA in accordance with the National Heritage Resources Act. o Work may only resume once SAHRA has issued written authorisation and all required mitigation actions (e.g., documentation, recording, or relocation under a Section 35 permit) have been implemented. o If human remains are encountered, all work must cease immediately. The remains must not be moved or disturbed. The archaeologist and SAHRA must be informed at once so that lawful procedures for exhumation or preservation can be followed. ▪ For any discovery of potential fossil material (bones, teeth, plant impressions, or trace fossils): o Work must stop in the affected area. o The ECO must notify a qualified palaeontologist to assess the find. o SAHRA must be contacted where required. o Work may only continue once clearance has been granted.		
▪ Stripping and stockpiling of topsoil and/or overburden. ▪ Excavation, loading and hauling to the processing plant.	Site Establishment-, Operational Phase	1.5 km	**<u>Drainage Line Protection (Where Vegetation Removal Intersects Watercourses)</u>** ▪ Several small ephemeral drainage lines cross the access road alignment; disturbance to these must be minimised. ▪ Erosion-control structures must be implemented at all drainage crossings and maintained throughout construction and operation.	▪ Disturbance limited to authorised footprint in compliance with NEMA Duty of Care (S28). ▪ Erosion control installed at all crossings to meet Best Environmental Management Practice standards. ▪ Natural water flow maintained, consistent with	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Drilling and blasting • Processing, stockpiling and transporting of material.			• Clearing of riparian or dense shrub vegetation within drainage lines is prohibited except where absolutely required for the approved access road footprint.	National Water Act requirements. • Riparian vegetation avoided except where essential for road footprint, in line with GN R326 EIA principles. • Immediate rehabilitation of disturbed areas to prevent sedimentation and meet water resource protection standards. • Ongoing ECO monitoring ensures continued compliance with Competent Authority conditions.	
• Stripping and stockpiling of topsoil and/or overburden. • Excavation, loading and hauling to the processing plant. • Drilling and blasting • Processing, stockpiling and transporting of material.	Site Establishment-, Operational Phase	±1 ha	**<u>Fugitive Dust Emission Mitigation:</u>** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.	Dust generation must be managed in accordance with the: • NEM: AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The crusher plant must have operational water sprayers to alleviate dust generation from the transfer points. • Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end. • Compacted dust must weekly be removed from the crusher plant to eliminate the dust source. • Loads must be flattened to prevent spillage during transportation on public roads. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. • All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM: AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). • Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.		
• Site establishment. • Excavation, loading and hauling to the processing plant • Drilling and blasting • Crushing, screening,	Site Establishment-, Operational-, and Decommissioning Phase	5 ha	**Noise Handling:** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).	Noise generation must be managed in accordance with the: • NEM: AQA. 2004 Regulation 6(1) • NRTA, 1996	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.			• Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM: AQA, 2004, SANS 10103:2008.		
• Stripping and stockpiling of topsoil and/or overburden. • Excavation, loading and hauling to the processing plant. • Drilling and blasting • Processing, stockpiling and transporting of material. • Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational-, and Decommissioning Phase	5 ha	**<u>Waste Management:</u>** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200-litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Ablution facilities must be provided in the form of chemical toilets. The chemical toilets must be placed outside the 1:100-year floodline of any open water resource and must be serviced at least once every two weeks for the duration of the mining activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM: WA, 2008 • NEM: WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • A spill kit must be available on-site which can be operated by trained employees for the ad hoc remediation of minor chemical and hydrocarbon spillages. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM: WA. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to a recognised general waste landfill site. • No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		
• Stripping and stockpiling of topsoil and overburden. • Excavation, loading and hauling to the processing plant. • Drilling and Blasting • Sloping and landscaping during rehabilitation.	Operational Phase	5 ha	**<u>Erosion Control and Storm Water Management:</u>** • Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Stormwater must be diverted around the stockpiles and mining areas to prevent erosion. • Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. • When mining within steep slopes, it must be ensured that adequate slope protection is provided. • During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. • Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. • Any erosion problems within the mining area because of the mining activities observed must	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ▪ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). ▪ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan. • Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			are formally drained to a dirty water drainage system at the site. ▪ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.		
• Crushing, screening, stockpiling and transporting material from site.	Operational Phase	±1 ha	**<u>Access Road Mitigation:</u>** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed and inactive areas. • Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. • Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes. • Minimise disturbance of ephemeral drainage lines intersected by the access road.	The access road must be managed in accordance with the: • NRTA, 1996	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Ensure the access road design maintains natural flow paths and does not channel or concentrate runoff. • Stabilise all drainage line crossings immediately after construction to prevent gullying. • Avoid clearing indigenous vegetation along the access road alignment except for the minimum footprint required. • Where protected succulent or geophytic species occur along the road alignment, they must be identified, mapped, permitted, and translocated before construction begins. • Monitor the access road verges for invasive alien plants, particularly *Prosopis glandulosa*, which favours disturbed soils. • Remove invasive species immediately upon detection to prevent establishment along the corridor. • Conduct a pre-construction faunal walk-through, focusing on relocating reptiles and small mammals from the road alignment. • Check the road alignment daily during construction for tortoises, reptiles, and small mammals, especially in rocky terrain. • Speed limits must be enforced to reduce collision risk with wildlife (e.g., tortoises, hares, small carnivores). • Topsoil removed during road preparation must be separately stockpiled, protected, and reused for rehabilitation. • Disturbed road edges must be revegetated using preserved topsoil to restore natural seedbank and prevent long-term erosion.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Once construction is complete, all temporary disturbance areas next to the access road must be recontoured, stabilised, and revegetated. • Ensure that rehabilitation restores surface naturalness and does not create artificial channels or erosion features.		
• Excavation, loading and hauling to the processing plant. • Drilling and Blasting • Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational-, and Decommissioning phase	5 ha	**Management of health and safety risks:** • Workers must have access to the correct personal protection equipment (PPE) as required by law. • Sanitary facilities must be located within 100 m from any point of work. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996)	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001	Throughout the site establishment-, operational and decommissioning phase.
• Site establishment and infrastructure development.	Site Establishment, & Operational Phase.	±500 m²	**Storage/Handling of Hazardous Substances/Chemicals:** • Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product. • The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water. • Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member. • A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site. • Any fuel/used oil tanks must have secondary containment in the form of an impermeable	Chemicals/hazardous substances must be stored in accordance with the: • HSA,1973 • NWA, 1998 • NEM: WA, 2008	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			bund wall and base within which the tanks sit, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely. • The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. • Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Sloping and landscaping during rehabilitation phase.	Decommissioning Phase	5 ha	**<u>Rehabilitation/landscaping of mining area:</u>** Rehabilitation of the proposed mining site will prioritize stabilizing and preparing disturbed areas for potential agricultural use or natural regrowth, considering the minimal topsoil available. Key elements of this plan are as follows: • Rehabilitation Process: The operation will proceed in staged sections of approximately 1–1.5 hectares, with each section undergoing rehabilitation immediately after completion of mining activities in that area. Earthmoving equipment will handle in-situ material during operations, ensuring that disturbed areas are minimized. Given the rocky, low-topsoil nature of the site, topsoil recovery will be limited to stripping whatever minimal soil can be recovered from the rocky terrain. This soil will be stockpiled temporarily for later redistribution. • Topsoil Redistribution: Although the site lacks substantial topsoil, any minimal amount of soil material recovered will be returned to its original depth after profiling the excavated areas with acceptable contours and erosion control measures. This redistribution will help stabilize the soil, reduce erosion, and foster natural regrowth or future agricultural use. • Erosion Control and Profiling: Excavated areas will be contoured and graded to prevent erosion and promote natural water flow. These erosion control measures will also help prevent sediment runoff into nearby areas and support the overall stability of the rehabilitated sections.	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 Closure Plan (Appendix L)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Waste Management: No waste material will be allowed to be deposited within the excavated areas. This will help maintain the integrity of the rehabilitated landscape and prevent any contamination that could hinder vegetation growth or future agricultural use. • Future Land Use Preparation: This rehabilitation approach is tailored to prepare the land for either future agricultural use or natural regrowth, aligning with the site's existing land use and minimal soil resources. By focusing on stabilization and basic soil restoration, the site will be left in a condition that allows for flexible land use options post-rehabilitation. • This staged approach will ensure that each section is rehabilitated to acceptable standards before moving on to the next, facilitating a controlled, orderly rehabilitation process with ongoing oversight and soil management as required. • Rehabilitation of plant, office, and service areas: • Unless otherwise agreed to in writing by the landowner, all stockpiled material must be removed from the site during the decommissioning phase, the area ripped, and the topsoil (available soil as described above) returned to its original depth to provide a growth medium. • On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.		

e) Impact Management Outcomes

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

Table 26: Impact Management Outcomes

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Demarcation of site with visible beacons.	No impact could be identified other than the beacons being outside the boundaries of the	N/A	Site Establishment phase	Control through management and monitoring.	Mining of aggregateis only allowed within the boundaries of the approved area. MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	approved mining area.				• NEMA, 1998
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Visual intrusion as a result of site establishment.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998
• Site establishment and infrastructure development.	• Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	Use of agricultural land must be managed in accordance with the: • CARA, 1983 Closure Plan (Appendix L)
• Stripping and stockpiling of topsoil and overburden. • Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation. • Construction of site access road	• Loss of stockpiled topsoil during mining and stockpiling. • Potential erosion of denuded areas. • Facilitation of erosion due to mining activities. • Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment-, Operational and Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational- and Decommissioning phase	Control: Implementing soil- and storm water management.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment- and Operational phase	Control & Stop: Implementing good management practices.	Fauna must be managed in accordance with the: • NEM:BA 2004 Any water related matters must be managed in accordance with the: • NWA, 1998 • WUL conditions
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Excavation, loading and hauling to the processing plant. • Drilling and Blasting • Processing, stockpiling and transporting of material.	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the mining activities.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment- and Operational Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation must be managed in accordance with the: • NEM: AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.	• Noise nuisance generated by earthmoving machinery. • Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the drilling and blasting activities. • Noise nuisance stemming from	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: • NEM: AQA, 2004 Regulation 6(1) • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	operation of the processing plant.				
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM: WA, 2008 • NEM: WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	• Potential impact on area/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999
• Construction of site access road • Screening, stockpile, and transporting material from site.	• Deterioration of the access road to the mining area.	Collapse of the road infrastructure will affect the landowner.	Operational Phase	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation phase.	• Unsafe working environment for employees. • Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS 18001 USBM standards
• Screening, stockpile, and transporting material from site.	• Overloading of trucks having an impact on the public roads.	Overloading will negatively affect the roads in the vicinity of the mining area.	Operational Phase	Control: Proper site management.	Load weights must be managed in accordance with the: • NRTA, 1996

f) Impact Management Actions

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

Table 27: Impact Management Actions

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
▪ Demarcation of site with visible beacons.	▪ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Beacons need to be in place throughout the life of the activity.	Mining of aggregateis only allowed within the boundaries of the approved area. ▪ MPRDA, 2008 ▪ NEMA, 1998
▪ Site establishment	▪ Visual intrusion as a result of site establishment.	**<u>Visual Mitigation</u>** ▪ Mining must be contained to the boundaries of the permitted area. ▪ The site must have a neat appearance and be always kept in good condition. ▪ The permit holder must limit vegetation removal (if applicable), and stripping of	Throughout the site establishment-, and operational phase.	Management of the mining area must be in accordance with the: ▪ MPRDA, 2008 ▪ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		topsoil may only be done immediately prior to the use of a specific area. • Upon closure, the mining area must be rehabilitated in accordance with approved closure objectives, focusing on stability, safety, and visual integration with the surrounding landscape, without implying backfilling of excavated areas. **Management of vegetation removal** • A pre-construction botanical walk-through must be conducted by a qualified ecologist/botanist to identify, tag, map, and record all protected and uncommon plant species within the disturbance footprint. • The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. • Blanket clearing of vegetation must be limited to the proposed footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Clearing of vegetation should be minimized and avoided where possible. • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • All protected and uncommon species must be legally handled in accordance with the Northern Cape Nature Conservation Act permits before any disturbance occurs.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Protected species including, but not limited to: *Albuca crispa, Aloe broomii, Stomatium rouxii, Anacampseros filamentosa, Trichodiadema setulifolium, Crassula deltoidea, Euphorbia caterviflora, Haworthiopsis venosa subsp. tessellata, Pachypodium succulentum, Pelargonium abrotanifolium, Duvalia corderoyi, Euphorbia arida, Adromischus trigynus, Ceropegia filiformis, etc.*,must be carefully excavated and translocated to suitable undisturbed areas before vegetation clearing begins. • The appointed ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • Translocation must be undertaken under direct specialist supervision and inspected by the ECO. • All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. • No plant species, whether native or exotic, should be brought into, ore removed from, the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • No fires must be allowed on-site.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Vegetation clearing within or adjacent to ephemeral drainage lines must be avoided where possible and limited strictly to the approved access road footprint. • No clearing may alter the natural vegetation buffer that stabilises these watercourses. • Disturbed and cleared areas must be recontoured, stabilised, and rehabilitated progressively as construction and mining phases proceed. • Stored topsoil must be reapplied to encourage natural regrowth from the existing seedbank.		
• Site establishment • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area. • Construction of site access road	• Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation	**<u>Topsoil Management:</u>** Topsoil must be stripped to ±30 cm, stored separately, protected from contamination, and reused during rehabilitation to preserve the natural seedbank. Even in areas with shallow and rocky soils, the surface layer must still be treated as topsoil due to the presence of seedbank and vegetative fragments. Subsoil must not be used as topdressing during rehabilitation. The proposed mining site lacks significant topsoil, as it is characterized by a rocky terrain. Due to the minimal natural topsoil layer, any rehabilitation efforts will not involve extensive topsoil replacement. Instead, rehabilitation will focus on redistributing whatever minimal soil material can be stripped during mining operations. This approach ensures that the disturbed areas are stabilized and prepared for future grazing or natural vegetation, while adhering to the limited soil resources available	Throughout the site establishment-, operational, and decommissioning phase.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		on-site. Therefore, any available topsoil should be managed as follows if practically possible. • Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed and inactive areas. • Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, to a depth of 300 mm or to a depth that is practical and aligns with the original and/or surrounding conditions, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil to its previous natural state at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement. • Control: Implementing the WUL conditions and specifications if applicable.		
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area. • Construction of site access road	• Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	**<u>Management of Invader Plant Species:</u>** • An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.	Throughout the site establishment-, operational, and decommissioning phase.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• All cleared and disturbed areas must be monitored regularly for alien invasive plants, particularly *Prosopis glandulosa*, which poses a high invasion risk following disturbance. • Any invasive species detected must be removed immediately using methods compliant with CARA and NEMBA regulations.		
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.	• Potential impact on fauna within the footprint area.	**<u>Protection of Fauna:</u>** • The site manager must ensure no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young. • Vegetation removal must only begin after a faunal pre-clearance survey has been conducted to safely relocate reptiles, tortoises, small mammals, and other fauna that could be harmed during clearing. The ECO must ensure no dens, burrows, or tortoise shelters are unknowingly destroyed during clearing.	Throughout the site establishment-, and operational phase.	Fauna must be managed in accordance with the: • NEM:BA 2004
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the mining activities.	**<u>Fugitive Dust Emission Mitigation:</u>** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • The site manager must ensure continuous assessment of all dust suppression	Throughout the site establishment-, operational, and decommissioning phase.	Dust generation must be managed in accordance with the: • NEM: AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.		equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust. • Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. • Loads must be flattened and covered to ensure that minimal spillage of material takes place during transportation, also preventing windblown dust. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. • All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM: AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). • Best practice measures shall be implemented during the stripping of topsoil, loading, and transporting of the aggregatefrom site to minimize potential dust impacts.		
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting	• Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	**<u>Noise Handling:</u>** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy	Throughout the site establishment-, operational-, and decommissioning phase.	Noise generation must be managed in accordance with the: • NEM: AQA. 2004 Regulation 6(1) • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.		condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). • Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM: AQA, 2004, SANS 10103:2008.		
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	**<u>Waste Management:</u>** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200-litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Ablution facilities must be provided in the form of a chemical toilet. The chemical toilets must be placed outside the 1:100-year floodline of any open water resource and must be serviced at least once every two weeks for the duration of the mining activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or	Throughout the site establishment-, operational-, and decommissioning phase.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM: WA, 2008 • NEM: WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder. • If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • A spill kit must be available on-site which can be operated by trained employees for the ad hoc remediation of minor chemical and hydrocarbon spillages. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM: WA. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area. • It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Excavation, loading and hauling to the processing plant. • Sloping and landscaping upon closure of the mining area.	• Potential impact on area/infrastructure of heritage or cultural concern.	**Archaeological, Heritage and Palaeontological Aspects:** • All mining, vegetation clearing, blasting, and infrastructure development must be strictly confined to the approved development footprint to avoid unnecessary disturbance of heritage-sensitive areas. • If any archaeological material is discovered (including stone tools, pottery, rock engravings, historical artefacts, or structural remains) during pre-construction, construction, operational, or closure phases: o Work in the immediate area must stop immediately, and the find must be left in situ and secured. o The discoverer must notify their supervisor, who must inform the senior on-site Manager. o The senior on-site Manager must: o Assess and demarcate the immediate no-go area;	Throughout the operational phase.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		○ Confirm the required extent of work stoppage; ○ Notify the Environmental Control Officer (ECO) without delay. The ECO must contact a professional archaeologist, who will: ○ Visit the site to assess the find; ○ Provide an expert recommendation; ○ Notify SAHRA in accordance with the National Heritage Resources Act. ○ Work may only resume once SAHRA has issued written authorisation and all required mitigation actions (e.g., documentation, recording, or relocation under a Section 35 permit) have been implemented. ○ If human remains are encountered, all work must cease immediately. The remains must not be moved or disturbed. The archaeologist and SAHRA must be informed at once so that lawful procedures for exhumation or preservation can be followed. ○ For any discovery of potential fossil material (bones, teeth, plant impressions, or trace fossils): ○ Work must stop in the affected area.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		○ The ECO must notify a qualified palaeontologist to assess the find. ○ SAHRA must be contacted where required. ○ Work may only continue once clearance has been granted.		
▪ Stripping and stockpiling of topsoil and/or overburden. ▪ Construction of site access road ▪ Excavation, loading and hauling to the processing plant. ▪ Processing, stockpiling and transporting of material. ▪ Sloping and landscaping upon closure of the mining area.	▪ Loss of stockpiled material due to ineffective storm water control.	**Storm Water Mitigation:** ▪ Storm water must be diverted around the topsoil heaps and mining area to prevent erosion. ▪ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems.	Throughout the operational phase.	Storm water must be managed in accordance with the: ▪ CARA, 1983 ▪ NEMA, 1998 ▪ NWA, 1998

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Construction of site access road • Stripping and stockpiling of topsoil and/or overburden. • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.	• Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.	**<u>Access Road Mitigation:</u>** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed and inactive areas. • Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. • Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes. • Minimise disturbance of ephemeral drainage lines intersected by the access road. • Ensure the access road design maintains natural flow paths and does not channel or concentrate runoff. • Stabilise all drainage line crossings immediately after construction to prevent gullying. • Avoid clearing indigenous vegetation along the access road alignment except for the minimum footprint required. • Where protected succulent or geophytic species occur along the road alignment, they must be identified, mapped, permitted, and translocated before construction begins. • Monitor the access road verges for invasive alien plants, particularly *Prosopis glandulosa*, which favours disturbed soils. • Remove invasive species immediately upon detection to prevent establishment along the corridor.	Throughout the operational phase.	The access road must be managed in accordance with the: • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Conduct a pre-construction faunal walk-through, focusing on relocating reptiles and small mammals from the road alignment. • Check the road alignment daily during construction for tortoises, reptiles, and small mammals, especially in rocky terrain. • Speed limits must be enforced to reduce collision risk with wildlife (e.g., tortoises, hares, small carnivores). • Topsoil removed during road preparation must be separately stockpiled, protected, and reused for rehabilitation. • Disturbed road edges must be revegetated using preserved topsoil to restore natural seedbank and prevent long-term erosion. • Once construction is complete, all temporary disturbance areas next to the access road must be recontoured, stabilised, and revegetated. • Ensure that rehabilitation restores surface naturalness and does not create artificial channels or erosion features.		
• Site establishment. • Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant.	• Potential health and safety risk to employees.	**<u>Management of Health and Safety Risks:</u>** • Adequate ablution facilities and water for human consumption must daily be available on site. • Workers must have access to the correct personal protection equipment (PPE) as required by law. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Throughout the site establishment-, operational and decommissioning phase.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.				

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The decommissioning phase will entail the reinstatement of the processing area by removing the mining machinery from the site. Removal of the crushing and screening plant, containers and chemical toilets from the mining area, removal/levelling of all stockpiled material and the landscaping of the mining area to allow the replacement of stockpiled topsoil.

The reinstated area will be vegetated, and invasive plant species will be controlled during a 12 months' aftercare period to address germination of problem plants in the area. The Applicant will comply with the minimum closure objectives as prescribed by DMPR.

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

This report, the Draft Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period. Comments received during this period will be included in the FBAR.

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

The requested rehabilitation plan is attached as Appendix L.

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

The rehabilitation plan is confirmed as compatible with the closure objectives based on the following considerations and its alignment with the applicable legislation detailed in Appendix L:

Progressive Rehabilitation Ensures Compatibility

Rehabilitation is performed progressively in sections of 1 to 1.5 hectares, minimizing environmental disruption and allowing immediate stabilization of disturbed areas. This approach aligns with the closure objective of rendering the site safe and suitable for agricultural use, reducing the likelihood of long-term environmental degradation. Section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) requires phased rehabilitation to mitigate environmental harm during and after mining operations.

Landform Stabilization and Drainage

The plan involves contouring and sloping the land to ensure proper drainage and prevent water pooling. The adaptation of the access road as a drainage pathway facilitates natural water flow, crucial for long-term stability and agricultural potential. The DMPR's minimum closure objectives mandate erosion control and land stabilization to ensure the site's safety and suitability for future use.

Topsoil Management

Despite limited topsoil, the plan emphasizes the redistribution of available soil to stabilize the land, promote vegetation, and reduce erosion. This effort ensures that the site can either support agriculture or revert to natural vegetation. Section 44 of the MPRDA, 2002 requires topsoil replacement and preparation of the area to support regrowth. The National Environmental Management: Biodiversity Act (NEM, 2004) regulations also emphasize soil preservation and invasive species control.

Restoration to Agricultural Grazing Potential

The plan aims to create a modest landscape feature, as restoring the site to its original topography is impractical. This approach supports its future use as low-potential agricultural / grazing land, aligning with the site's existing agricultural state and ensuring compatibility with closure objectives. The DMPR closure requirements focus on preparing land for post-mining use that aligns with its historical or intended future purpose.

Compliance with DMPR Standards

The plan meets the DMPR's minimum closure objectives, including removing stockpiles, equipment, and waste, along with restoring disturbed areas through landscaping, erosion control, and invasive species management. Section 43(4) of the MPRDA, 2002 and NEM (2004) mandate waste removal, invasive species control, and compliance with environmental rehabilitation standards Unless otherwise agreed to in writing by the landowner.

Erosion and Invasive Species Control

The rehabilitation plan integrates erosion control through scarification and grading while monitoring and eradicating invasive species, particularly those categorized under NEM Regulations in terms of NEM (2004) requires the eradication of Category 1a and 1b invasive species, while the DMPR closure objectives emphasize maintaining ecological stability through erosion and invasive species management.

Final Rehabilitation

The plan includes final landscaping and surface shaping of disturbed areas where practicable, limited to the treatment of stockpiled or previously disturbed surfaces and not involving the backfilling of excavated voids. This will be accompanied by the removal of all equipment and infrastructure, as well as the disposal of waste at appropriately licensed and recognised facilities. Compacted soil will be scarified, and vegetation will be reestablished where necessary using indigenous seed mixes. Monitoring will ensure vegetation regrowth aligns with closure goals as required in terms of Section 44 of the MPRDA, 2002 and Regulation 62 require comprehensive rehabilitation measures, including waste management and vegetation restoration.

The rehabilitation plan adheres to legislative requirements under the MPRDA, 2002 and NEM (2004) while fulfilling the DMPR's closure objectives. Its phased, environmentally conscious approach ensures the site's safety and agricultural potential, confirming its compatibility with the closure goals.

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

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

Mine type and saleable mineral by-product

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

Mine type	Quartzite/Sandstone/Sand
Saleable mineral by-product	None

Risk ranking

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

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

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components.

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	NO
2(A)	Demolition of steel buildings and structures	-	NO
2(B)	Demolition of reinforced concrete buildings and structures	-	NO

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
3	Rehabilitation of access roads	-	NO
4(A)	Demolition and rehabilitation of electrified railway lines	-	NO
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	NO
5	Demolition of housing and facilities	-	NO
6	Opencast rehabilitation including final voids and ramps	YES	
7	Sealing of shafts, adits and inclines	-	NO
8(A)	Rehabilitation of overburden and spoils	-	NO
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	NO
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	YES	

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	338597	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	225,731	1.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	178817	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	23797	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1 (Undulating)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

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

Table 28: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Power Construction (Pty) Ltd			**Location:**	Victoria West		
Evaluators:	Sonette Smit			**Date:**	December 2025		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m²	0	23	1.00	1.1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	323	1.00	1.1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	476	1.00	1.1	R 0.00
3	Rehabilitation of access roads	m^2	0	58	1.00	1.1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	561	1.00	1.1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	306	1.00	1.1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	646	1.00	1.1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	1,5	338,597	0.04	1.1	R 20,315.82
7	Sealing of shaft, audits and inclines	m^3	0	174	1.00	1.1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	225,731	1.00	1.1	R 22,573.10
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	281,144	1.00	1.1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	816,575	0.51	1.1	R 0.00
9	Rehabilitation of subsided areas	ha	0	189,016	1.00	1.1	R 0.00
10	General surface rehabilitation	ha	0,1	178,817	1.00	1.1	R 89,408.50
11	River diversions	ha	0	178,817	1.00	1.1	R 0.00

12	Fencing	m	0	204	1.00	1.1	R 0.00
13	Water Management	ha	0	67,992	0.17	1.1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	1	23,797	1.00	1.1	R 23,797.00
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 156,094.42
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)			1,05			**Sub Total 1**	R 163,899.14

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 9,833.95
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 16,389.91
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 190,123.00
		Vat (15%)	R 28,518.45
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 218,641.45**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 218641.45**

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

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

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

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanisms for monitoring compliance

Table 29: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Demarcation of site with visible beacons	Maintenance of beacons	• Visible beacons need to be placed at the corners of the mining area.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Site establishment	**Visual Characteristics:** • Visual intrusion as a result of site establishment.	• Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility:	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Contain mining to the boundaries of the permitted area. • Ensure that the site have a neat appearance and is always kept in good condition. • Limit vegetation removal, and only strip topsoil immediately prior to the use of a specific area. • Upon closure, the mining area must be rehabilitated in accordance with approved closure objectives, focusing on stability, safety, and visual integration with the surrounding landscape, without implying backfilling of excavated areas.	
• Site establishment • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.	**<u>Geology and Soil:</u>** • Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation .	• Earthmoving equipment to reinstate mined-out areas. • Erosion control infrastructure (if necessary)	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. • Environmental Control Officer (ECO) o Verify correct stripping, handling, stockpiling and re-spreading of topsoil. o Monitor effectiveness of erosion control measures after rainfall events. o Inspect topsoil stockpiles for invasive alien plants (*including Prosopis glandulosa*) and ensure immediate removal. o Confirm that stockpile placement and height comply with specialist recommendations. o Oversee rehabilitation progress and confirm vegetation establishment. • Botanical / Ecological Specialist (as required pre-construction) o Provide guidance on preservation of surface soil layers (seedbank-rich material). o Advise on the suitability of rehabilitation soils and revegetation success indicators. • Site Supervisor / Contractors	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Implement all soil-handling procedures exactly as specified. ○ Ensure machinery operators follow approved stripping and stockpiling boundaries. ○ Install and maintain erosion-control structures along disturbed areas, especially drainage lines. <u>Responsibility:</u> • Strip and stockpile the available soil. • Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. • Place topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed and inactive areas. • Protect topsoil stockpiles against losses by water and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establishment of plants on the stockpiles will help prevent erosion. • Ensure that topsoil heaps do not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Keep temporary stockpiles free of invasive plant species. • Divert storm- and runoff water around the mining area to prevent erosion. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			returned topsoil is minimized. The best time of year is at the end of the rainy season. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement. • Topsoil Handling & Preservation • Treat the surface rocky layer as part of the topsoil, as it contains the natural Eastern Upper Karoo seedbank. • Prevent contamination of topsoil with subsoil, waste, or foreign materials. • Maintain separate, clearly marked stockpiles of topsoil and subsoil. • Do not compact soil stockpiles; ensure stable but aerated storage conditions. • Erosion Prevention & Drainage • Install erosion-control measures (stone packing, berms, contour banks) where topsoil is exposed or re-spread. • Stabilise slopes and disturbed soil immediately following heavy rainfall. • Prevent artificial channelling of stormwater that can erode disturbed soils. • Inspect rehabilitated areas after rainfall events and repair erosion promptly. • Alien Invasive Species Management • Conduct routine monitoring of all topsoil and temporary stockpiles for alien species recruitment. • Remove *Prosopis glandulosa* and other invaders at early germination stage to prevent colonisation. • Dispose of removed invasives according to NEMBA and CARA requirements. • Rehabilitation & Soil Restoration • Ensure re-spread topsoil is placed evenly and not mixed with subsoil.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Facilitate natural revegetation using soil seedbank; avoid introducing external plant material. • Maintain groundcover restoration to minimise long-term erosion risk. • Continue monitoring rehabilitated areas for at least 12 months, extending if soil stability has not been achieved.	
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	**<u>Groundcover:</u>** • Infestateion of denuded areas with invader plant species. • Infestation of the reinstated area with invader plant species.	• Designated team to cut or pull-out invasive plant species that germinated on site. • Herbicide application equipment.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. • Environmental Control Officer (ECO) o Monitor groundcover condition during all phases to detect early erosion or vegetation loss. o Inspect disturbed areas after rainfall events and ensure corrective action is taken. o Verify that invasive species (especially Prosopis glandulosa) are removed promptly from denuded soil and stockpiles. o Ensure that groundcover restoration and soil stabilisation measures are correctly implemented. • Contractor / Site Supervisor o Ensure machinery operators avoid unnecessary disturbance of soil and surface crust. o Maintain erosion-control structures until vegetation has re-established. o Prevent storage of materials on areas intended to rehabilitate groundcover. o Ecological / Botanical Specialist (when required)	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Provide guidance on restoration of natural Eastern Upper Karoo groundcover using seedbank-rich topsoil. ○ Advise the ECO on slope stability, groundcover recovery and areas requiring additional intervention. <u>Responsibility:</u> • Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. • Keep all stockpiles (topsoil) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas. • Groundcover Protection & Restoration ○ Preserve natural soil crusts and rocky surface layers wherever possible, as these support the natural groundcover and seedbank. ○ Prevent unnecessary stripping of surface material outside the working footprint. ○ Stabilise bare soil immediately using contouring, stone-packing or brush-packing to prevent erosion until vegetation returns. ○ Re-spread stored topsoil evenly to promote natural revegetation from the existing seedbank. ○ Avoid dumping spoil or placing stockpiles on areas designated for groundcover rehabilitation. • Invasive Species Control (Groundcover-Specific) ○ Monitor denuded and reinstated areas regularly for invasive species germination. ○ Immediately remove invasive seedlings from groundcover restoration areas before they establish.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Ensure herbicide use, if necessary, is limited and supervised to avoid harming recovering indigenous vegetation. • Monitoring & Follow-Up ○ Conduct monthly inspections of reinstated areas during the first 6 months, followed by quarterly inspections thereafter. ○ Identify areas where vegetation has not re-established and implement additional stabilisation or reseeding where required. ○ Maintain photographic monitoring records to document groundcover recovery.	
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.	**Fauna:** • Potential impact on fauna within the footprint area. • Disturbance to fauna within the footprint area.	• Toolbox talks to educate employees how to handle fauna that enter the work areas.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. ○ Groundcover Protection & Restoration ○ Preserve natural soil crusts and rocky surface layers wherever possible, as these support the natural groundcover and seedbank. ○ Prevent unnecessary stripping of surface material outside the working footprint. ○ Stabilise bare soil immediately using contouring, stone-packing or brush-packing to prevent erosion until vegetation returns. ○ Re-spread stored topsoil evenly to promote natural revegetation from the existing seedbank. ○ Avoid dumping spoil or placing stockpiles on areas designated for groundcover rehabilitation. ○ Invasive Species Control (Groundcover-Specific)	Applicable throughout site establishment-, and operational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Monitor denuded and reinstated areas regularly for invasive species germination. ○ Immediately remove invasive seedlings from groundcover restoration areas before they establish. ○ Ensure herbicide use, if necessary, is limited and supervised to avoid harming recovering indigenous vegetation. • Monitoring & Follow-Up ○ Conduct monthly inspections of reinstated areas during the first 6 months, followed by quarterly inspections thereafter. ○ Identify areas where vegetation has not re-established and implement additional stabilisation or reseeding where required. ○ Maintain photographic monitoring records to document groundcover recovery. <u>Responsibility:</u> • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young. • Faunal Protection & Handling ○ Conduct a pre-clearing faunal search and relocate small mammals, reptiles, and tortoises from construction areas. ○ Inspect all open excavations, trenches, and pits daily and safely rescue trapped animals. ○ Immediately report sightings of species of conservation significance (e.g., *Chersobius boulengeri*, *Atelerix frontalis*). ○ Ensure no burrows, nests, or reptile shelters are knowingly destroyed.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Ensure only trained personnel handle snakes and potentially dangerous wildlife. ○ Prevent injury or death of fauna by ensuring secure overnight storage of equipment and preventing animals from entering machinery. • Minimise Disturbance ○ Restrict clearing and heavy machinery activities to daylight hours where possible, reducing disturbance to nocturnal species. ○ Reduce noise and vibration during sensitive periods (e.g., during tortoise activity season in warmer months). • Preventing Habitat Degradation ○ Maintain natural refuge areas (e.g., rocky patches, shrub clusters) outside demarcated work areas. ○ Prevent accidental contamination of faunal habitat through correct waste storage and spill prevention. • Monitoring & Reporting ○ Record all fauna incidents (injuries, mortalities, relocations) in site environmental logs. ○ Follow ECO instructions regarding rehabilitation of disturbed fauna habitat. ○ Maintain open communication with the ECO regarding any risks observed on-site.	
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting	**<u>Air Quality:</u>** • Dust nuisance as a result of the mining activities.	• Dust suppression equipment such as a water car. • Signage that clearly reduce the speed on the access roads.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.			• Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 40 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation. • Flatten and cover loads to prevent spillage and windblown dust during transportation. • Take weather conditions into consideration upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM: AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, loading, and transporting of material from site to minimize potential dust impacts.	
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting	**Noise Ambiance:** • Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	• Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure that employees and staff conduct themselves in an acceptable manner while on site.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.			• No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. • Implement best practice measures to minimise potential noise impacts. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM: AQA 2004, SANS 10103:2008.	
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon	**<u>Waste Management:</u>** • Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	• Oil spill kit. • Sealed drip trays. • Formal waste disposal system with waste registers.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure regular vehicle maintenance, repairs and services take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200-litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Provide ablution facilities in the form of a chemical toilets that are placed outside the 1:100-year floodline of any open water resource. Ensure the	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
closure of the mining area.			toilets are serviced at least once every two weeks for the duration of the mining activities. • Ensure that the use of any temporary, chemical toilet facilities does not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling. • Clean drip trays after use. Do not use dirty drip trays. • Keep a spill kit on site. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Compile a waste management plan and implement it on site. The plan must focus on the waste hierarchy of the NEM: WA. • Contain general waste in marked, sealable, refuse bins placed at a designated area and remove waste from the mining area to a recognised general waste landfill site. • Prevent the burning or burying of waste on site. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			the Department of Water and Sanitation and other relevant authorities. • Park the machinery at the mining area with drip trays placed underneath stationary vehicles.	

• Stripping and stockpiling of topsoil and/or overburden.
• Construction of site access road
• Excavation, loading and hauling to the processing plant.
• Sloping and landscaping upon closure of the mining area.
	• Potential impact on areas/infrastructure of heritage or cultural concern.	• Contact number of an archaeologist that can be contacted when a discovery is made on site.	<u>Role:</u>
			• Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.
			• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.
			
			<u>Responsibility:</u>
			• Confine all mining to the development footprint area.
			• Implement the following change find procedure when discoveries are made on site:
			  • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
			  • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
			  • The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA.
				Applicable throughout site establishment-, operational-, and decommissioning phases.
				• Daily compliance monitoring by site management.
				• Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Work may only continue once the go-ahead was issued by SAHRA.	
• Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.	**<u>Hydrology:</u>** • Storm water management	• Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area (when needed). • Water use authorisation issued by the DWS.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. • Adhere to the specifications of the water use authorisation for the duration of the mining operation. • Environmental Control Officer (ECO) o Monitor the condition of ephemeral drainage lines intersecting the access road and mining footprint. o Verify that stormwater diversion structures are functioning and maintained after rainfall events. o Ensure no unauthorised alteration of natural drainage patterns occurs. o Confirm erosion-control measures are installed and repaired when needed. • Contractor / Site Supervisor o Implement construction methods that avoid channelling or concentrating stormwater into sensitive areas. o Ensure machinery operators do not disturb drainage lines beyond the approved footprint. • Ecological Specialist (as required) o Provide guidance on protecting natural drainage features during construction. o Advise on corrective actions if erosion or sedimentation is detected in drainage lines. <u>Responsibility:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS

			• Divert storm water around stockpiles to prevent erosion.
			• Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.
			• Drainage Line & Erosion Protection
			  ○ Prevent disturbance to small ephemeral drainage lines and allow natural sheet flow to continue undisturbed. Inspect drainage crossings after storm events and repair any erosion or channel formation immediately.
			  ○ Avoid altering slope gradients in ways that could accelerate runoff or cause gullying.
			  ○ Stormwater Diversion & Management
			  ○ Divert clean stormwater around disturbed areas, stockpiles, and work surfaces to prevent erosion.
			  ○ Prevent contaminated stormwater from entering natural drainage lines.
			  ○ Maintain all stormwater berms, drains and diversion channels throughout construction and operation.
			• Soil & Sediment Protection
			  ○ Ensure stripped topsoil is stored outside natural flow paths and is protected from stormwater erosion.
			  ○ If sediment movement is observed downslope of disturbed areas, implement additional sediment traps or brush-packing.
			  ○ Rehabilitation of Hydrological Features
			  ○ Rehabilitate disturbed drainage lines after construction by stabilising soil, reinstating natural contours, and promoting revegetation using topsoil with intact seedbank.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			○ Monitor rehabilitated drainage areas for at least 12 months and re-stabilise if erosion persists. • Invasive Species Monitoring (Hydrology-Relevant) ○ Inspect drainage lines and stormwater pathways for invasive species establishment (*especially Prosopis glandulosa*) and remove immediately.	
• Construction of site access road • Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.	**Existing Infrastructure:** • Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.	• Grader to restore the road surface when needed.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Divert storm water around the access road to prevent erosion. • Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed and inactive areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the truck, and file proof of load weights for auditing purposes.	Applicable throughout operational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Site establishment. • Stripping and stockpiling of topsoil and/or overburden. • Construction of site access road	• Potential health and safety risks to employees.	• Stocked first aid box. • Level 1 certified first aider. • All appointments in terms of the Mine Health and Safety Act, 1996.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility:	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Drilling and Blasting • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping upon closure of the mining area.			• Ensure adequate ablution facilities and water for human consumption is daily available on site. • Ensure that workers have access to the correct PPE as required by law. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	

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

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMPR for compliance monitoring purposes or in accordance with the time period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

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

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct regarding the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management:**
  - Stay within boundaries of site – do not enter adjacent properties.
  - Keep tools and material properly stored.
  - Smoke only in designated areas.
  - Use toilets provided – report full or leaking toilets.

- **Water Management and Erosion:**
  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.
  - Check that dirty water is kept from clean water.

- **Waste Management:**
  - Take care of your own waste
  - Keep waste separate into labelled containers – report full bins.
  - Place waste in containers and always close lid.
  - Don't burn waste.
  - Pick-up any litter laying around.

- **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**
  - Never mix general waste with hazardous waste.
  - Use only sealed, non-leaking containers.
  - Keep all containers closed and store only in approved areas.
  - Always put drip trays under vehicles and machinery.
  - Empty drip trays after rain.
  - Stop leaks and spills, if safe:
    - ✓ Keep spilled liquids moving away.
    - ✓ Immediately report the spill to the site manager/supervision.
    - ✓ Locate spill kit/supplies and use to clean-up, if safe.
    - ✓ Place spill clean-up wastes in proper containers.
    - ✓ Label containers and move to approved storage area.

- **Discoveries:**
  - Stop work immediately.
  - Notify site manager/supervisor.
  - Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

- **Air Quality:**
  - Wear protection when working in very dusty areas.
  - Implement dust control measures:
    - ✓ Water all roads and work areas.

- ✓ Minimize handling of material.
- ✓ Obey speed limit and cover trucks.

- **Driving and Noise:**

  - Use only approved access roads.
  - Respect speed limits.
  - Only use turn-around areas – no crisscrossing through undisturbed and inactive areas.
  - Avoid unnecessary loud noises.
  - Report or repair noisy vehicles.

- **Vegetation and Animal life:**

  - Do not remove any plants or trees without approval of the site manager.
  - Do not collect firewood.
  - Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
  - Report any animal trapped in the work area.
  - Do not set snares or raid nests for eggs or young.

- **Fire Management:**

  - Do not light any fires on site, unless contained in a drum at demarcated area.
  - Put cigarette butts in a rubbish bin.
  - Do not smoke near gas, paints or petrol.
  - Know the position of firefighting equipment.
  - Report all fires.
  - Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

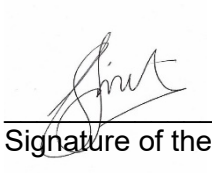
(Among others, confirm that the financial provision will be reviewed annually)

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMPR for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports [X]
b) the inclusion of comments and inputs from stakeholders and I&AP's [X]
c) the inclusion of inputs and recommendations from the specialist reports where relevant, and [X]
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein [X]



Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

3 November 2025

Date:

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B
LOCALITY MAP AND LAND USE MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

SCREENING REPORT

APPENDIX E
REHABILITATION MAP

APPENDIX F
PROOF OF PUBLIC PARTICIPATION

APPENDIX G
SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

+

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
TYPE OF IMPACT	**DURATION**	**LIKELIHOOD**	**SIGNIFICANCE**
Site establishment & infrastructure development • Alteration of the agricultural sense of place; • Loss of agricultural land for duration of mining; • Visual intrusion as a result of site establishment; • Potential impact on fauna within the footprint area; • Potential impact on vegetation and listed and/or protected plant species • Dust nuisance due to site establishment • Potential impact on archaeological artefacts; • Work opportunities to 6 local residents **(Positive Impact)**	**Duration of site establishment phase (<1 month)**	**Possible** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite**	**Low-Medium Concern** **Low-Medium Concern** **Low-Medium Concern** **Low Concern** **Low Concern** **Low-Medium Concern** **Low Concern** **Medium-High (+)**
Construction of site access road: • Visual intrusion caused by construction of site access road • Loss of stockpiled topsoil during construction of access road • Dust nuisance as a result of the construction of access road • Noise nuisance generated by earthmoving machinery. • Potential erosion of denuded areas. • Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages.	**Duration of site establishment phase (<1 month)**	**Possible** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Medium Concern** **Low-Medium Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
Mining of dolerite: • Soil contamination from hydrocarbon spills. • Disturbance to fauna within the footprint area. • Noise nuisance as a result of the mining activities. • Potential impact on areas/infrastructure of heritage or cultural concern.	**Duration of operational phase (5 years maximum)**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**
Stripping and stockpiling of topsoil and/or overburden: • Visual intrusion caused by mining activities; • Loss of stockpiled topsoil during mining and stockpiling; • Dust nuisance as a result of the disturbance of soil; • Noise nuisance generated by earthmoving machinery; • Potential impact on local fauna due to disturbance and loss of available habitat; • Potential erosion of denuded areas; • Loss of stockpiled material due to ineffective storm water control • Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages;	**Duration of site establishment phase (<1 month)**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Possible**	**Low Medium Concern** **Low Medium Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Medium Concern** **Low Concern**
Excavation, loading and hauling to the processing plant: • Visual intrusion as a result of excavation and from loading and vehicles transporting the material • Dust nuisance due to excavation and from loading and vehicles transporting the material; • Noise nuisance as a result of the mining activities; • Unsafe working environment for employees;	**Duration of operational phase (5 years maximum)**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Medium Concern** **Low Concern** **Low Concern** **Low Medium Concern** **Low Medium Concern**

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
• Soil contamination from hydrocarbon spills and/or littering; • Potential impact on areas of palaeontological concern; • Facilitation of erosion due to mining activities;		**Low Possibility** **Low Possibility**	**Low Concern** **Low Concern**
Processing, stockpiling and transporting of material: • Dust nuisance generated at the processing plant; • Noise nuisance stemming from operation of the processing plant; • Visual intrusion as a result of operation of the processing plant • Potential contamination of environment due to improper waste management; • Overloading of trucks impacting road infrastructure; • Degradation of the access road;	**Duration of operational phase (5 years maximum)**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Concern** **Low Concern** **Low Medium Concern** **Low Concern** **Low Medium Concern** **Low Medium Concern**
Cumulative impacts: • Impact the broad-scale ecological processes; • Transformation of intact habitat would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna, avifauna, and flora and impair their ability to respond to environmental fluctuations • Impact on existing infrastructure as a direct result of the mining operation;	**Duration of all phases**	**LIKELIHOOD** **Low Possibility** **Low Possibility** **Low Possibility**	**SIGNIFICANCE** **Low Medium Concern** **Low Medium Concern** **Low Medium Concern**
Sloping and landscaping upon closure of the mining area: • Safety risk posed by un-sloped areas; • Erosion after rehabilitation;	**Duration of decommissioning phase (±2 months)**	**LIKELIHOOD** **Low Possibility** **Low Possibility**	**SIGNIFICANCE** **Low Medium Concern** **Low Medium Concern**

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
• Infestation of the reinstated areas by weeds and invader plant species; • Potential impact associated with litter/waste left at the mining area. • Return of the mining area to landscape feature upon closure **(Positive Impact)**.		**Low Possibility** **Low Possibility** **Definite**	**Low Medium Concern** **Low Medium Concern** **Medium-High (+)**

APPENDIX H
FINANCIAL AND TECHNICAL ABILITY

APPENDIX I

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX J

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX K

CV AND EXPERIENCE RECORD OF EAP

APPENDIX L
CLOSURE - REHABILITATION PLAN

APPENDIX M
SPESIALIST STUDIES

APPENDIX N
SITE SENSITIVITY REPORT