PROPOSED MINING ON A PORTION OF PORTION 2 OF THE FARM GLEN THORNE NO 2163, MANGAUNG DISTRICT FREE STATE PROVINCE

FINAL BASIC ASSESSMENT REPORT

DEPARTMENTAL REFERENCE NUMBER

FS 30/5/1/3/2/10445 MP

DECEMBER 2025

PREPARED FOR

Gravel North (Pty) Ltd
28 Donald Murray Ave
Parkwest
Bloemfontein
9301
Contact Person: Mr GF Griesel
Cell: 071 315 6810
Email: animalfeeds@jsboerdery.co.za

PREPARED BY

Greenmined Environmental (Pty) Ltd
Unit MO1, No 106 AECI Site
Baker Square, Paardevlei
De Beers Avenue
Somerset West, 7130
Contact Person: Ms Christine Fouché
Tel: 021 851 2673
Cell: 082 811 8514
Email: christine.f@greenmined.co.za

EXECUTIVE SUMMARY

Gravel North (Pty) Ltd, applied for environmental authorisation (EA) and a mining permit (MP) to mine gravel from 2.75 ha over Portion 2 of the farm Glen Thorne No 2163 in the Mangaung Metropolitan Municipality (MMM) of the Free State.

The property has an existing borrow pit that was historically used for the extraction of gravel for private use on the farm. The proposed mining site of this application will serve as an extension of the existing pit. The mining method will involve direct excavation using earthmoving equipment. When necessary, a crusher and screening plant will be utilised to size the material, after which it will be stockpiled. Stockpiled material will be loaded onto client trucks for removal from the site.

The proposed mining project requires an EA & mining permit from the Department of Mineral and Petroleum Resources (DMPR), and this report, the Final Basic Assessment Report (FBAR), forms part of the departmental application requirements.

PROJECT ALTERNATIVES OUTCOME

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

The project proposal regarding the property on which the proposed borrow pit will be developed was directed by the area on the farm with the best mineral potential that will also have the least possible impact on the receiving environment. The Preferred Property/Site Alternative for the development of the gravel borrow pit is therefore in accordance with the project proposal and no other viable site/location alternatives are applicable to this project.

b) <u>Type of activity to be undertaken</u>

The Applicant intends to extract gravel from an area where gravel has historically been removed for farming purposes. The only viable alternative land use of the earmarked area is agriculture.

Approximately 41% of the proposed mining area has already been disturbed through previous gravel extraction activities. As a result, the development of the proposed 2.75 ha is not expected to significantly impact the agricultural potential of the farm. Furthermore, the proposed mining footprint will not compromise ecosystem connectivity in the area. Given the existing land use, the presence of gravel resources, and the limited environmental and agricultural impact, the proposed mining activity represents the most appropriate and beneficial use of the land in this context.

c) Design and layout of the activity

During the planning phase the Applicant considered the mining of two alternative layouts referred to as Layout Option 1 (3.59 ha) and Layout Option 2 (2.75 ha) in this report.

Layout Option 2 was selected as the **preferred option** based on both resource availability and environmental compliance. Layout Option 1 has been mined extensively over the years and no longer contains sufficient gravel to support continued extraction. In contrast, the proposed area of Layout Option 2 has confirmed gravel deposits, making it the more viable and sustainable option for mining. Additionally, the layout was designed to maintain a buffer of >100 meters from the southern drainage line that passes near the site to minimise potential environmental impacts and ensure compliance with the National Water Act, 1998 (Act No. 36 of 1998).

d) Technology to be used in the activity

This project entails a small scale mining operation where there is no alternative other than to excavate, load, process and haul the gravel.

e) Operational aspects of the activity

Due to the small scale of the proposed activity the operational requirement of the mine is lenient. The Applicant will make use of the existing (off-site) offices, storerooms and workshop of the farm, and an access road to the proposed mining area already exists. Should the mitigation measures proposed in this report be implemented no need for alternative operational aspects could be identified.

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

If the no-go alternative is implemented the area in question will not be mined by the Applicant and the gravel source of the property will not be commercialised. The positive implications of the no-go alternative are that there will be no mining related impact on the bio- and geophysical environment of the earmarked area. However, the EIA did not identify any fatal flaws or reason why the proposed development cannot proceed. Nevertheless, care must always be taken to mitigate potential impacts, regardless of the low ecological and migratory status of the site.

PUBLIC PARTICIPATION PROCESS

The relevant landowner, stakeholders and I&AP's were informed of the mining permit application by means of an advertisement in the BloemExpress, and on-site notices that were placed at conspicuous places. A notification letter inviting comments on the DBAR over a 30-days commenting period

(ending 08 December 2025) was sent to the landowner, neighbouring landowners, and stakeholders. No comments were received on the DBAR that could be incorporated into this final Basic Assessment Report (FBAR) to be submitted to the DMPR for consideration.

BASIC ASSESSMENT REPORT

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

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

a) Topography

- Mining the proposed borrow pit into the eastern face of the hill should create an excavation with more or less two faces that will be benched as the mining depth increases. The rehabilitation proposal is therefore (upon closure) to render the borrow pit safe and leave it as a landscape feature. If the proposed closure actions, as prescribed in the Environmental Management Programme (EMPR), are implemented the impact on the topography of the specific area will be of medium significance.

b) Visual Characteristics

- The viewshed analyses shows that the proposed visual impact will be of low-medium significance as the mining area will mainly be visible from the northern to south-eastern adjacent areas. The terrain layout will screen the proposed development from most of the north-western to southern areas. As the distance between the development and the observer increases the visual impact will decrease and perception of the 2.75 ha excavation will diminish to negligible at the periphery of 10 km.

c) Air and Noise Quality

- The proposed activity does not require an air emissions licence.
- Emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening, and the transport of material on gravel roads. Due to the small scale and nature of the proposed project and should the mitigation measures be implemented the impact on the air quality of the surrounding environment is deemed to be of low significance.
- The noise to be generated at the proposed borrow pit will contribute to the daily noise levels of the receiving environment through excavation, crushing/screening and transporting of

material. It is expected that the mine will be visited by approximately two trucks per day. Due to the small scale of the proposed project the noise nuisance value is expected to be of low significance.

- ❖ Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area where gravel has sporadically been removed in the past, the impact is therefore deemed compatible with the property's operations and of low significance.

d) Hydrology

- ❖ The proposed mining area is >100 m from the southern non-perennial (ephemeral) drainage line and mining activities is not expected to have an impact on this feature.
- ❖ The anticipated impact on the hydrology of the receiving environment should remain low as long as the mitigation and monitoring measures proposed in this document and the EMPR are implemented throughout all the project phases.

e) Terrestrial Biodiversity (including Fauna and Flora)

- ❖ This application entails the expansion of an existing borrow pit where ±41% of the natural vegetation has previously been disturbed/removed.
- ❖ Wild Olive trees (*Olea europaea* subsp. *africana*) occur in the area that are a protected species and therefore requires permission from the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) prior to disturbance and/or removal.
- ❖ The project footprint represents a very small and localised disturbance when considered in the context of the surrounding landscape, which remains largely intact. Provided that the Applicant obtains the necessary plant removal permits from DESTEA and strictly confines vegetation clearance to the approved mining footprint, the ecological impact will be contained and of low significance.
- ❖ No resident fauna occur within the proposed mining footprint. Given the small size of the application area (2.75 ha) and the fact that the site has already been disturbed, the potential impact on local fauna is expected to be minimal. Mining activities will progress gradually, allowing any transient or mobile species sufficient time to vacate the area in response to increased human presence and noise. Furthermore, the project will not result in habitat fragmentation or the creation of barriers that could impede the movement of wildlife across the broader landscape. As such, the proposed activity is unlikely to have significant or lasting impacts on faunal populations in the area.

f) Archaeology, Cultural, Heritage and Palaeontology Environment

- The Department of Forestry, Fisheries and the Environment (DFFE) Screening Report characterises the archaeological and cultural heritage theme sensitivity of the study as low, while the palaeontological theme is of medium significance.
- Given the small scale of the proposed activity (2.75 ha) and the disturbed nature of the site, the likelihood of encountering significant heritage or archaeological resources is considered low. Nonetheless, as a precautionary measure, the Applicant must adhere to the Chance Finds Protocol that forms part of the EMPR.
- The geological structures suggest that the rocks to be mined do not contain fossils. Since there is a small chance that fossils from the adjacent Adelaide Subgroup may be disturbed a Fossil Chance Find Protocol must be adhered to. The Palaeontological Impact Assessment (PIA) concluded that the potential impact to fossil heritage resources is Low, and the project can therefore be authorised from a palaeontology point.

g) Existing Infrastructure

- No infrastructure exists in the proposed 2.75 ha footprint that could be affected by the proposed activity. The permit holder will need to implement the mitigation measures to minimise potential impacts to the nearby auction pens and maintain the internal access road for the duration of the mining operations. However, should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

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

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 120 670.88.

LIST OF ABBREVIATIONS

ADT	Articulated Dump Truck
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DARD	Department of Agriculture and Rural Development
DBAR	Draft Basic Assessment Report
DCSRT	Department of Community Safety, Roads and Transport
DESTEA	Department of Economic, Small Business Development, Tourism and Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DMPR	Department of Mineral and Petroleum Resources
DoL	Department of Labour
DPWI	Department of Public Works and Infrastructure
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)
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
FBAR	Final Basic Assessment Report
FSBP	Free State Biodiversity Plan
GDP	Gross Domestic Product
GNR	Government Notice
GPS	Global Positioning System
HDSA	Historically Disadvantaged South Africans
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
LC	Least Concern
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MMM	Mangaung Metropolitan Municipality
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)
NFA	National Forest Act, 1998 (Act No. 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NPAES	Nationals Protected Area Expansion Strategy
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
OHSAS	Occupational Health and Safety Management Systems
PCB’s	Polychlorinated Biphenyl
PCO	Pest Control Officer
PIA	Palaeontological Impact Assessment
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANS	South African National Standards
SDS	Safety Data Sheet
SWSA	Strategic Water Source Area
WMA	Water Management Area

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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:	Gravel North (Pty) Ltd
TEL NO:	071 315 6810
FAX NO:	-
POSTAL ADDRESS:	28 Donald Murray Ave, Parkwest, Bloemfontein, 9301
PHYSICAL ADDRESS:	Farm Glen Thorne, Glen District, Bloemfontein, 9360
FILE REFERENCE NUMBER SAMRAD:	FS 30/5/1/3/2/10445 MP

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

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

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

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

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

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

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

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental (Pty) Ltd

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

i) Details of the EAP

Name of the Practitioner:	Ms Christine Fouché (Senior Environmental Specialist)
Tel No.:	021 851 2673
Cell No:	082 811 8514
Fax No.:	086 546 0579
E-mail address:	christine.f@greenmined.co.za

ii) Expertise of the EAP.

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

Ms. Fouché has a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology. Full cirriculum vitae with evidence is attached as Appendix L.

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

Ms Fouché has twenty years' experience doing Environmental Impact Assessments in South Africa. Ms. Fouché is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA (Environmental Assessment Practitioners Association of South Africa). See a list of past projects attached as Appendix L.

b) Location of the overall Activity.

Table 1: Property description.

Farm Name:	Portion 2 of the farm Glen Thorne No 2163
Application area (Ha)	2.75 ha
Magisterial district:	Mangaung Metropolitan Municipality
Distance and direction from the nearest town	The proposed project area is ±17 km north of Bloemfontein in the Free State Province. When leaving Bloemfontein and using the N1 in a northbound direction, take the R30 turnoff towards Brandfort (Winnie Madela). The entrance to the farm is ±1.6 km on the left-hand side after merging onto the R30.
21 digit Surveyor General Code for each farm portion	F00300000000216300002

c) Locality map

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

The requested map is attached as Appendix B.

Figure 1: Locality of the proposed mining footprint (green polygon) in relation to the surrounding area. The N1 national and R30 provincial roads pass the site to the south and south-east respectively (image obtained from Google Earth).

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

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

The Applicant, Gravel North (Pty) Ltd, applied for environmental authorisation (EA) and a mining permit (MP) to mine gravel from 2.75 ha over Portion 2 of the farm Glen Thorne No 2163 in the Mangaung Metropolitan Municipality (MMM) of the Free State.

The property has an existing borrow pit that was historically used for the extraction of gravel for private use on the farm. The proposed mining site of this application will serve as an extension of the existing pit. The mining method will involve direct excavation using earthmoving equipment. When necessary, a crusher and screening plant will be utilised to size the material, after which it will be stockpiled. Stockpiled material will be loaded onto client trucks for removal from the site.

The proposed MP project will therefore entail the:

1. site establishment and infrastructure development;
2. stripping and stockpiling of topsoil from the proposed mining footprint area;
3. excavation of the mining area;
4. crushing and screening of the loosened material at the processing plant (when needed); and
5. stockpiling the product until sold to clients.

The existing access road to the farm, and borrow pit, will be used to access the mining area. If required, the farm road may need to be upgraded to accommodate truck movement. At present, no new road construction is anticipated.

The proposed mining operation will appoint ±5 full time employees supported by ±5 part time staff, and due to the temporary nature and small scale of the operation no permanent infrastructure in the form of offices or workshops will be established at the mining area. The expected infrastructure and equipment to be needed at the mine will include (non-exhaustive list):

1. ADT trucks;
2. Ablution facilities (either on-site or at the nearby off-site auction pens);
3. Crushing and screening plant;
4. Earthmoving- and excavation equipment;
5. Generators / solar energy connection; and
6. Water truck.

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

Upon commencement, the proposed project will trigger listed activities (see following table) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the Competent Authority (Department of Mineral and Petroleum Resources) when considering the environmental authorisation.

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.	2.75 ha	N/A	Not listed
Site establishment and infrastructure development.	±.0.30 ha	X	GNR 983 Listing Notice 1 of 2014 (as amended) – 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.*
Stripping and stockpiling of topsoil.	±2.45 ha	X	
Excavation, loading and hauling to processing area.	±2.45 ha	X	
Crushing, screening and stockpiling of material.	±0.30 ha	X	
Sloping, landscaping and rehabilitation upon closure of the site.	2.75 ha	X	

ii) Description of the activities to be undertaken

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

PROJECT PROPOSAL

The Applicant identified the need to apply for a mining permit (MP) and environmental authorisation (EA) from the Department of Mineral and Petroleum Resources (DMPR) for the development of a 2.75 ha borrow pit on the above mentioned property that will supply gravel to the construction industry of Bloemfontein and surroundings. The following table lists the GPS coordinates of the proposed mining area as shown on the Regulation 2.2 Mine Plan (Appendix A).

Table 3: GPS Coordinates of the proposed mining footprint

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28º57'39.27"	26º17'08.78"	-28.960909º	26.285773º
B	28º57'44.01"	26º17'08.41"	-28.962225º	26.285668º
C	28º57'45.82"	26º17'08.10"	-28.962729º	26.285583º
D	28º57'45.78"	26º17'10.01"	-28.962718º	26.286113º
E	28º57'44.96"	26º17'12.55"	-28.962488º	26.286819º
F	28º57'45.02"	26º17'13.94"	-28.962506º	26.287206º
G	28º57'40.00"	26º17'14.17"	-28.961110º	26.287268º
H	28º57'39.61"	26º17'13.27"	-28.961002º	26.287019º

The following satellite image shows the location of the proposed mining area (green polygon) in relation to the surrounding landscape.

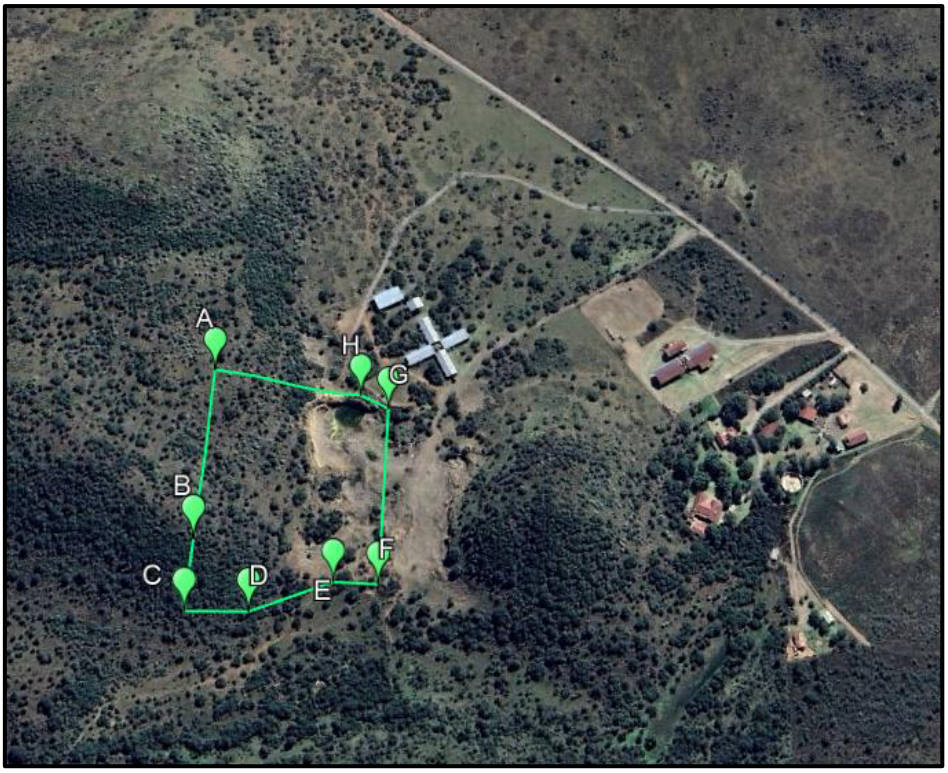


Figure 2: Satellite view showing the location of the MP application area (green polygon) in relation to the surrounding farm infrastructure and access road (image obtained from Google Earth).

Should the relevant authorisations be granted, and the mining activity be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

(1) *Site establishment/construction phase* which will involve the demarcation of the site boundaries. Site establishment will further entail the removal/relocation of the protected plants (discussed in more detail later in the report), clearing of vegetation, stripping and stockpiling of topsoil, and the introduction of the mining machinery and equipment.

(2) *Operational phase* that will entail opencast mining. The mining method will make use of direct excavation of the gravel; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened (if needed) to various sized stockpiles. The material will be stockpiled until it is transported from the mining area to the clients.

(3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the DMPR. The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the permit holder will be required to

submit a closure application to the DMPR in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

1. SITE ESTABLISHMENT PHASE

Site establishment entails the demarcation of the mining boundaries and the removal/relocation of the identified protected plants, clearance of vegetation, and stripping and stockpiling of topsoil to access the mineral as detailed below:

- **Demarcation of Mining Boundaries**

  Pursuant to receipt of the EA and MP, and prior to mining, the boundary of the mining area will be demarcated with visible beacons. Project specific areas to be demarcated within the boundary of the mining footprint may include, but not be limited to, the stockpile and processing areas, and the excavation.

- **Access Roads**

  The farm is accessed via a public gravel road that turns off the R30 provincial road. The gravel road then links up with an existing internal farm road that provides access to the proposed mining area as shown in the following figure. If required, the internal farm road of ±0.40 km may need to be upgraded to accommodate the mining related truck movement. At present, no new road construction is anticipated.

  The public gravel road leading to the farm is already utilised by heavy vehicles transporting products to and from a bulk organic compost supplier situated further along the route. Therefore, the addition of approximately two trucks per day associated with the proposed mining operation is anticipated to have a negligible impact on the overall traffic volumes and the capacity of the road.

Figure 3: Satellite view showing the internal farm road (yellow line) to be used to access the proposed mining area (green polygon) (image obtained from Google Earh).

- **Clearing of Vegetation**

  (Also refer to Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructures on the site – Site Specific Terrestrial Biodiversity (including fauna and flora)

  The vegetation type of the earmarked footprint falls within the Winburg Grassy Shrubland (Gh7) that has a conservation status of Least Threatened. As mentioned earlier, this application entails the expansion of an existing borrow pit where the natural vegetation has previously been removed to allow access to the gravel. Approximately 41% of the 2.75 ha application area has already been distributed and has none to very little vegetation left.

  The vegetation composition of the western part of the proposed mining footprint, that extends up the hill, is mainly intact Winburg Grassy Shrubland dominated by False Olive (*Buddleja saligna*), and Sour Karee (*Searsia ciliata*). The grass layer is sparse but shrubs/small trees such as the Blue Guarri (*Euclea crispa*), Lightning Bush (*Clutia pulchella*), Karoo Kunibush (*Searsia burchelli*), Broom Karee (*S. erosa*), Bluebush (*Diospyros lycioides*), Camphor bush (*Tarchonanthus camphoratus*) and Fine-leaved Felicia *(Felicia filifolia)* abound in the area.

Various Wild Olive trees (*Olea europaea* subsp. *africana*) also occur in the area. The Wild Olive tree is a protected species in terms of the National Forests Act, 1998 (Act No 84 of 1998) as well as the Free State Nature Conservation Ordinance 8 of 1969 and may therefore not be destructed, disturbed and/or removed prior to approval by the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).

Consequently the removal of vegetation from especially the western part of the mining area will be necessary to access the resources. Where the development will affect the protected Wild Olive trees the Applicant will, prior to bush clearance, apply for destruction permits from DESTEA. Bush clearance will only commence upon receipt of the applicable plant permit. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of said permit.

- **Topsoil Stripping and Stockpiling**

Although the proposed mining area has very little/shallow topsoil, it is proposed that the available topsoil will be removed, with the vegetation layer, from the areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. The topsoil berm will measure a maximum of 2 m in height to preserve micro-organisms within the topsoil, which can be lost due to compaction.

- **Introduction of Mining Machinery and Site Equipment**

As mentioned earlier, the Applicant plans to establish very little infrastructure within the mining footprint. It is proposed that the processing area will occupy ±0.30 ha of the proposed 2.75 ha area and include the crushing and screening plant. The mine will either make use of an on-site chemical toilet, alternatively the existing ablutions at the nearby auction pens will be available for employee use. Due to the proposed mining method, the production rate will dictate the layout of the proposed footprint area. The existing offices, storerooms and workshops of the farm (off-site) will be used and therefore no new structures for this purpose need to be developed at the mining area.

Presently, the mining equipment/infrastructure is expected to consist of at least:

- ADT trucks;
- Ablution facilities (either on-site or at the off-site auction pens);
- Crushing and screening plant;
- Earthmoving- and excavating equipment;
- Generators / solar energy; and
- Water truck.

2. OPERATIONAL PHASE

The Applicant applied for this environmental authorisation and mining permit to expand the existing borrow pit at the farm and mine the gravel for commercial purposes.

The gravel will be mechanically recovered with excavating- and earthmoving equipment. The rock will then be delivered to the crushing and screening plant where it will be reduced to various sized gravels (if needed). The screened material will be delivered to various size category stockpiles until it is sold and transported from site.

The proposed mine will appoint ±5 full time employees that will be sourced from the local municipal area and daily be transported to site. Mining will take place between 05:00 and 20:00 Monday – Saturday. No work will be done on Sundays.

❖ Water Use

Water will only be required for dust suppression at the plant and internal access road, as no washing activities are planned for the project. All water will be sourced from the farm in line with the property's current Water Use Authorisation. Approximately 20 000 litres of water will be required per day during the dry months.

Dust generation will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum. These measures will include a combination of the following:

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal farm road to minimize dust generation;
- Site management will attempt to lessen denuded areas (dust source) to the absolute minimum;

- Strips of used conveyor belts can be attached to the drop end of the crusher plant where crushed material falls onto the stockpiles. This lessens the blowing of fines from the minerals;
- Compacted dust will weekly be cleaned of the crusher plant to eliminate it as a dust source.

Under very windy/dusty conditions the permit holder may have to substitute the above mentioned dust suppression methods with the spraying of water, in which case a water truck will moisten the problem areas, and sprayers at the processing plant will moisten the material to alleviate dust generation from the conveyor belts. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

(Also refer to Part B(1)(d)(vii) *Volumes and rate of water use required for the mining, trenching or bulk sampling operation*; Part B(1)(d)(viii) *Has a water use licence been applied for*).

❖ **Electricity Use**

The crushing equipment will either be powered by generators or solar energy. The remainder of the operation does not require electricity. If generators are used it will have secondary containment in the form of a bund wall/drip tray that can contain 110% of the generator's maximum capacity. The fuel needed to power the generators will daily be transported to the mining area from the existing storeroom of the farm. Drip trays will also be used when refuelling is required.

❖ **Servicing and Maintenance**

No workshop or storage buildings will be established in the proposed mining area as the existing infrastructure of the farm (±1 km from the mining area) will be used. Routine maintenance of the equipment will take place at the offsite workshop of the farm. If emergency repairs are needed on equipment not able to move to the workshop, drip trays will be used under the machinery, and all waste will be contained and removed from the emergency service area to the workshop to ensure proper disposal.

There will be no storage of fuel on site, and very little (if any) chemicals will be needed on a daily basis. Any chemicals/hazardous substances needed on

site will be kept in drip trays/vehicles during the work day and removed from the site to the farm's stores and/or workshop at the end of each day.

- **Waste Handling**

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the processing area until the waste is transported to a registered general waste landfill site. Should a chemical toilet be established on site, a recognized contractor will service the toilet, and proof will be filed for auditing purposes.

Due to the nature of the project very little generation of hazardous waste is expected and will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and the contaminated soil will be contained in designated hazardous waste containers that will be kept in a drip tray with impermeable surface until it is removed from site at the end of the day to the farm's workshop where it will be collected by a registered hazardous waste handling contractor to an approved facility.

3. DECOMMISSIONING PHASE

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site equipment/infrastructure and landscaping the disturbed footprint. Due to the impracticality of importing large volumes of fill to restore the borrow pit to its original topography, the rehabilitation option is to develop the excavation into a landscape feature. This will entail creating a series of irregular benches along the pit faces thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix H for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the excavation;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;

- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

Upon rehabilitation, the area around the excavation will be landscaped and return to agricultural use (grazing), and the planting of the indigenous grass layer (to protect the topsoil) will tie in with the proposed land use.

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

- <u>Rehabilitation of the excavated area:</u>

  The excavated area must serve as a final depositing area for the placement of unwanted material. Rocks and coarse material removed from the excavation must be dumped into the excavation.

  No waste may be permitted to be deposited in the excavations.

  Once unwanted material, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

  The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

  If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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 vegetation seed mix to his or her specification.

- <u>Rehabilitation of processing area:</u>

  Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil 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.

Photographs of the processing area, 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 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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.

❖ <u>Final rehabilitation:</u>

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

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

e) Policy and Legislative Context

Table 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)(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 CARA, 1983.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	Management of invader plant species.	
Free State Nature Conservation Ordinance No. 8 of 1969	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 Vegetation Removal & Management of invader plant species*.	The Applicant will apply for a plant removal/relocation permit from the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) for the protected plants within the proposed footprint area.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	Part A(1)(f) Need and desirability of the proposed activity.	The need and desirability of the proposed project was assessed in terms of this guideline.
Mangaung 2024/2025 Integrated Development Plan (IDP).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Socio-economic Environment.*	The description of the study area's socio-economic status is in accordance with that of the IDP.
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-FS Ref No: FS 30/5/1/3/2/10445 MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended)	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMPR-FS Ref No: FS 30/5/1/3/2/10445 MP

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
❖ GNR 983 Listing Notice 1 of 2014 (as amended) - Activity 21		
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.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Fugitive Dust Emission Mitigation Measures.*	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal & 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. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Waste Management*.	The mitigation measures proposed for the site consider the NEM:WA.
National Forest Act, 1998 (Act No 84 of 1998)	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal.*	The mitigation measures proposed for the site includes specifications of the NFA, 1998.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects*.	The mitigation measures proposed for the site includes specifications of the NHRA, 1999. An application in terms of Section 41 of the said act will be submitted to SAHRA for their perusal.
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 – *Mitigating the potential impact on the hydrology related features*. Part B(1)(d)(iii) Has a water use licence been applied for?	The mitigation measures proposed for the site includes specifications of the NWA, 1998.
National Web based Environmental Screening Tool. Site Sensitivity Verification Requirements for Specialist Assessment, and all relevant Species Protocols. Appendix 6 of the EIA Regulations, 2014 (as amended).	Part A(1)(h)(iv)(1)(b) Description of the current land uses. Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site. Part A(1)(k) Summary of specialist reports. Appendix E: Palaeontological Impact Assessment.	A site screening report was generated using the National Web-Based Environmental Screening Tool, and all relevant environmental theme sensitivities were identified and assessed. Where applicable, sensitivity verification was undertaken in accordance with the published protocols for the assessment and minimum report content requirements of environmental themes. The specialist study that was conducted where compiled in line with Appendix 6 of the EIA Regulations to ensure consistency, transparency, and scientific credibility.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations.
The South African Constitution	Implied throughout the document.	To be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.

f) Need and desirability of the proposed activities.

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

PROPOSED MINING PROJECT

The proposed expansion of the existing borrow pit located ±17 km outside Bloemfontein is considered both necessary and desirable within the context of sustainable development and strategic land use planning. The site has already been disturbed through previous activities, and the gravel resource has been proven to be of suitable quality. This reduces the need for further prospecting and minimises environmental risk, aligning with the principles of resource efficiency and impact avoidance as outlined in the NEMA.

The activity supports the objectives of the National Development Plan (NDP 2030) by contributing to infrastructure development, economic growth, and job creation. It also aligns with the Mangaung Metropolitan Municipality's Integrated Development Plan (IDP) and Spatial Development Framework (SDF), which prioritise the provision of bulk services and the promotion of local economic development. The gravel extracted will be used in the building industry, meeting a clear and growing demand for construction materials in the region.

From a spatial perspective, the use of an existing site avoids the need to disturb new areas, thereby promoting responsible land use and reducing cumulative impacts on the surrounding environment. The project is also consistent with the principles of ecological sustainability, as it seeks to optimise the use of previously impacted land while ensuring that environmental management measures are in place to mitigate any residual impacts.

In summary, the proposed project is desirable as it supports national and local development priorities, makes use of a known and disturbed resource, and contributes to the sustainable use of natural capital while delivering socio-economic benefits in a manner that is environmentally responsible and legally compliant.

INTEGRATED ENVIRONMENTAL MANAGEMENT GUIDELINE: GUIDELINE ON NEED AND DESIRABILITY (2017)

The need and desirability of the proposed project was also 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? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	Kindly refer to the following discussions: ❖ *Part (A)(1)(h)(i) Details of the development footprint alternatives considered.* ❖ *Part (A)(1)(h)(iv) The Environmental attributes associated with the alternatives.* ❖ *Part (A)(1)(g) Motivation for the overall preferred site, activities, and technology alternative.* ❖ *Part (A)(1)(h)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.* ❖ *Part (A)(1)(l)(i) Summary of the key findings of the environmental impact assessment.*	Desirable should the management and mitigation measures be implemented.
How will this development pollute and/or degrade the biophysical environment?	Due to the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the gravel resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, it is proposed that the project may be allowed if a fair representation of the protected Wild Olive trees (smaller specimens) are relocated prior to bush clearance. Therefore, should the permit holder adhere to the conditions incorporated into this report it is believed that the impact on the biophysical environment is of acceptable significance.	
What waste will be generated by this development?	The general waste to be generated at the mine will mainly consist of paper, plastic, tin, and/or glass from the daily operations of the employees. All general waste will be contained in sealable refuse bins that will be placed at the processing area until it is transported to a registered general waste landfill site. Should a chemical toilet be established on site, a recognized contractor will service the toilet, and proof will be filed for auditing purposes. As mentioned earlier, hazardous waste may result from accidental spillages/breakdowns. Such contaminated areas will immediately (within two hours of occurrence) be cleaned, and the contaminated soil will be contained in a designated hazardous waste container that will be kept at the workshop of the farm until it is removed from site	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 a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned, or treated on the site.	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	Kindly refer to the following discussions: ❖ *Part (A)(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Cultural and Heritage Environment.* ❖ *Part (A)(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.* ❖ *Part (A)(1)(t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.*	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	If approved the Applicant will mine the resource identified on Portion 2 of the farm Glen Thorne No 2163 as an extension of the existing borrow pit. Widespread visible daylighting of in-tact, weathered dolerite at surface level indicate that minimal (if any) overburden stripping can be anticipated, reducing the overall volume of materials needed to be moved, and thus lowering the overall impact of the borrowing activities on the environment. Considering this, the permit holder will responsibly mine the resource on the property.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that the total water requirement of the mining project will be ±20 000 l/day. All water use will occur in accordance with the farm's water use authorisation. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	The Applicant will apply for a destruction/relocation permit for the protected Wild Olive Trees from DESTEA prior to bush clearance. Bush clearance will only commence upon receipt of the applicable plant permit. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of the said permit.	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 will the ecological impacts resulting from this development impact on people's environmental right?	The mine will be managed in accordance with the specifications of a memorandum of agreement to be signed with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of low significance. If the monitoring programs, proposed in this document, is implemented it is believed that no environmental rights of the surrounding residents/public will be affected by ecological impacts associated with the proposed activity.	Highly Desirable
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	The proposed project presents a clear linkage between human wellbeing, livelihoods, and ecosystem services in the local context. Gravel is a critical input for the construction industry, which underpins infrastructure development, housing, and service delivery that are key components of human wellbeing. The availability of locally sourced gravel reduces transport costs, supports regional economic activity, and contributes to job creation both directly through mining operations and indirectly through the building sector. The site in question has already been disturbed, and the expansion will occur within the existing footprint, thereby limiting additional ecological disruption. However, ecosystem services such as soil stability, water infiltration, and biodiversity support may be temporarily affected during the operational phase. These impacts are expected to be low and manageable, given the scale of the activity and the implementation of appropriate mitigation measures. If unmanaged, ecological degradation could lead to longer-term socio-economic consequences, such as reduced agricultural productivity or diminished landscape resilience. However, by confining the activity to a known and previously impacted area, and by applying rehabilitation and erosion control measures, the project aims to safeguard ecosystem services while enabling economic development. This balance ensures that the development contributes positively to local livelihoods and wellbeing without compromising the ecological integrity of the surrounding environment.	Highly Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 2.75 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for an ESA.	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**
objectives/targets/considerations of the area?	Also refer to: ❖ *Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation;* ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered;* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – 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 (including fauna and flora).*	
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?	Please refer to *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.*	Highly Desirable
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?	If approved, the borrow pit will supply material to the construction industry, create at least five work opportunities for local residents and will expand the land-uses of the farm. It is proposed that the mine will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area.	
How will this development address the specific physical, psychological,		

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
developmental, cultural and social needs and interests of the relevant communities?		
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed gravel mining project is small in scale and temporary in nature, with a lifespan of approximately five years. While it will not result in significant long-term socio-economic transformation, short-term benefits such as local employment and procurement opportunities will be fairly distributed. The use of a previously disturbed site and the implementation of rehabilitation measures will help ensure that environmental impacts are limited and do not disproportionately affect any specific group. As such, the development is not expected to result in inequitable impacts in either the short or long term.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The proposed development is strategically located within an existing, previously disturbed borrow pit ±17 km outside Bloemfontein. Its placement contributes to the area by maximising the use of an already impacted site, thereby avoiding unnecessary disturbance of undisturbed land and preserving surrounding ecological integrity. The location is also advantageous due to its proximity to local construction markets, reducing transport distances and associated emissions. This supports more efficient resource use and contributes to local economic activity in a manner that aligns with sustainable land use planning and development objectives. Also refer to: ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered;* ❖ *Part A(1)(h)(vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected; and* ❖ *Part A(1)(l) Environmental Impact Statement.*	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures included in this report.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
How will the socio-economic impacts resulting from this development impact on people's environmental right?	The proposed activity may have an impact on the visual characteristics of the surrounding environment and may temporarily affect air quality and the noise ambiance of the study area. However, the mine will be managed in accordance with the specifications of the memorandum of agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of low significance. If the monitoring programs, 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.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations? 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?	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 2.75 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for an ESA. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the supply of gravel to the construction industry in the surroundings region, employment of at least five local residents, and support of the local economy. Also refer to: ❖ *Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.*	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 categories of persons disadvantaged by unfair discrimination?	The mine will operate in accordance with, amongst others, the following: ❖ CARA, 1983 – to ensure agriculture related compliance; ❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; ❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; ❖ MPRDA, 2002 (as amended) – to ensure mining related compliance; ❖ NEM:AQA, 2004 – to ensure air quality related compliance; ❖ NEM:BA, 2004 – to ensure biodiversity related compliance;	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	❖ NEM:WA, 2008 – to ensure waste related compliance; ❖ NEMA, 1998 (as amended) – to ensure environmental related compliance; As mentioned earlier, the proposed project intends to promote local economic growth and development through direct and indirect employment.	
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.	Presently, it is proposed that the mine will create a minimum of five employment opportunities to local residents. In a municipal area with an unemployment rate of ±31%, new job opportunities are of high significance.	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 mine will operate in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management will arrange regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the toolbox sessions and site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, the proposed mining operation will be of small scale but intends to appoint ±5 full time employees supported by ±5 part time staff.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the	The proposed mine will operate under a valid environmental authorisation and mining permit to be issued by the DMPR-FS. Compliance of the site with the approved EMPR, and EA conditions will be reported on as per	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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.	departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when applicable) by the mine. As mentioned earlier, due to the impracticality of importing large volumes of fill to restore the pit to its original topography, the rehabilitation option is to develop the excavation into a landscape feature that will be rendered safe upon final site closure. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grassmix, and the area will be returned to grazing. If the disturbed areas are successfully rehabilitated no long-term management burden will be left behind.	Highly Desirable
What measures were taken to ensure that the costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a 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. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMPR that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	Highly Desirable
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	Please refer to: ❖ *Part A(1)(h)(i) Details of the development footprint alternatives considered.* ❖ *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.* ❖ *Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.*	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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.	❖ *Part A(1)(t)(i)(1) Impact on the socio-economic conditions of any directly affected person.*	

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

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

During the environmental impact assessment process the feasibility of the final project proposal 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. 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 finalised 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.

During the EIA phase the following alternatives were assessed upon receipt of the site-specific information, comments received from the public, and the results of the specialist study.

a) <u>THE PROPERTY ON WHICH, OR LOCATION WHERE, IT IS PROPOSED TO UNDERTAKE THE ACTIVITY</u>

Applicants can only apply for a mining permit within areas where such rights are not yet held by other companies/applicants. Furthermore, the mining activities are dependent upon the presence of the desired mineral which is again dependent upon geological formations. A mining permit furthermore may not exceed an area of 5 ha.

The proposed mining activity aims to extract gravel from a known deposit on the identified farm. As such, the site selection was guided by the presence of the confirmed gravel resource. This application involves the expansion of an existing borrow pit, which has already demonstrated the availability of suitable material. The proposed mining footprint on Portion 2 of the farm Glen Thorne No. 2163 was therefore informed by geological data indicating gravel potential, as well as the landowner's support for the application.

Figure 4: Image showing the earmarked area (green polygon) within the boundaries (white polygon) of Portion 2 of the farm Glen Thorne No 2163 (image obtained from Google Earh).

Current Project Proposal

Considering the abovementioned, the project proposal regarding the property on which the proposed borrow pit will be developed was directed by the area on the farm with the best mineral potential that will also have the least possible impact on the receiving environment.

The Preferred Property/Site Alternative for the development of the gravel borrow pit is therefore in accordance with the project proposal and no other viable site/location alternatives are applicable to this project.

b) Type of activity to be undertaken

The Applicant intends to extract gravel from an area where gravel has historically been removed for farming purposes. The only viable alternative land use of the earmarked area is agriculture.

Agriculture

Approximately 1.62 ha of the western portion of the proposed mining area is covered with natural vegetation, while the remaining 1.13 ha of the eastern section has previously been cleared to allow for the private extraction of gravel for farming use. The farm's auction pens are ±42 meters to the north-east of the study site, which are used to house game animals that are for sale. These pens are not permanently stocked, and although the excavation extending up the slope of the hill will be visible from the pens, the processing area will not be visible. Aside from the auction pens, the surrounding area is occasionally used for cattle grazing.

The study area is not situated within a Protected Agricultural Area. The nearest field crop boundaries are ±530 m east of the study site, but due to the gravel nature of the area no agricultural activities occur on site. The overall land capability for the site was considered not arable or marginal. The grazing capacity of the surrounding area is typically 6 to 8 ha/LSU.

The landowner supports the development of the proposed borrow pit over the earmarked location, and the proposed activity will not have a significant impact on the greater agricultural operations of the farm, greater area or pose a threat to food security.

Current Project Proposal

Approximately 41% of the proposed mining area has already been disturbed through previous gravel extraction activities. As a result, the development of the proposed 2.75 ha is not expected to significantly impact the agricultural potential of the farm. Furthermore, the proposed mining footprint will not compromise ecosystem connectivity in the area. Given the existing land use, the presence of gravel resources, and the limited environmental and agricultural impact, the

proposed mining activity represents the most appropriate and beneficial use of the land in this context.

c) <u>Design and layout of the activity</u>

During the planning phase the Applicant considered the mining of two alternative layouts as presented in the following figure.

- **Layout Option 1** entailed the mining of a 3.59 ha area that would be sited between the two hills of the farm.

- **Layout Option 2 (Preferred Layout)** entails the mining of the proposed 2.75 ha area that extends up the eastern side of the nearest hill.

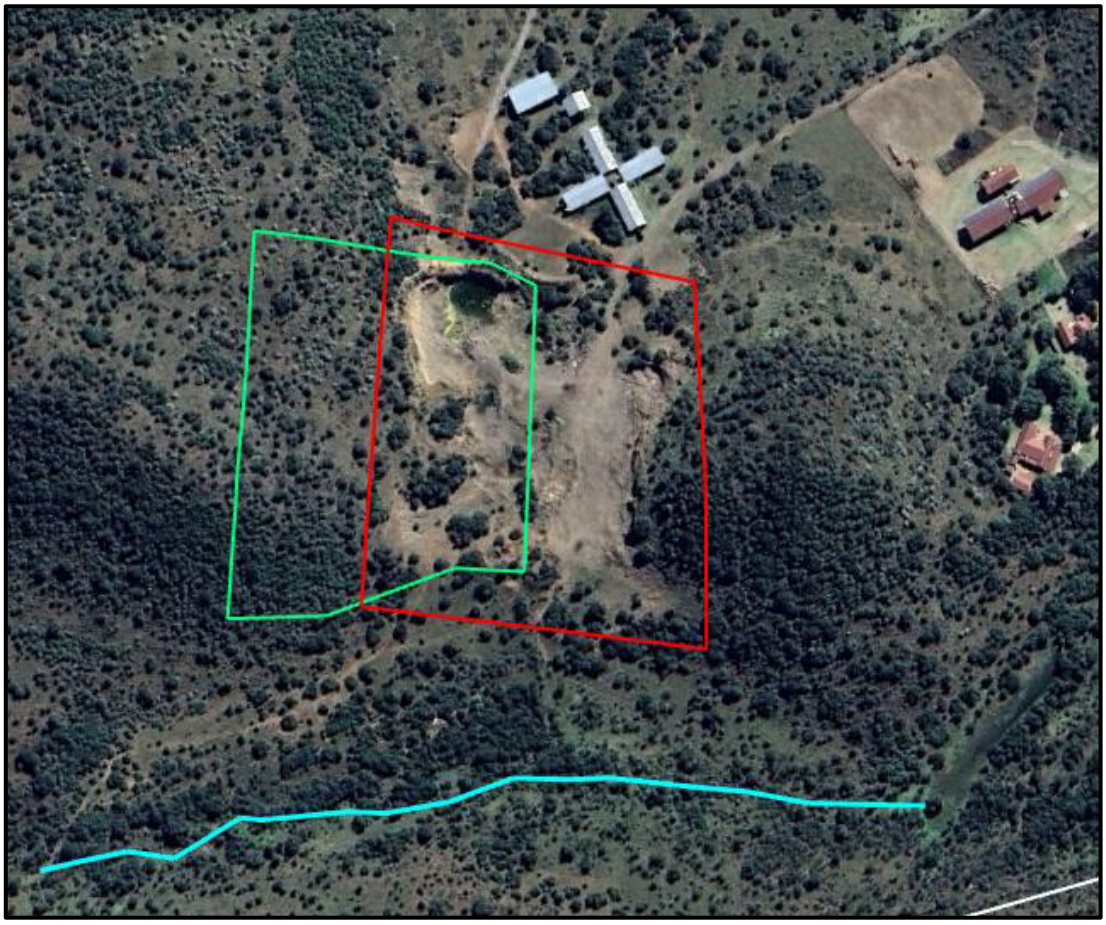


Figure 5: Image showing the location of Layout Option 1 (red polygon) in relation to Layout Option 2 (green polygon). The blue line indicates the non-perennial drainage line passing the study area to the south (image obtained from Google Earh).

A non-perennial (ephemeral) drainage line passes the study area to the south that feeds a pond in the east. The southern boundary of Layout Option 1 will be ±75 m

from this drainage line, while the nearest boundary of Layout Option 2 will be ±110 m from the drainage line.

Layout Option 2 was selected as the **preferred option** based on both resource availability and environmental compliance. Layout Option 1 has been mined extensively over the years and no longer contains sufficient gravel to support continued extraction. In contrast, the proposed area of Layout Option 2 has confirmed gravel deposits, making it the more viable and sustainable option for mining.

Additionally, the layout was carefully designed to maintain a buffer of more than 100 meters from the southern drainage line that passes near the site. This not only minimises potential environmental impacts but also ensures compliance with water use regulations. Any activity within 100 meters of a watercourse would require a Water Use License application in terms of Section 21(c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998) (NWA), which Layout Option 2 avoids.

Current Project Proposal

Considering the above, the final layout proposal for this project is that of Layout Option 2 in accordance with the GPS coordinates listed in Table 3 and presented in Figure 2.

d) Technology to be used in the activity

As previously mentioned, the Applicant intends to extract gravel using conventional direct excavation methods. Blasting will not be required, as the material can be effectively sourced using an excavator. Once excavated, the gravel will be loaded and transported to the crushing plant, where it will be screened into various size fractions. No washing of material will be necessary. Screened material will be stockpiled on site until it is transported to clients.

The only technology applicable to this project is the use of the crushing and screening plant to reduce the material to the sizes desired by the clients. This project does not require complex technology to allow the winning of the intended mineral, and therefore no further technology alternatives were considered in the EIA process.

Current Project Proposal

It is a small scale mining operation where there is no alternative other than to excavate, load, process and haul the gravel.

e) Operational aspects of the activity

Due to the small scale of the proposed activity the operational requirement of the mine is lenient. The Applicant will make use of the existing offices, storerooms and workshop of the farm, and an access road to the proposed mining area already exists.

This project considers mitigating impacts such as dust and/or noise generation, waste management, and rehabilitation. These mitigation measures were incorporated into the EMPR (Part B) that forms part of this report and will become a legally binding document once approved. Should the mitigation measures proposed in this report be implemented no need for alternative operational aspects could be identified.

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

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. If the no-go alternative is implemented the area in question will not be mined by the Applicant and the gravel source of the property will not be commercialised.

The positive implications of the no-go alternative are that there will be no mining related impact on the bio- and geophysical environment of the earmarked area. However, the EIA did not identify any fatal flaws or reason why the proposed development cannot proceed. Nevertheless, care must always be taken to mitigate potential impacts, regardless of the low ecological and migratory status of the site.

Furthermore, the no-go alternative is not supported as a viable option due to the following reasons:

- the gravel deposit represents a valuable resource that could contribute to local infrastructure development and economic activity. Leaving it unutilised would mean foregoing these potential benefits;
- the proposed mining area has already been partially disturbed through previous gravel extraction, and the remaining footprint has been carefully selected to

minimise environmental impact, including maintaining a buffer of more than 100 meters from the nearby drainage line. Furthermore, Layout Option 2 avoids triggering a Water Use License application under Section 21(c) and (i) of the NWA, which would be required if activities were undertaken within 100 meters of a watercourse.

- ❖ by responsibly managing the site and adhering to environmental regulations, the proposed mining activity offers a balanced approach that supports resource use while limiting ecological disruption.
- ❖ the proposed job opportunities, associated with the development of the borrow pit, will be lost to the surrounding community.

g) <u>Final Project Proposal</u>

In summary, it is deduced that the Final Project Proposal entails the:

- ❖ mining of the proposed 2.75 ha area over Portion 2 of the farm Glen Thorne No 2163 within the boundaries of the GPS Coordinates listed in Table 3;
- ❖ mining of the earmarked area instead of the continued use for agricultural purposes;
- ❖ mining of the borrow pit through excavation, crushing, screening, and stockpiling of the material using temporary equipment;
- ❖ management of the proposed mining area according to the mitigation measures, management programmes and rehabilitation objectives as proposed in this document as well as the EMPR (Part B).

ii) Details of the Public Participation Process Followed

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

The landowner, stakeholders and I&AP's were informed of the mining permit application by means of an advertisement in the BloemExpress, and on-site notices that were placed at the farm entrance and the nearby Astron Energy N1 Bloemfontein fuel station. A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 08 December 2025) was sent to the landowner, neighbouring landowners, and stakeholders that may be interested in the project. No comments were received on the DBAR that could be incorporated into this final Basic Assessment Report (FBAR) to be submitted to the DMPR for consideration.

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

Table 6: List of the I&AP's and stakeholders that were informed/invited to comment/register on the project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner ❖ Barnie Human Landgoed Trust Portion 2 of Glen Thorne No 2163 (landowner) Portion 3 of Glen Thorne No 2163 (surrounding neighbour) Portion 4 of Glen Thorne No 2163 (surrounding neighbour) Portion 2 of Glen Lyon No 13 (surrounding neighbour) **Surrounding landowners** ❖ Promptvest Nine (Pty) Ltd Portion 0 of Van Niekerk's Rust No 1782 Spitskop No 16302 ❖ Simdor Trust Portion 0 of Roodeheuvel No 238 ❖ Lups Trust Portion 2 of Mimosa Glen No 885 Portion 3 of Mimosa Glen No 885	❖ Department of Agriculture and Rural Development (DARD); ❖ Department of Community Safety, Roads and Transport (DCSRT); ❖ Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA); ❖ Department of Labour (DoL); ❖ Department of Public Works and Infrastructure (DPWI); ❖ Department Water and Sanitation (DWS); ❖ Eskom; ❖ Mangaung Metropolitan Municipality (Ward 44); ❖ Mangaung Metropolitan Municipality (MMM); ❖ SANRAL; ❖ South African Heritage Resources Agency (SAHRA).

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

Table 7: 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.*	Notice boards were fixed at conspicuous and publicly accessible areas: ❖ Entrance to the farm; and ❖ Astron Energy N1 Bloemfontein fuel station. The notice boards complied with the requirements of Regulation 41(3) and were 60 x 42 cm in size with Arial font of sufficient size.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
❖ Regulation 41(3): *A notice, notice board or advertisement referred to in subregulation (2) must—* *(a) give details of the application or proposed application which is subjected to public participation; and* *(b) state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application;* *(ii) the nature and location of the activity to which the application relates;* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the application or proposed application may be made.* ❖ Regulation 41(4): *A notice board referred to in subregulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and* (b) *display the required information in lettering and in a format as may be determined by the competent authority.*	
❖ Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;* *(iv) the municipality which has jurisdiction in the area;*	(i) The landowner is aware of the MP application and is kept apprised of the EIA (BA) process and was invited to comment on the DBAR. (ii) The directly surrounding landowners, and lawful occupiers of the land (if applicable) were invited to comment on the project and the DBAR. (iii) The Ward Councillor of Ward 44 was invited to comment on the project and DBAR. (iv) The Mangaung Metropolitan Municipality was invited to comment on the project and DBAR. (v) As listed in Table 7 the relevant state departments and entities were invited to comment on the project and DBAR. (vi) No other parties were identified that needed to be contacted.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
(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;*	
❖ 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 the BloemExpress.
❖ 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 does not extend beyond the boundaries of the metropolitan 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.
❖ Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d)…*	Not applicable to this application.
❖ Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and* (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	❖ The DBAR containing all the facts in respect of this application was available to the landowner, stakeholders and potential I&AP's for perusal and commenting over a 30-days commenting period. The DBAR was also available on the Greenmined website. I&AP's and stakeholders were invited to contact the EAP should additional information be required. ❖ No comments were received on the DBAR that could be incorporated into this FBAR to be submitted for departmental consideration.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
❖ 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&AP's

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

Table 8: 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		-	-	-	-
Barnie Human Landgoed Trust ❖ Portion 2 of Glen Thorne No 2163 ❖ Portion 3 of Glen Thorne No 2163 ❖ Portion 4 of Glen Thorne No 2163 ❖ Portion 2 of Glen Lyon No 13	X	No comments were received from the landowner that could be incorporated into the final BAR and EMPR.			
Lawful occupier/s of the land	-	-			
N/A	-	-			
Landowners or lawful occupiers on adjacent properties	**X**	-			
Promptvest Nine (Pty) Ltd ❖ Portion 0 of Van Niekerk's Rust No 1782	X	No comments were received from the directly surrounding landowners that could be incorporated into the final BAR and EMPR.			
Simdor Trust ❖ Portion 0 of Roodeheuvel No 238	X				
Lups Trust ❖ Portion 2 of Mimosa Glen No 885 ❖ Portion 3 of Mimosa Glen No 885	X				

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Municipal councillor	**-**	-	-	-	-
Mangaung Metro Municipal Ward Councillor (Ward 44)	X	No comments were received from the ward councillor that could be incorporated into the final BAR and EMPR.			
Municipality	**-**	-	-	-	-
Mangaung Metropolitan Municipality	X	No comments were received from the municipality that could be incorporated into the final BAR and EMPR.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	-	-	-	-	-
Department of Community Safety, Roads and Transport (DCSRT)	X	No comments were received from the DCSRT that could be incorporated into the final BAR and EMPR.			
Department of Public Works and Infrastructure (DPWI)	X	No comments were received from the DPWI that could be incorporated into the final BAR and EMPR.			
Department of Water and Sanitation (DWS)	X	No comments were received from the DWS that could be incorporated into the final BAR and EMPR.			
Eskom	X	No comments were received from Eskom that could be incorporated into the final BAR and EMPR.			

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
SANRAL	X	No comments were received from SANRAL that could be incorporated into the final BAR and EMPR.			
Communities	N/A	-			
Dept. Land Affairs	X	No comments were received from the Department of Land Affairs that could be incorporated into the final BAR and EMPR.			
Traditional Leaders	N/A	-	-	-	-
Dept. Environmental Affairs					
Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)	X	No comments were received from the DESTEA that could be incorporated into the final BAR and EMPR.			
Other Competent Authorities affected	-	-	-	-	-
Department of Agriculture and Rural Development (DARD)	X	No comments were received from DARD that could be incorporated into the final BAR and EMPR.			
Department of Labour (DoL)	X	No comments were received from DoL that could be incorporated into the final BAR and EMPR.			
South African Heritage Resources Agency	X	No comments were received from SAHRA that could be incorporated into the final BAR and EMPR.			
OTHER AFFECTED PARTIES		N/A	-	-	-
INTERESTED PARTIES		N/A	-	-	-

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

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

CLIMATE

Bloemfontein experiences a semi-arid climate, characterized by hot summers and cool, dry winters. Summer temperatures (October to March) often exceed 30°C, with occasional thunderstorms providing most of the annual rainfall. Winters (May to August) are typically dry, with daytime temperatures ranging from 15°C to 20°C, and nighttime temperatures often dropping close to freezing. Rainfall is generally low, averaging around 500 mm per year, and is mostly concentrated in the summer months. The following chart shows the maximum, minimum and average temperatures of the Bloemfontein region.

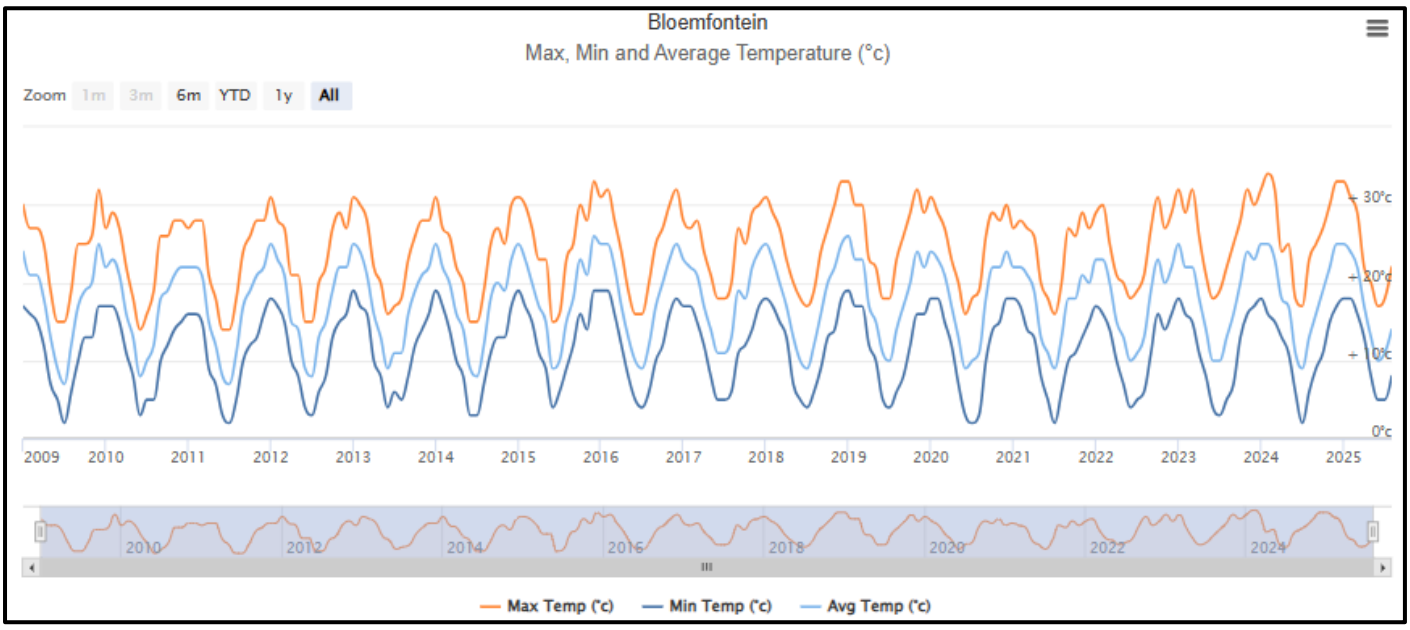


Figure 6: Maximum, minimum, and average temperature of the Bloemfontein region where the orange line indicates the maximum temperature, the light blue line shows the averages, and the dark blue line shows the minimum temperatures (chart obtained from http://www.worldweatheronline.com)

The following chart obtained from World Weather Online shows that the measured rainfall average for 2024 was ±376 mm, while the area received the lowest rainfall during the winter months (May – August) and the highest in the summer (January - March).

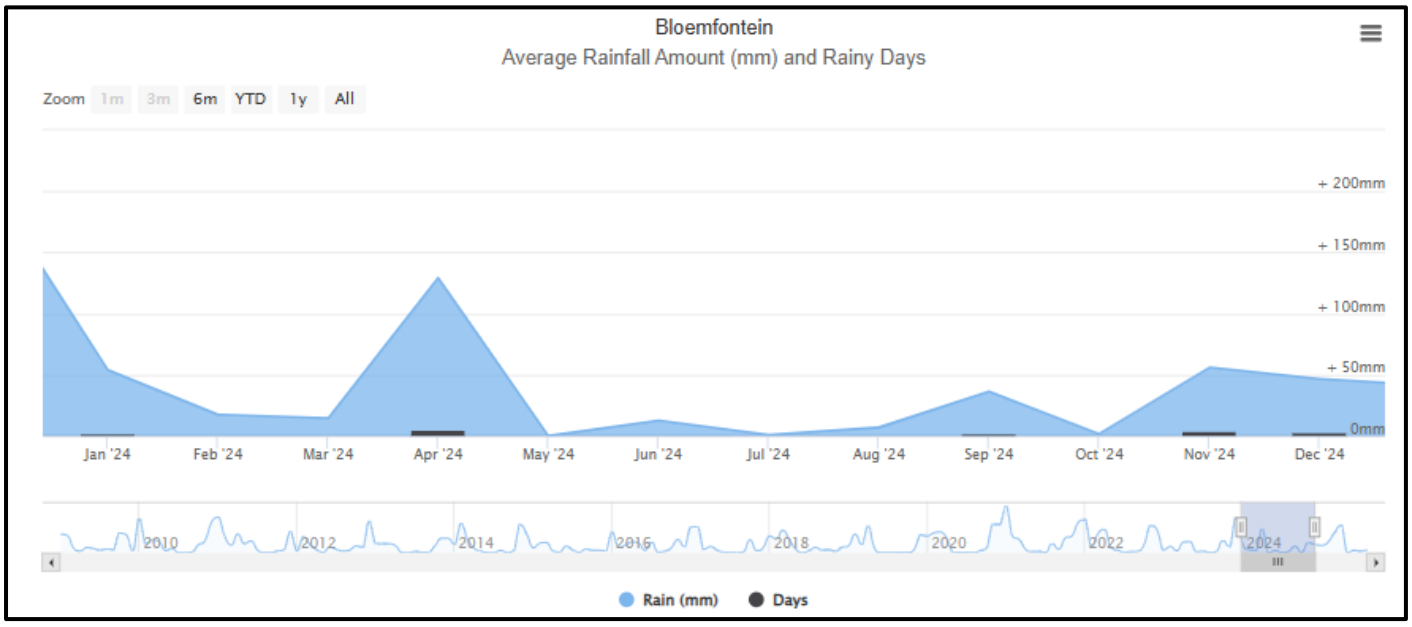


Figure 7: Average rainfall amount and rainy days count for the Bloemfontein region (chart obtained from http://www.worldweatheronline.com)

The dominant wind direction of the Bloemfontein region is constant in a north to north-western direction (south-eastern wind), with the average wind speed being ±6.6 knots (±12.22 km/h) as shown in the figure below (measured at the Bram Fischer International Airport).

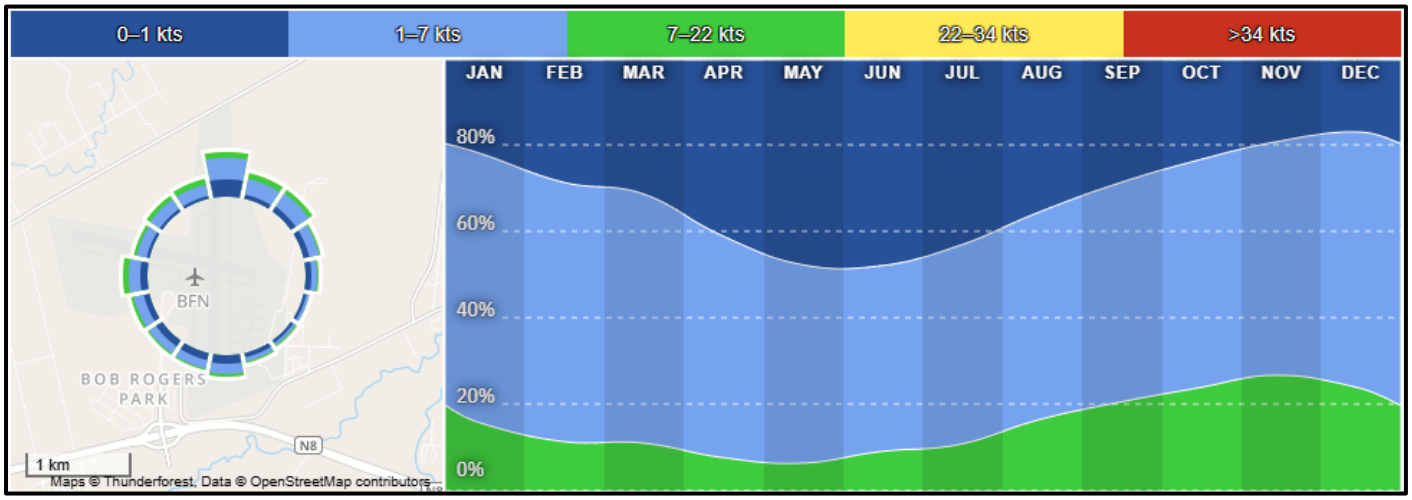


Figure 8: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Bloemfontein area (image obtained from http://www.windfinder.com/windstatistics/bloemfontein).

TOPOGRAPHY

The surrounding region is characterized by gently undulating plains and low-relief terrain, typical of the central interior of South Africa. The landscape consists of broad, open grasslands interspersed with low ridges and shallow drainage lines. Elevation changes are generally gradual, with occasional rocky outcrops and seasonal pans. Soils are typically sandy to loamy, supporting natural grassland vegetation and agricultural activities.

The study area is part of the Highveld, sitting at an elevation of approximately 1 300 to 1 400 meters above sea level, which contributes to its semi-arid climate and relatively flat appearance. Drainage features are subtle but present, often flowing seasonally and influencing land use planning, especially for activities like mining and agriculture.

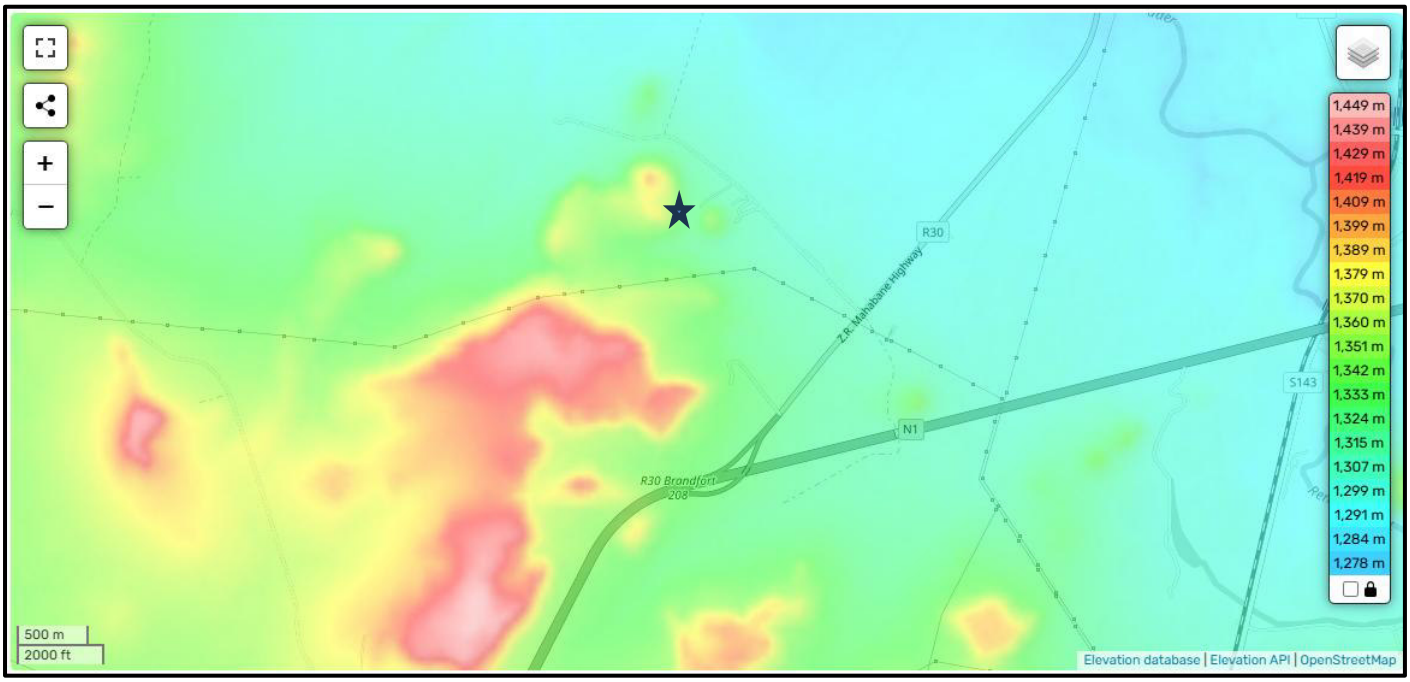


Figure 9: Map showing the topography of the greater study area where the star indicates the application area (image obtained from http://www.en-za.topographic-map.com/maps/gwpq/South-Af).

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

VISUAL CHARACTERISTICS

The landscape is predominantly open and expansive, with gently rolling plains and low-lying ridges that create a sense of vastness. The area is part of the Highveld grassland biome, featuring a mix of natural grassland, scattered shrubs, and occasional rocky outcrops. Vegetation is generally low and sparse, allowing for long, unobstructed views across the terrain.

The overall impression is one of a quiet, semi-arid agricultural landscape, with a natural, earthy palette dominated by browns, yellows, and muted greens, especially outside the rainy season.

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

AMBIENT AIR AND NOISE QUALITY

The greater area surrounding the proposed mining site is predominantly rural, with low-density agricultural land use and limited industrial activity. As a result, ambient air quality is generally good, with low concentrations of pollutants. However, the presence of the N1 highway and the R30 provincial road introduces intermittent sources of vehicle emissions and dust, particularly during dry and windy conditions. These emissions are localized and do not significantly degrade the overall air quality of the area.

Noise levels are typically low, consistent with a quiet rural environment. Background noise is mainly generated by farming activities and occasional vehicle movement. The proximity of the N1 national and R30 provincial roads contribute to periodic traffic noise, but this does not dominate the acoustic environment. There are no major industrial or urban noise sources in the immediate vicinity.

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

BASELINE GEOLOGY

The greater area lies within the Karoo Supergroup, which dominates much of the central interior of South Africa. Specifically, the geology is typically associated with the Beaufort Group, comprising sedimentary rocks such as mudstone, siltstone, and sandstone. These formations were deposited during the late Permian to early Triassic periods and are known for their fossil content and layered structure.

Overlying these formations in some areas are unconsolidated surface deposits, including gravel, calcrete, and soil horizons, which are often targeted for mining and agricultural use. The presence of gravel in the area suggests localized alluvial or colluvial deposits, likely derived from weathering and erosion of the underlying sedimentary rocks.

The terrain is generally stable, with low seismic activity and minimal geological hazards. The geology supports both agricultural activities and small-scale mining, particularly for materials like gravel and calcrete.

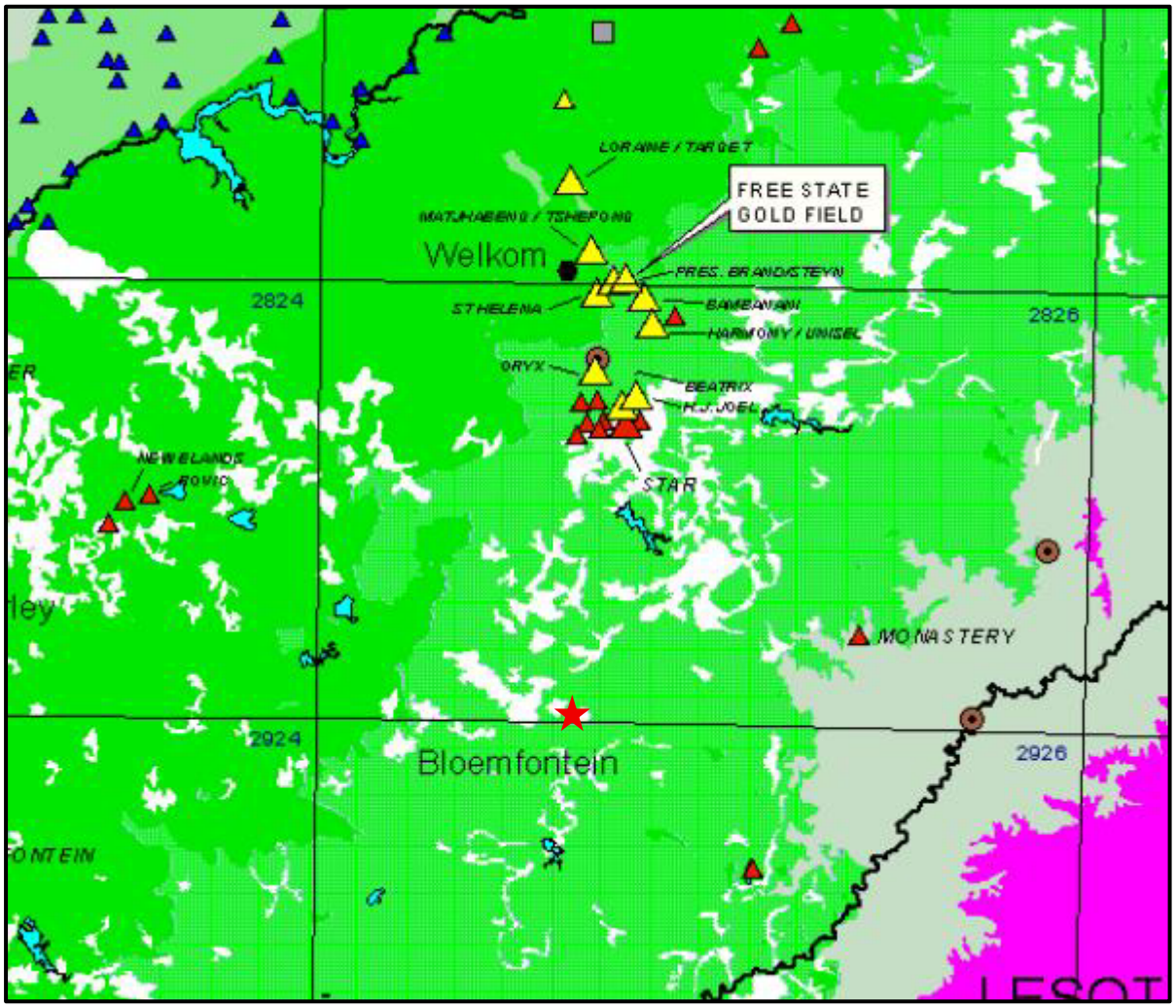


Figure 10: Indication of the simplified geology of the study area, where the solid green colour represents the Dwyka and Ecca Groups, the checkered green colour shows the Beaufort Group (both part of the Karoo Supergroup). The white areas show the intrusive Dolerite, and the study area is indicated by the red star. The yellow triangles indicate gold mines, while the red triangles show the position of diamond (in Kimberlite) mines. (Image obtained from the Council for Geoscience)

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

HYDROLOGY

The study area is located within a semi-arid region of the central Free State, where surface water features are limited and largely seasonal. A key hydrological feature in the broader area is the Modder River, which flows ±2.5 km north of the proposed mining site. The Modder River is a perennial watercourse, providing an important source of surface water for agriculture, livestock, and ecological systems in the region.

In addition to the Modder River, a southern ephemeral drainage line passes near (>100 m) the proposed mining footprint. This drainage line flows only during periods of significant rainfall and contributes to local surface water movement and ecological connectivity during the wet season.

The site falls within the Riet/Modder Sub-Water Management Area, which forms part of the larger Upper Orange Water Management Area (WMA). This classification is important for water resource planning and regulation, particularly in terms of water use licensing and catchment management.

Groundwater in the region is typically found in fractured rock aquifers associated with the sedimentary formations of the Karoo Supergroup. These aquifers are generally low-yielding and used primarily for domestic and agricultural purposes. Recharge rates are slow due to low rainfall and limited infiltration capacity of the soils.

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

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 potential mining footprint is layered over the Mining and Biodiversity Map (following figure), it falls in an area of moderate biodiversity importance (yellow) with a corresponding rating of moderate risk for mining.

The Mining and Biodiversity Guideline's definition for areas of moderate biodiversity importance stipulates that: "*these biodiversity priority areas have moderate biodiversity importance in which mining options may be constrained".* The guidelines note that environmental screening, the EIA and specialists (if required) 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 11: The Mining Guidelines map shows the proposed mining area (black polygon) within an area of moderate biodiversity importance with a moderate risk for mining (yellow) (image obtained from the BGIS Map Viewer – Mining Guidelines).

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

BASELINE ECOLOGICAL ENVIRONMENT (FAUNA AND FLORA)

(Also refer to Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora)

According to the 2015 Free State Biodiversity Plan (FSBP), the study area is situated within an area characterised as an Ecological Support Area 1 (ESA1) (refer to following figure). The Lexicon of Biodiversity Planning in South Africa provides the following definition for an ESA area:

- Ecological Support Area (ESA): *"An area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or not necessary to meet them in natural or near-natural areas."*

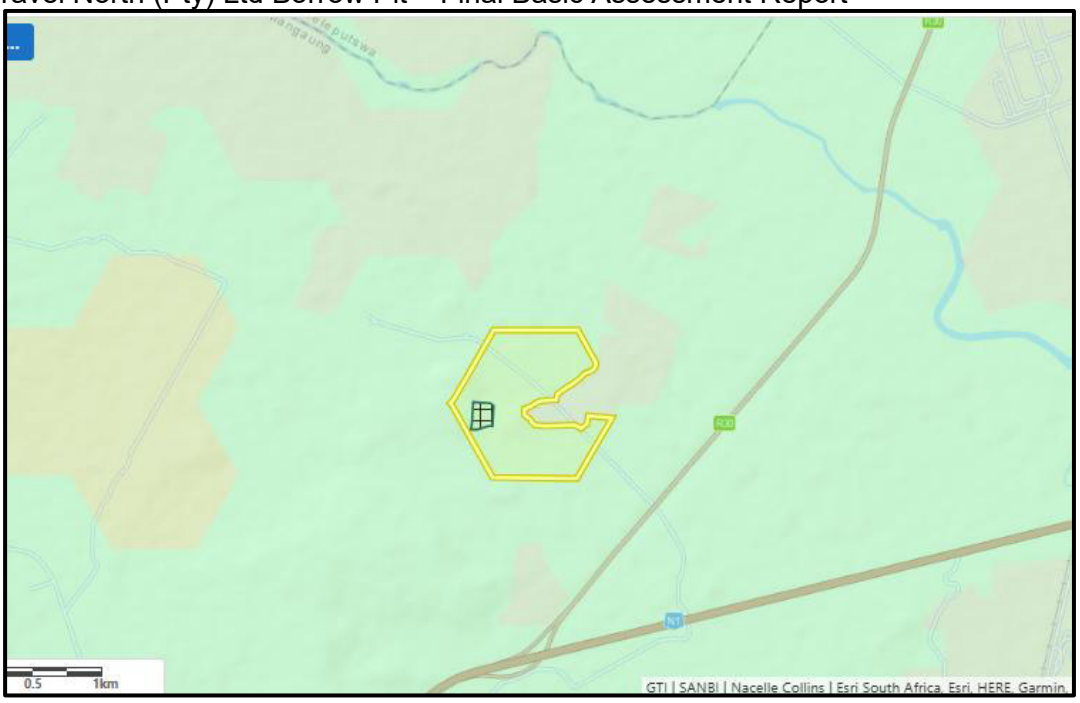


Figure 12: 2015 Free State Biodiversity Plan showing the footprint of the earmarked area (black polygon), in relation to the ESA1 area (light green). (Image obtained from the BGIS Map Viewer: 2015 Free State Biodiversity Plan).

Vegetation

According to Mucina and Rutherford (2012) the vegetation type of the study area is classified as Winburg Grassy Shrubland (Gh7) as presented in the following figure.

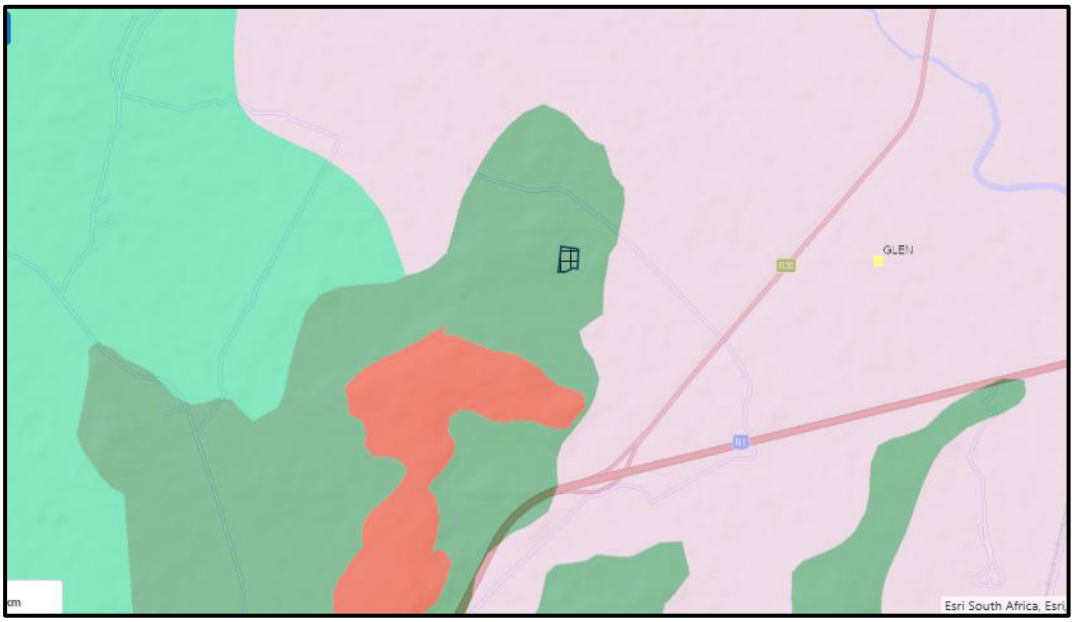


Figure 13: Map showing the distribution of the Winburg Grassy Shrubland (Gh7) vegetation type (dark green polygon) as depicted on the SANBI 2018 National Vegetation Map. (Image obtained from the BGIS Map Viewer: 2018 National Vegetation Map).

The Winburg Grassy Shrubland (Gh7) vegetation type is characterised solitary hills, slopes and escarpments of mesas creating a mosaic of habitats ranging from open

grassland to shrubland. Tall shrubs and sometimes small trees are sheltered against frequent by flat topography supporting riparian thickets mostly dominated by periods of frost during the winter months and regular veld fires in late winter to early spring. The medium-height evergreen shrublands are dominated by a combination of *Olea europaea* subsp. *africana*, *Euclea crispa* subsp. *crispa*, *Gymnosporia buxifolia, Diospyros lycioides, Searsia burchellii, S. ciliata, S. erosa* (mainly in the south), *Clutia pulchella* and *Grewia occidentalis*. Trees such as *S. lancea, Celtis africana* and *Ziziphus mucronata* are found in more deeply incised drainage lines.

Important taxa include amongst others: Small Trees: Va*chellia karroo, Celtis africana, Cussonia paniculata, Pittosporum viridiflorum, Searsia lancea, Scolopia zeyheri, Ziziphus mucronata*. Tall Shrubs: *Buddleja saligna, Euclea crispa* subsp. *ovata*, *Gymnosporia polyacantha, Olea europaea* subsp. *africana*, *Searsia burchellii, S. erosa, Diospyros lycioid*es subsp. *lycioides*, *Grewia occidentalis, Gymnosporia buxifolia, Tarchonanthus camphoratus.* Low Shrubs: *Helichrysum dregeanum, Pentzia globosa, Anthospermum rigidum* subsp. pu*milum, Asparagus cooperi, A. laricinus, Berkheya annectens, Chrysocoma ciliata, Clutia pulchella, Euryops empetrifolius,* Graminoids: *Aristida adscensionis, A. congesta, A. diffusa, Cymbopogon pospischilii, Cynodon dactylon, C. incompletus, Eragrostis chloromelas, E. lehmanniana, E. micrantha, E. obtusa, E. trichophora.*

The conservation status of the vegetation type is Least Threatened, with the conservation target set at 28%, of which almost 2% is statutorily conserved in the Willem Pretorius Nature Reserve.

Fauna

The Winburg Grassy Shrubland is confined to hills and ridges, forming part of the Grassland Biome, and supports a diverse range of fauna due to its relatively intact natural condition and structural habitat variety. The area provides important terrestrial corridors and ecological niches for both common and protected species.

The region supports typical Highveld mammalian fauna including:

- Scrub hare (*Lepus saxatilis*)
- Yellow mongoose (*Cynictis penicillata*)
- Bat-eared fox (*Otocyon megalotis*)
- Various antelope species, especially in game farming areas.

The region is rich in avifauna, with over 150 bird species recorded in nearby conservancies such as the Seven Dams Conservancy. Common and notable species include:

- Cape Longclaw (LC)
- African Fish Eagle (LC)
- Helmeted Guineafowl (LC)
- Malachite Sunbird (LC)
- Black-shouldered Kite (LC)
- Various larks, chats, and cisticolas

These birds utilise the grassland, wetland, and shrubland habitats, with seasonal wetlands and drainage lines providing additional foraging and breeding grounds.

The area supports a range of reptiles, including skinks, agamas, and snakes, as well as a diverse invertebrate community, which plays a key role in ecosystem functioning.

ARCHAEOLOGICAL, CULTURAL AND HERITAGE ENVIRONMENT

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

The central Free State region is known for its rich cultural and historical heritage, although the landscape surrounding the study area is predominantly rural and agricultural, with relatively low archaeological sensitivity in undisturbed areas. However, the broader region has historically supported hunter-gatherer communities, early pastoralists, and later colonial-era settlements, which means that isolated heritage resources may still be present.

Typical heritage features in the greater region may include:

- Stone tools and scatters from the Later Stone Age.
- Historic farmsteads, graves, and burial sites, often associated with early European settlement.
- Rock engravings or petroglyphs, although these are more commonly found in rocky outcrops and ridges.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the proposed mining area is placed on the PSM, it shows the study area to extend over an area of insignificant (grey) and very high (red) concern as presented in the figure below.

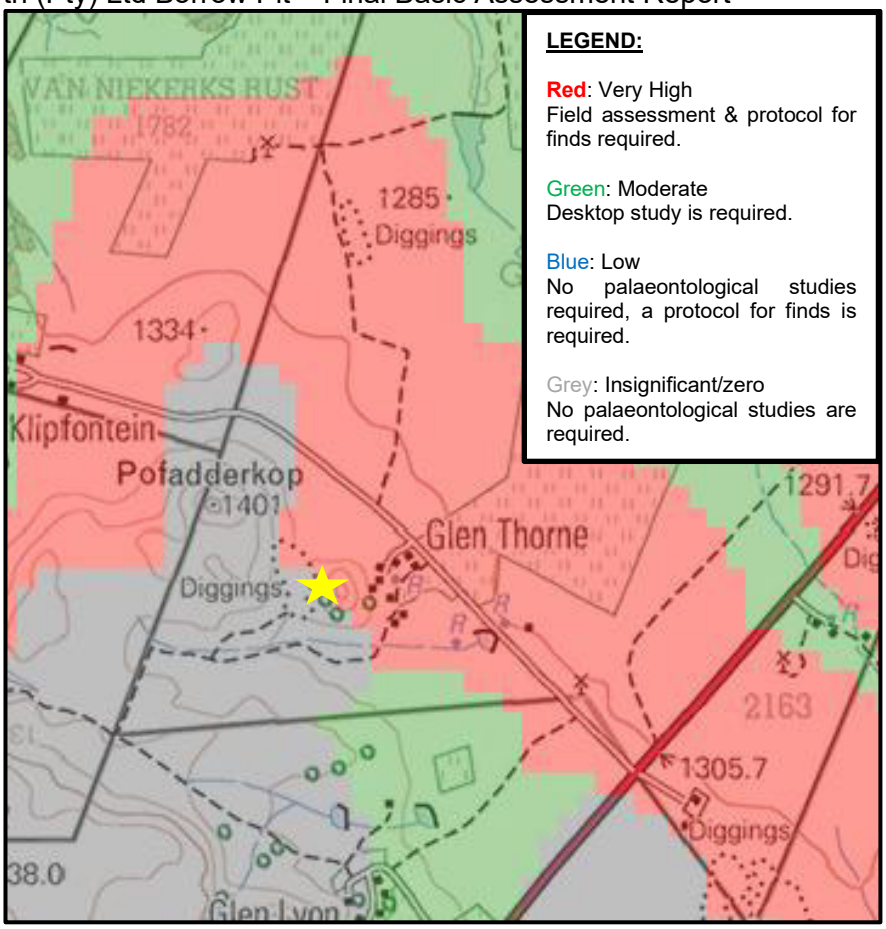


Figure 14: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (yellow star) falls in an area of Insignificant (grey) and Very High (red) concern.

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

SOCIO-ECONOMIC ENVIRONMENT

(Information obtained from StatsSA and the MMM 2024/2025 IDP)

Social Environment

The proposed mining area is located ±17 km north of Bloemfontein in the Mangaung Metropolitan Municipality (MMM). The MMM is a Category A or metropolitan municipality and includes the following cities/towns: Bloemfontein, Botshabelo, Mangaung, and Thaba Nchu.

The economy is strongly driven by the government sector, which has seen the fastest growth in the last five years as a result of increased government programmes in livelihoods improvement interventions. The finance sector is the second-fastest growing sector due to very active estate and construction activities. Small businesses have a major role to play in the Mangaung economy, in terms of employment creation, income generation and output growth.

People

Mangaung has a population of 747 431, of which 83.3% are black African, 11.0% are white, 5.0% are coloured, with other population groups making up the remaining 0.7%. Of those aged 20 years and older, 4.7% have completed primary education, 33.2% have some secondary education, 30.3% have completed matric and 14.2% have some form of higher education. 4.3% of this group have no formal schooling. 83.7% of the population is housed in formal dwellings, while 40.8% of the households are headed by females.

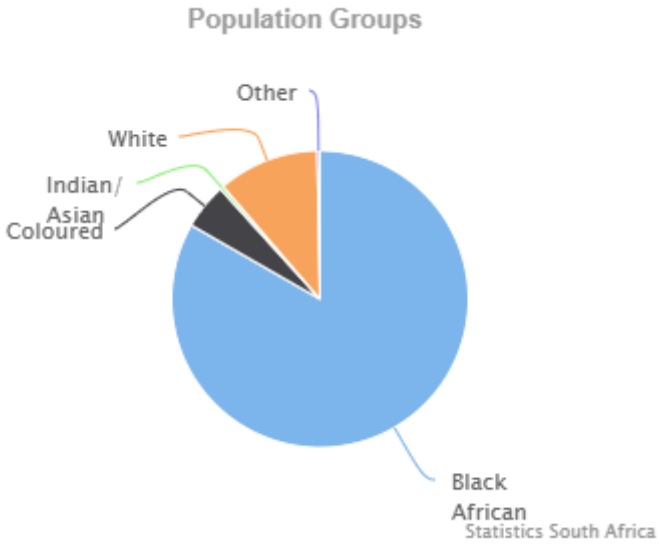


Figure 15: Chart showing the population groups of the MMM (image obtained from StatsSA).

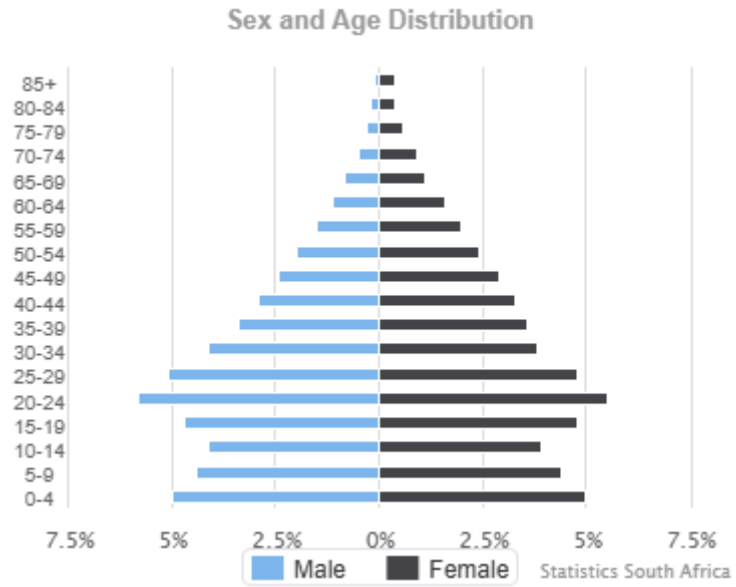


Figure 16: Chart showing the sex and age distribution of the people in the MMM (image obtained from StatsSA).

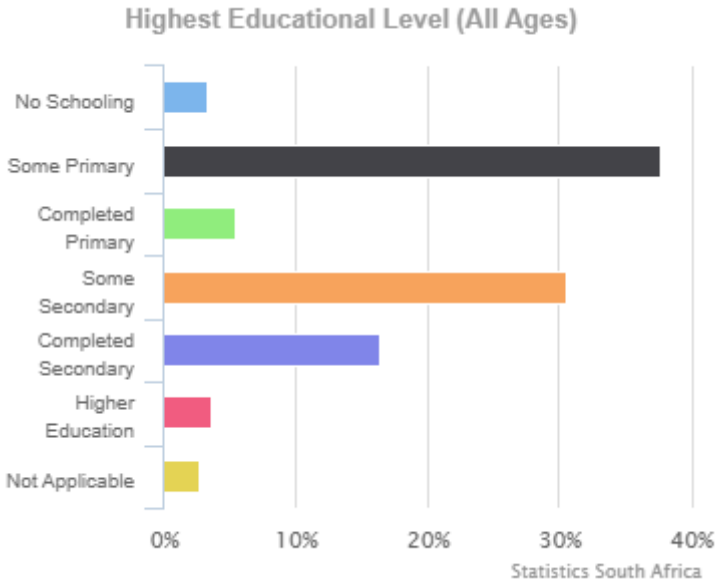


Figure 17: Chart showing the highest educational level of the people in the MMM (image obtained from StatsSA).

Economy

Of the 292 971 economically active (employed or unemployed but looking or work) people in Mangaung, 27.7% are unemployed. 37.2% of the 150 128 economically active youth (15 – 34 years) in the area are unemployed.

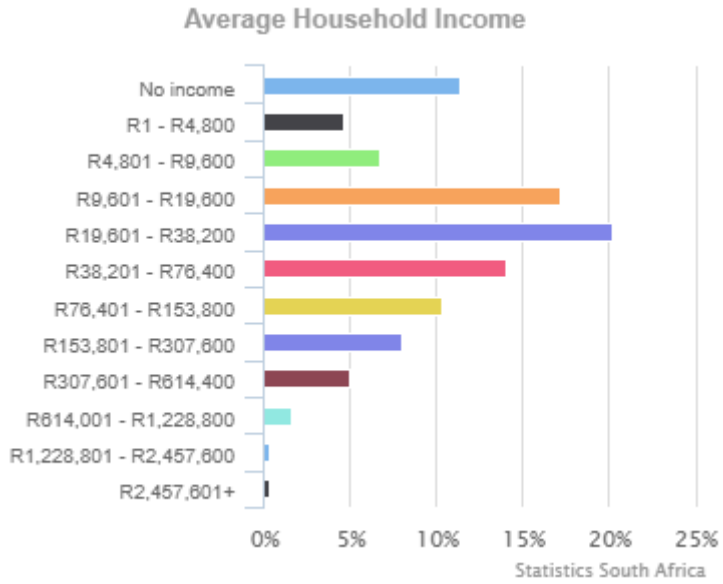


Figure 18: Chart showing the average household income in the MMM (image obtained from StatsSA).

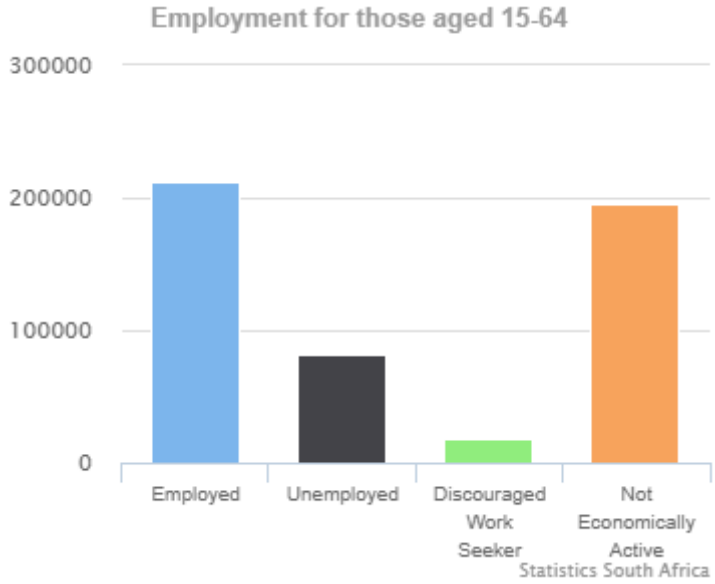


Figure 19: Chart showing the employment numbers for those aged 15-64 (image obtained from StatsSA).

Agricultural Activity Profile

According to data from Stats SA, there are 46 172 agricultural households in the broader region that show a strong preference for plant-based farming activities. Approximately 35% of households are engaged in vegetable farming, making it the most prevalent agricultural activity. This is closely followed by crop cultivation, which accounts for 30% of households. In contrast, poultry farming and livestock farming represent 13% and 12% respectively, indicating a lower emphasis on animal husbandry. The remaining 10% of households are involved in other unspecified agricultural activities. This distribution reflects a regional agricultural economy that is primarily driven by vegetable and crop production, which may influence land use decisions and local employment patterns.

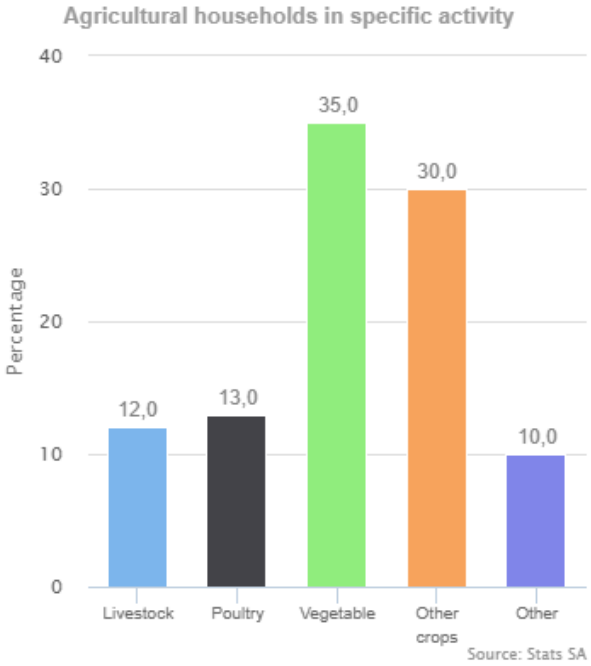


Figure 20: Chart showing the agricultural households in specific activity of the MMM region (image obtained from StatsSA).

(b) Description of the current land uses

Portion 2 of the farm Glen Thorne No 2163 is situated in a rural settling intersected by road and electricity infrastructure. The property is mainly used for game and livestock farming while the earmarked mining area entails the proposed expansion of an existing borrow pit that has been used for non-commercial purposes to date. The farm also has water use authorisation to irrigate fields from the Modder River.

The land use of the immediate surrounding properties is mainly for agricultural purposes with the bulk of the land being natural to semi-natural rangelands grazed by cattle. Dryland crop cultivation is extended to pivot irrigation along the Modder River, and an organic compost supplier operates approximately 1 km north-west of the proposed mine.

According to the Department of Forestry, Fisheries and the Environment (DFFE) Screening Report the Agricultural Theme Sensitivity of the study area is of Low sensitivity as presented in the following figure.

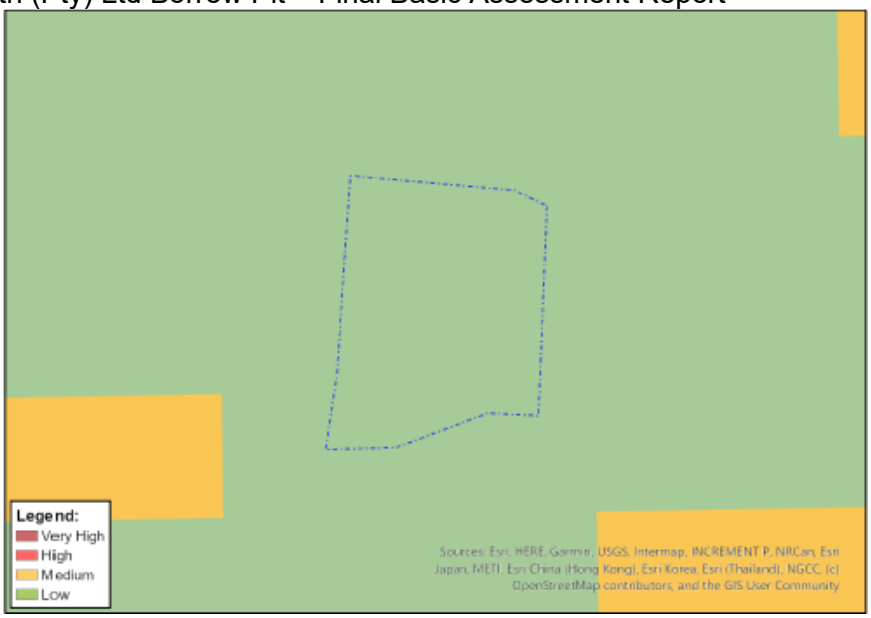


Figure 21: Agricultural Theme Sensitivity of the study area according to the DFFE screening report.

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 mining area:

Table 9: Land uses and/or prominent features that occur within 500 m radius of the proposed mining area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural purposes.
Low density residential	-	**NO**	-
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-
High voltage power line	-	**NO**	-
Office/consulting room	-	**NO**	-
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	-	**NO**	-
Quarry, sand or borrow pit	**YES**	-	This project entails the expansion of the existing borrow pit on the farm.
Dam or reservoir	**YES**	-	Various farm dams occur on the property.
Hospital/medical centre	-	**NO**	-
School/ crèche	-	**NO**	-
Tertiary education facility	-	**NO**	-
Church	-	**NO**	-
Old age home	-	**NO**	-
Sewage treatment plant	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Train station or shunting yard	-	**NO**	-
Railway line	-	**NO**	-
Major road (4 lanes or more)	-	**NO**	-
Airport	-	**NO**	-
Harbour	-	**NO**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	The farm's auction pens are ±42 meters north-east of the site, which are used to house game animals for sale. Aside from the auction pens, the surrounding area is occasionally used for cattle grazing.
River, stream, or wetland	**YES**	-	A non-perennial drainage line passes the study area (±110 m from Layout Option 2) to the south that feeds a pond in the east.
Nature conservation area	-	**NO**	-
Mountain, hill or ridge	**YES**	-	The proposed footprint extends up the side of a hill. Various other hills occur within 500 m of the mining area.
Museum	-	**NO**	-
Historical building	-	**NO**	-
Protected Area	-	**NO**	-
Graveyard	-	**NO**	-
Archaeological site	-	**NO**	-
Other land uses (describe)	-	**NO**	-

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

SITE SPECIFIC TOPOGRAPHY

(Determined through desktop studies, and site investigation by EAP)

Layout Option 2 (Preferred Layout) extends onto the eastern slope of a hill. Approximately 40% of the proposed development footprint is situated on relatively level terrain, beyond which the topography transitions into a steep incline up the hillside. The average elevation of the study area is ±1 336 masl with the northern corner being the highest at 1 359 masl. From the highest point the elevation drops in an eastern direction, with the north-eastern corner being the lowest point of the site (1 321 masl) as presented in the following figure. The average loss in elevation over the presented route is ~3.58 m with an average slope (northerly) of 16.8% (Max. Slope: 50.4%).

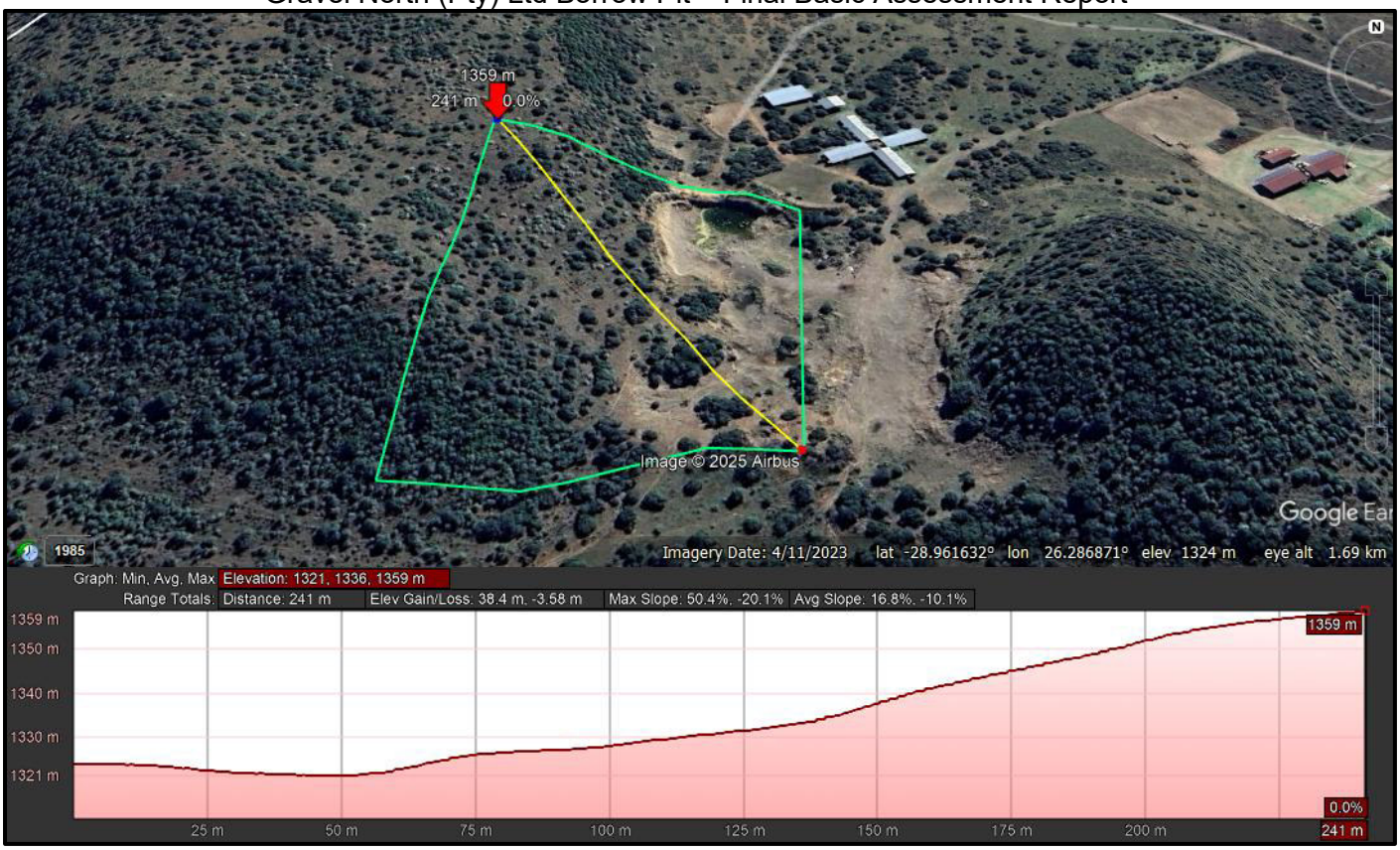


Figure 22: Elevation profile of the preferred layout option (Option 2) (Image obtained from Google Earth).

Mining the proposed borrow pit into the eastern face of the hill should create an excavation with more or less two faces that will be benched as the mining depth increases. The rehabilitation proposal is therefore (upon closure) to render the borrow pit safe and leave it as a landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area will be of medium significance.

SITE SPECIFIC VISUAL CHARACTERISTICS

(Determined through desktop studies, and site investigation by EAP)

The following figure shows the viewshed analysis (according to Google Earth) for the proposed footprint from the highest point on the hill within a ±10 km radius around the study area. The green shaded areas indicate the positions from where the borrow pit will be visible. The analysis shows that the proposed visual impact will be of low-medium significance as the mining area will mainly be visible from the northern to south-eastern adjacent areas. The terrain layout will screen the proposed development from most of the north-western to southern areas. It must also be borne in mind that as the distance between the development and the observer increases the visual impact will decrease and perception of the 2.75 ha excavation will diminish to negligible at the periphery of 10 km.

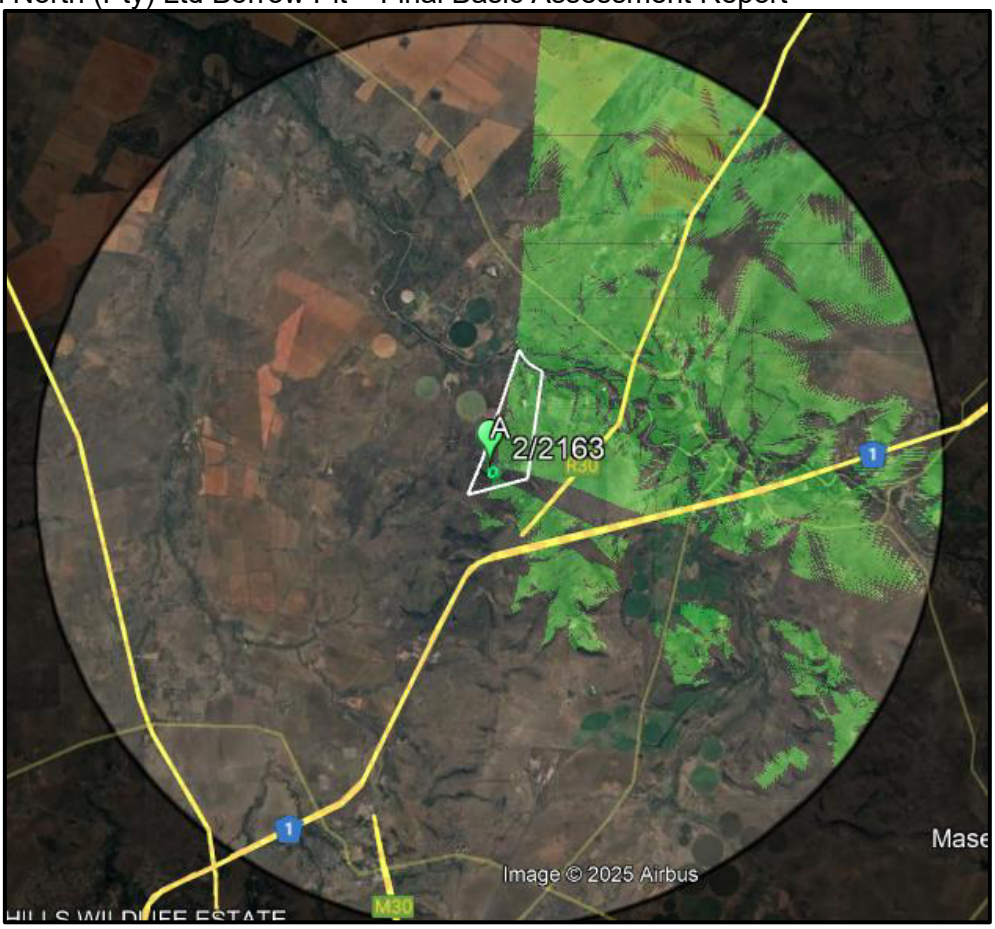


Figure 23: Viewshed analysis of the highest corner (A) of the proposed mining area where the green shaded areas indicate the positions from where the excavation (green polygon) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The auction pens and farm buildings of Portion 2 of the farm Glen Thorne No 2163 are the nearest structures to the proposed mining (within 500 m). The surrounding farm yards occur within ±820 m north-west (Farm Yard 1), and ±960 m south (Farm Yard 2) of the study site. As mentioned earlier, the prevalent wind direction of the study area is in a north-western direction for most of the year. Currently the air quality of the study area is mainly impacted on by traffic along the gravel roads, and agricultural practices in the area. Traffic along the R30 provincial- and N1 national roads influences the ambient sound levels and air quality within the greater study area.

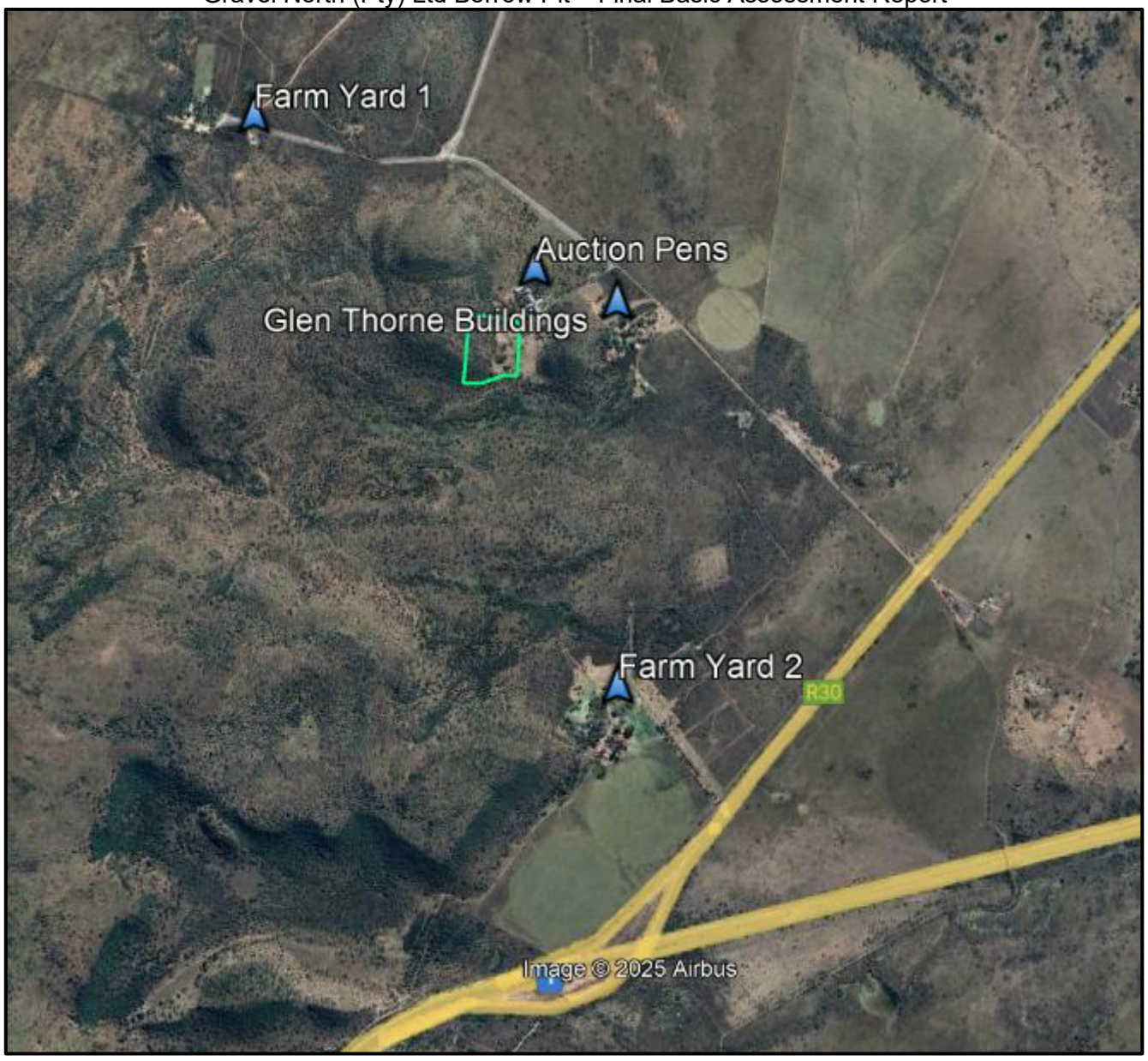


Figure 24: Satellite image of the nearest dwellings to the proposed mining area (green polygon) (image obtained from Google Earth).

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, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening, and the transport of material on gravel roads. Due to the small scale and nature of the proposed project and should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance.

The noise to be generated at the proposed borrow pit will contribute to the daily noise levels of the receiving environment through excavation, crushing/screening and transporting of material. As mentioned earlier, mining will take place from Monday –

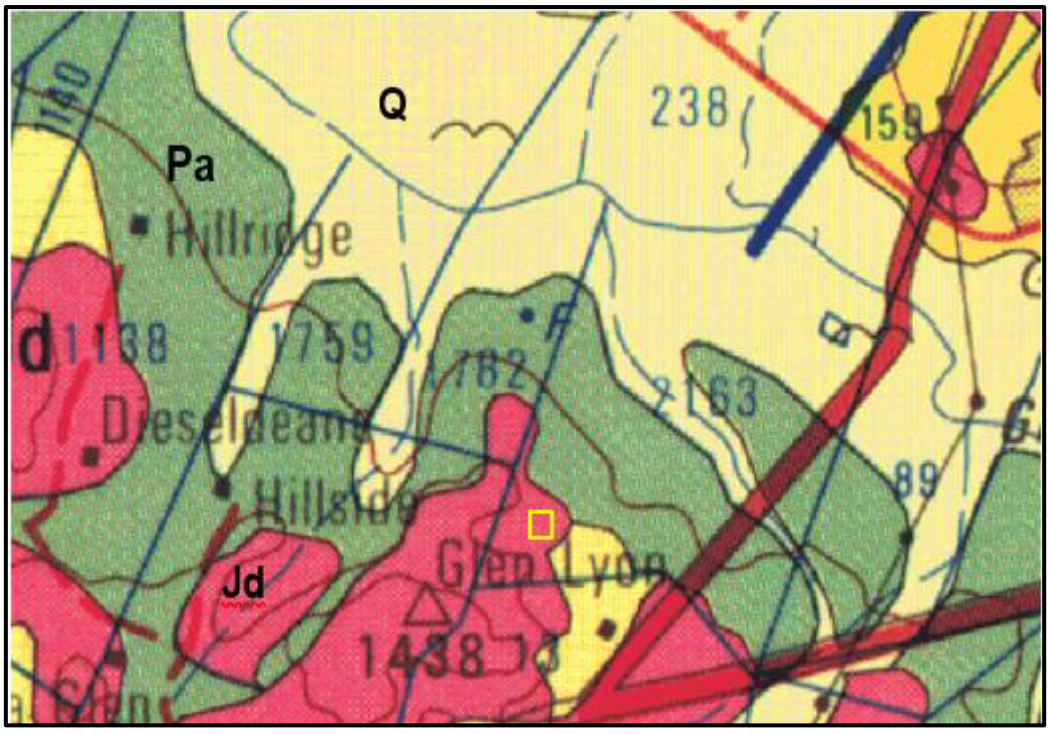
Saturdays between 05:00 to 20:00 and no work will be done on Sundays. It is expected that the mine will be visited by approximately two trucks per day. Due to the small scale of the proposed project the nuisance value of noise to be generated by the heavy earthmoving equipment and trucks transporting material from site to residence in the vicinity, is expected to be of low significance.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area where gravel has sporadically been removed in the past, the impact is therefore deemed compatible with the property's operations and of low significance.

SITE SPECIFIC GEOLOGY

(Information obtained from the Palaeontological Impact Assessment attached as Appendix E)

The site specific geology resembles the geology as described under *Part A(h)(iv)(1)(a) Type of Environment Affected by the Proposed Activity – Baseline Geology*. The project lies in the central part of the main Karoo Basin where the Beaufort Group sediments of the Karoo Supergroup are exposed. They are unconformably overlain by fluvial sands and alluvium that were deposited during the Quaternary period (following figure).



Symbol	Group/Formation	Lithology	Approximate Age
Q	Quaternary	Alluvium, sand, calcrete	Quaternary ca 1.0 Ma to Present
Jd	Jurassic dykes	Dolerite dykes, intrusive	Jurassic, Ca 183 Ma

Symbol	Group/Formation	Lithology	Approximate Age
Pa/Pne	Normandien Fm, Adelaide Subgroup, Beaufort Group, Karoo SG	Shale, mudstone, sandstone	Late Permian, ca 256 - 251 Ma

Figure 25: Geological map of the area around the Farm Glen Thorne with the borrow pit site indicated by the yellow rectangle (Bamford, 2025).

The Karoo Supergroup rocks cover a very large proportion of South Africa and extend from the northeast (east of Pretoria) to the southwest and across to almost the KwaZulu Natal south coast. It is bounded along the southern margin by the Cape Fold Belt and along the northern margin by the much older Transvaal Supergroup rocks. Representing some 120 million years (300 – 183 Ma), the Karoo Supergroup rocks have preserved a diversity of fossil plants, insects, vertebrates and invertebrates.

Overlying the basal Dwyka Group glacigene rocks are rocks of the Ecca Group that are Early Permian in age. There are eleven formations recognised in this group, but they do not all extend throughout the Karoo Basin. In the central and eastern part are the following formations, from base upwards: Pietermaritzburg, Vryheid and Volksrust Formations. All of these sediments have varying proportions of sandstones, mudstones, shales and siltstones and represent shallow to deep water settings, deltas, rivers, streams and overbank depositional environments.

Overlying the Ecca Group are the rocks of the Beaufort Group that has been divided into the lower Adelaide Subgroup for the Upper Permian strata, and the Tarkastad Subgroup for the Early to Middle Triassic strata. As with the older Karoo sediments, the formations vary across the Karoo Basin.

In this part of the basin, east of 24°E, three formations are recognised in the Adelaide Subgroup, the basal Volksrust Formation that is also included in the Ecca Group, and the upper Normandien Formation. The latter has been divided into five members only where exposures are good. In the Free State the Adelaide Subgroup is difficult to subdivide.

Large exposures of Jurassic dolerite dykes occur throughout the area. These intruded through the Karoo sediments around 183 million years ago at about the same time as the Drakensberg basaltic eruption.

There were two large basins dominating southern Africa during the Cenozoic, with the Kalahari Basin to the west and the Bushveld basin to the east. Both basins are bounded along their southern extent by the more or less west-east trending Griqualand-Transvaal Axis (Partridge et al., 2006).

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

This application is for the direct mining of the weathered gravel source on the farm that will be sold to the construction industry.

SITE SPECIFIC HYDROLOGY

DFFE National Web Based Environmental Screening Tool

The Screening Tool, developed by the Department of Environmental Affairs (“DEA”), now Department Forestry and Fisheries of Environment, (DFFE), is a geospatial web-enabled application that aims to provide readily available information, known as ‘spatial datasets’, which enables applicants for Environmental Authorisation to screen their proposed site for environmental sensitivities.

According to the DFFE Screening Report the aquatic biodiversity sensitivity of the area is of Low Sensitivity.

Table 10: Aquatic biodiversity sensitivity of the proposed site according to the DFFE Screening Report.

Site Specific Description

According to the SANBI BGIS National Wetlands and NFPA Mapviewer the project area is not within any Strategic Water Source Area (SWSA) or National Freshwater Ecosystem Priority Area (NFEPA) as indicated in the following figure.

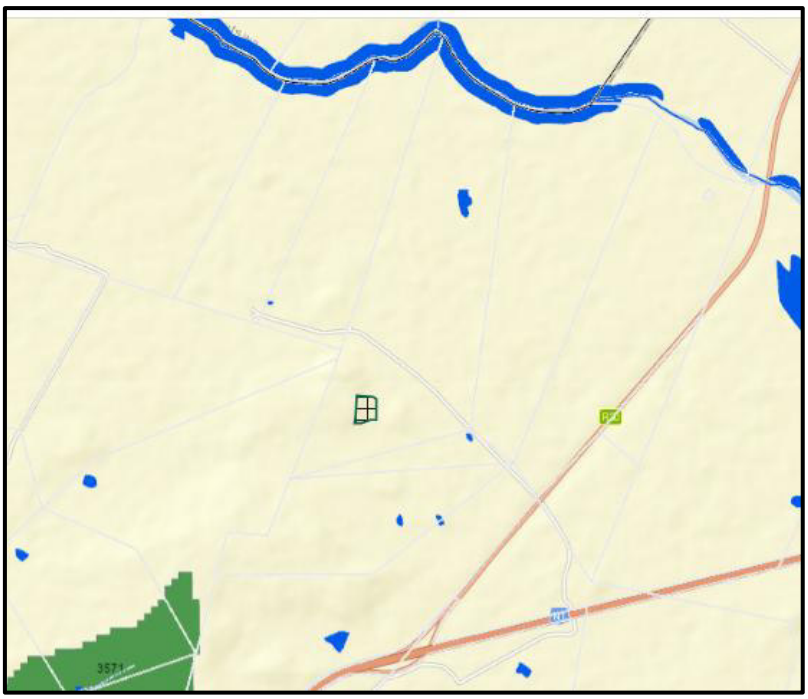


Figure 26: Map showing that the earmarked area (crossed polygon) is outside any SWSA and/or NFEPA. The Modder River is indicated by the blue line to the north. (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA)

As previously mentioned, approximately 40% of the proposed mining footprint is situated on terrain that is relatively level, primarily due to historical gravel extraction. However, despite its general flatness, this area remains uneven, allowing surface water to periodically accumulate in some of the historic depressions. These temporary pools result from runoff descending from the nearby hillside. Importantly, these features are short-lived and do not constitute formal wetlands, streams, or drainage lines within the proposed footprint.

The ephemeral drainage line (discussed in *Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Hydrology*) that passes the proposed mining to the south is more than 100 m from the study site (Figure 5) and mining activities is not expected to have an impact on this feature.

The anticipated impact on the hydrology of the receiving environment should remain low as long as the mitigation and monitoring measures proposed in this document and the EMPR are implemented throughout all the project phases.

SITE SPECIFIC TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)

DFFE National Web Based Environmental Screening Tool:

According to the DFFE Screening Report the following animal, plant, and terrestrial biodiversity sensitivities were identified for the proposed footprint.

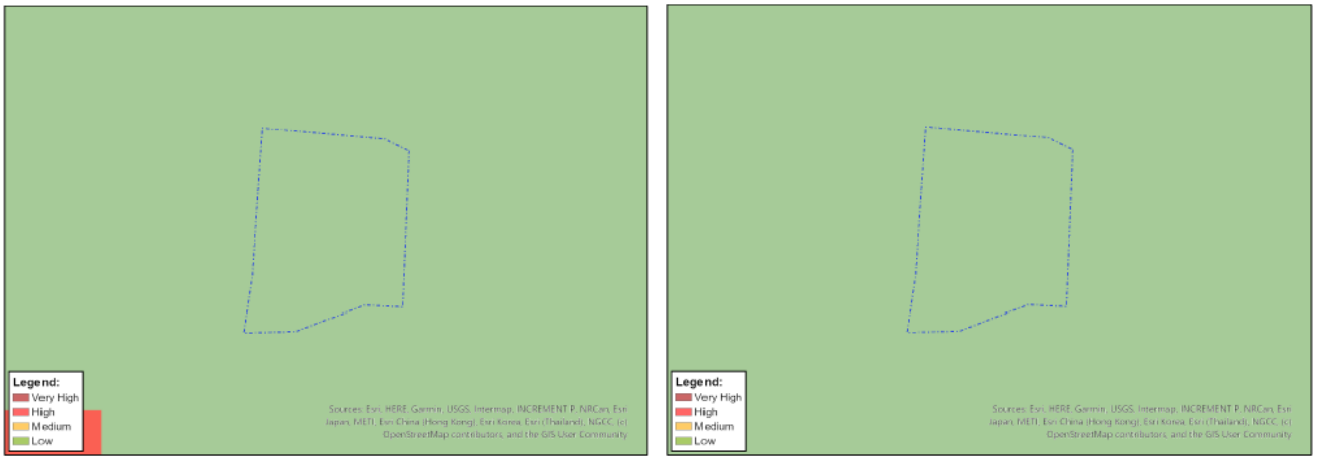


Table 11: The animal species- (left pane), plant and biodiversity (right pane) theme sensitivity of the proposed mining area according to the DFFE Screening Report.

Site Specific Description

As mentioned earlier, this application entails the expansion of an existing borrow pit where the natural vegetation has previously been removed to allow access to the gravel. Approximately 41% of the 2.75 ha application area has already been distributed and has none to very little vegetation left.

The vegetation composition of the western part of the proposed mining footprint, that extends up the hill, is mainly intact Winburg Grassy Shrubland dominated by False Olive (*Buddleja saligna*), and Sour Karee (*Searsia ciliata*). The grass layer is sparse but shrubs/small trees such as the Blue Guarri (*Euclea crispa*), Lightning Bush (*Clutia pulchella*), Karoo Kunibush (*Searsia burchelli*), Broom Karee (*S. erosa*), Bluebush (*Diospyros lycioides*), Camphor bush (*Tarchonanthus camphoratus*) and Fine-leaved Felicia *(Felicia filifolia)* abound in the area.

Various Wild Olive trees (*Olea europaea* subsp. *africana*) also occur in the area. The Wild Olive tree is a protected species in terms of the National Forests Act, 1998 (Act No 84 of 1998) as well as the Free State Nature Conservation Ordinance 8 of 1969 and may therefore not be destructed, disturbed and/or removed prior to approval by the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).

Consequently the removal of vegetation from especially the western part of the mining area will be necessary to access the resources. Where the development will affect the protected Wild Olive trees the Applicant must, prior to bush clearance, apply for destruction permits from DESTEA. Bush clearance may only commence upon receipt of the applicable plant permit.

Though the majority of the site does not currently contain any significant weed or invasive plant infestations, problem plants such as Wild Tobacco (*Nicotiana glauca*) did establish in the previously mined areas. The proposed development will therefore have to implement a comprehensive monitoring and eradication programme to ensure that invasive plant species are removed from the area and prevented from re-establishing.

In summary, the proposed mining activity will result in the permanent removal of approximately 59% of the vegetation cover within the 2.75 ha project area. However, this footprint represents a very small and localised disturbance when considered in the context of the surrounding landscape, which remains largely intact. Provided that the Applicant obtains the necessary plant removal permits from DESTEA and strictly confines vegetation clearance to the approved mining footprint, the ecological impact will be contained and of low significance. The use of a previously disturbed site further reduces the potential for broader ecosystem disruption, reinforcing the project's alignment with principles of minimal environmental impact and responsible land use.

A site inspection confirmed that there is currently no resident fauna within the proposed mining footprint. Given the small size of the application area (2.75 ha) and the fact that

the site has already been disturbed, the potential impact on local fauna is expected to be minimal. Mining activities will progress gradually, allowing any transient or mobile species sufficient time to vacate the area in response to increased human presence and noise. Furthermore, the project will not result in habitat fragmentation or the creation of barriers that could impede the movement of wildlife across the broader landscape. As such, the proposed activity is unlikely to have significant or lasting impacts on faunal populations in the area.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Palaeontological Impact Assessment, September 2025 attached as Appendix E)

DFFE National Web Based Environmental Screening Tool

According to the DFFE Screening Report the archaeological and cultural heritage theme sensitivity of the study site is indicated as Low, while the palaeontological sensitivity of the area is reported to be of Medium significance.

Table 12: Archaeological and cultural heritage theme sensitivity of the proposed site according to the DFFE Screening Report.

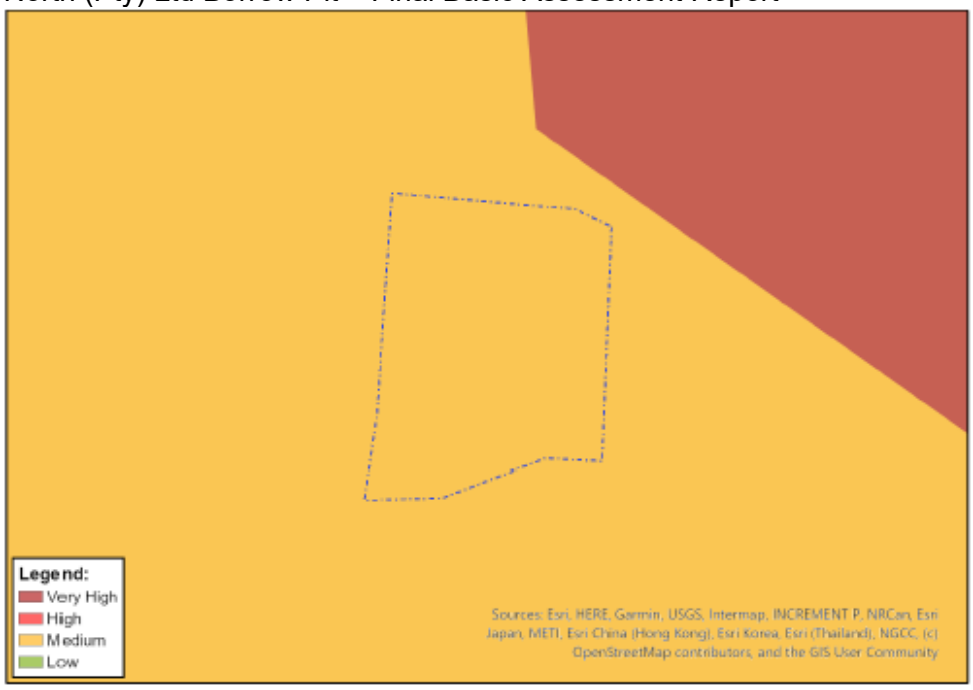


Table 13: Palaeontology theme sensitivity of the proposed site according to the DFFE Screening Report.

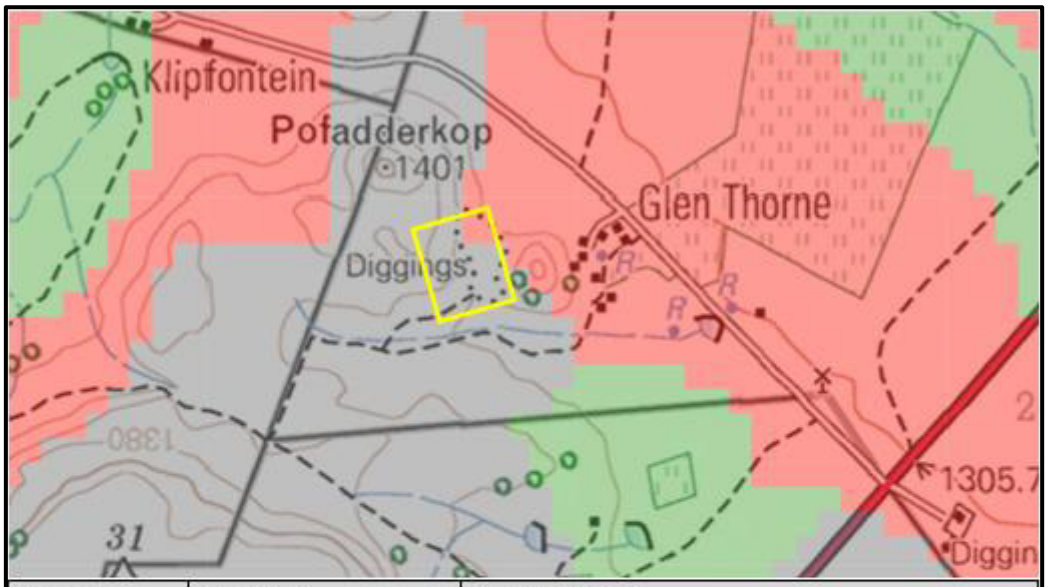
Site Specific Conditions

The broader region surrounding the proposed mining site is situated within the central interior of South Africa, an area known for its rich cultural and historical landscape. The Free State is home to a variety of heritage resources, including Stone Age and Iron Age archaeological sites, historical battlefields, mission stations, and colonial-era farmsteads. However, the specific project area is located within a previously disturbed borrow pit, and a site inspection has confirmed the absence of any visible heritage features, such as pottery shards, graves, or built structures of historical significance.

Given the small scale of the proposed activity (2.75 ha) and the disturbed nature of the site, the likelihood of encountering significant heritage or archaeological resources is considered low. Furthermore, the project is not expected to impact any formally declared heritage sites or cultural landscapes as defined under the National Heritage Resources Act (Act No. 25 of 1999).

Nonetheless, as a precautionary measure, the Applicant must adhere to the chance finds protocol (incorporated into the EMPR). Should any heritage artefacts or human remains be uncovered during site preparation or mining activities, work must cease immediately, and the South African Heritage Resources Agency (SAHRA) and the Free State Provincial Heritage Resources Authority must be notified for further investigation and guidance.

As the DFFE Screening Report identified the palaeontology sensitivity of the study area to be of Medium significance, Prof Marion Bamford was appointed to undertake a desktop PIA study of the proposed development and indicate whether further mitigation is required. The PIA notes that the palaeontological sensitivity of the area under consideration is mainly of Insignificant sensitivity while a small portion in the north-east is considered to have a Very High sensitivity rating as presented in the following figure.



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/ YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 27: SAHRIS palaeosensitivity map for the site for the Glen Thorne Borrow Pit mining permit application shown within the yellow rectangle.

According to the PIA, the Adelaide Subgroup is part of the eastern foredeep basin and was deposited in the overfilled or non-marine phase (Catuneanu et al., 2005) and so comprises terrestrial deposits. There are numerous fining-upward cycles, abundant red mudrocks and sedimentary structures that indicate deposition under fluvial conditions (Johnson et al., 2006). Some of the lower strata probably represent a subaerial upper delta-plain environment and the generally finer grained materials are typical of meandering rather than braided rivers. Channel deposits are indicated by sandstones while overbank deposits are indicated by the mudstones (Johnson et al., 2006).

The Normandien Formation is represented by the *Daptoccephalus* Assemblage Zone. The Daptocephalus Assemblage Zone is recognised by the co-occurrence of the dicynodontoid *Daptocephalus leoniceps*, the therocephalian *Theriognathus microps*, and the cynodont *Procynosuchus delaharpeae* (Viglietti, 2020). This has been further divided into two subzones, the lower *Dicynodon -Theriognathus* Subzone (in co-occurrence with *Daptocephalus*), and the upper *Lystrosaurus maccaigi – Moschorhinus kitchingi* Subzone (ibid). Other taxa include fish, amphibians, parareptiles, eureptiles, biarmosuchians, anomodontians, gorgonopsians, therocephaleans, cynodonts and molluscs. The flora is more diverse than the older Assemblage Zones and comprises glossopterids, mosses, ferns, sphenophytes, lycopods, cordaitaleans and gymnosperm woods (Plumstead, 1969; Anderson and Anderson, 1985; Bamford, 2004).

Dolerite is an igneous rock that has intruded through the sedimentary layer along cracks and fissures, then cooled and solidified. The heat from the molten material often alters and damages the sediments through which it has intruded. Dolerite does not preserve fossils (Cowan, 1995; Briggs and McMahon, 2016). Therefore the correct palaeosensitivity for this area is insignificant to zero. The north-eastern portion of the borrow pit appears to be on the very highly sensitive Adelaide Subgroup but this is probably a result of the resolution of the mapping. It is more likely that the material to be mined is dolerite as it is much harder than shales or mudstones of the Adelaide Subgroup.

The geological structures suggest that the rocks to be mined are the wrong kind (dolerite) to contain fossils. Since there is a small chance that fossils from the adjacent Adelaide Subgroup may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the PIA concluded that the potential impact to fossil heritage resources is Low, and the project can therefore be authorised from a palaeontology point.

SITE SPECIFIC INFRASTRUCTURE

No infrastructure exists in the proposed 2.75 ha footprint that could be affected by the proposed activity. The auction pens are the nearest infrastructure to the mining area, and the permit holder will need to implement the mitigation measures proposed in this report and the EMPR to minimise potential impacts to these structures. Furthermore, the internal access road will need to be maintained by the permit holder for the duration of the mining operations. However, should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

(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 Final Project Proposal as the alternative development options considered during the planning phase were all ruled unattainable.

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

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
1	4	1	2	5	5	5	**10**

Visual intrusion because of site establishment

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

Impact on vegetation structure and plant species composition

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

Impact on protected plant species within mining footprint

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	5	5	5	**20**

Potential change of natural runoff and drainage patterns

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	3.2	4	5	4.5	**14.4**

Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	5	1	3.3	1	1	1	**3.3**

Additional job opportunities because of the mining operation **(Positive Impact)**

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
4	4	5	4.3	5	5	5	**21.5**

STRIPPING AND STOCKPILING OF TOPSOIL

Visual intrusion caused by mining activities

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

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	1	2.5	**6.5**

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	1	2	2	5	5	5	**10**

Noise nuisance generated by earthmoving machinery

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

Infestation of the topsoil heaps and mining area with invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	2	3	5	2	3.5	**10.5**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	2	3.5	**9.1**

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	2	3.3	4	4	4	**13.2**

EXCAVATION, LOADING AND HAULING TO PROCESSING AREA

Visual intrusion associated with the excavation activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	2	2.6	5	5	5	**13**

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	2.6	5	5	5	**13**

Noise nuisance because of the mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**

Unsafe working environment for employees

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

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	5	4.5	**11.7**

Facilitation of erosion due to mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**

Potential impact on palaeontological features

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
4	5	1	3.3	1	1	1	**3.3**

Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	4	5	4.5	**18**

CRUSHING, SCREENING AND STOCKPILING OF MATERIAL

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	2	2.6	5	5	5	**13**

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	4	4	**10.4**

Infestation of the area with invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	5	4	4	5	4.5	**18**

Potential increase in runoff from bare areas and associated accelerated erosion

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	2	3.5	**9.1**

Loss of stockpiled material due to ineffective stormwater control

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

Increased fire risk due to mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	4	4	3	1	2	**8**

CUMULATIVE IMPACTS

Cumulative impact on overall species and ecosystem diversity

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

Cumulative impact of invader plants in both the borrow pit and the surrounding areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: High			**Final Project Proposal**		**Degree of Mitigation: Full**		
4	4	5	4.3	5	5	5	**21.5**

Cumulative impact on the internal access road when borrow pit is operational

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	2	2.6	5	5	5	**13**

SLOPING, LANDSCAPING AND REHABILITATION UPON CLOSURE OF THE SITE

Safety risk posed by un-sloped areas

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

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	5	4.5	**11.7**

Infestation of the reinstated areas by invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	5	3	3.6	5	5	5	**18**

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**10.5**

Return of the mining area to agricultural use upon closure **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**		**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 14: 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 15: 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 16: 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 17: 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 in the tables below.

Determination of Frequency

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

Table 18: 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 19: 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 20: 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 21: 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 22: Description of environmental significance and related action required.

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

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

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

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

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

Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

POSITIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

- **Effective Use of Previously Disturbed Land:** The project makes use of an existing borrow pit, minimising the need to disturb new, undisturbed land;
- **Low Environmental Footprint:** The mining footprint is small (2.75 ha) and will be confined to a defined area, reducing the overall ecological impact;
- **Support for Local Infrastructure Development:** The gravel extracted will supply the local construction industry, contributing to roads, housing, and service delivery projects.
- **Short-Term Employment Opportunities:** The project will create jobs for local community members, supporting livelihoods and skills development.
- **Stimulation of Local Economy:** Local businesses may benefit from the supply of goods and services such as transport, and equipment hire.
- **Reduced Transportation Emissions:** Proximity to Bloemfontein and surrounding development areas reduces the need for long-distance transport of gravel, lowering fuel use and emissions.
- **Rehabilitation and Land Stewardship:** The project includes a rehabilitation plan that will restore the site post-mining, potentially improving its ecological condition over time.

- **No Significant Impact on Fauna, Hydrology or Heritage Resources:** The site has no resident fauna or known heritage features and is more than 100 m from the non-perennial drainage line. Mining will proceed in a way that avoids habitat fragmentation or cultural disturbance.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

The following table shows the potential negative impacts associated with the final project proposal that were identified during the EIA:

Table 23: List of potential negative impacts associated with the final project proposal.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of mining.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrusion associated with the excavation activities.	❖ Medium ❖ Medium ❖ Medium	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium
❖ Site establishment and infrastructure development. ❖ Cumulative impacts.	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	❖ Medium ❖ High ❖ Low-Medium	❖ Low-Medium ❖ Low ❖ Low
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential change of natural runoff and drainage patterns. ❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.	❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low ❖ Low ❖ Low ❖ Low ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to processing area.	❖ Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities. ❖ Potential impact on palaeontological features.	❖ Low ❖ Low	❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	❖ Medium ❖ Medium ❖ Medium	❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant.	❖ Low ❖ Low-Medium ❖ Low-Medium	❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil. ❖ Crushing, screening and stockpiling of material. ❖ Cumulative impacts. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Infestation of the topsoil heaps and mining area with invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas. ❖ Infestation of the reinstated areas by invader plant species.	❖ Medium ❖ Medium-High ❖ High ❖ Medium-High	❖ Low ❖ Low ❖ Low-Medium ❖ Low
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste left at the mining area.	❖ Medium ❖ Medium ❖ Medium ❖ Medium	❖ Low ❖ Low ❖ Low ❖ Low
❖ Excavation, loading and hauling to processing area. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Medium ❖ Medium	❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	❖ Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading. ❖ Cumulative impact on the internal access road when borrow pit is operational.	❖ Medium-High ❖ Medium	❖ Low-Medium ❖ Low-Medium
❖ Crushing, screening and stockpiling of material.	❖ Increased fire risk due to mining activities.	❖ Low-Medium	❖ Low

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

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

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

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area

- ❖ The excavated area must serve as a final depositing area for the placement of unwanted material.
- ❖ Unwanted rocks and coarse material removed from the excavation must be dumped into the excavation.
- ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- ❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- ❖ No waste may be permitted to be deposited in the excavations.
- ❖ Once unwanted rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- ❖ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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 vegetation seed mix to his or her specification.

- 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-, and stockpile areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation

- The site must have a neat appearance and at all times 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 topsoil 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 site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures

- The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must daily assess the efficiency of all dust suppression equipment.
- Speed on the haul roads must be limited to 20 km/h and 40 km/h on the internal access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimised 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.

- 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).
- Best practice measures shall be implemented to minimize potential noise impacts.
- Mining must be conducted between 05:00 and 20:00 Monday to Saturday. No mining may be allowed on Sundays.

GEOLOGY AND SOIL

Topsoil Management

- The topsoil must be stripped and stockpiled before mining.
- 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 areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 2 m in height and are not to be sloped more than 1:2 to avoid collapse.
- The temporary topsoil stockpiles must be kept free of invasive plant species.

- Topsoil heaps to be stored longer than a period of 3 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 on-site stockpile area to prevent erosion.
- The available topsoil must be evenly spread 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.
- An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.
- 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 stabilised if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management

- A storm water management plan must be implemented for the duration of the mining activities.
- 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.
- Vegetation clearing activities must be put on hold when heavy rains are expected.
- Stormwater must be diverted around the topsoil heaps 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.

- ❖ No dirty water emanating from the mining area shall be discharged into the natural environment or any watercourse. All run-off must be channelled into the stormwater system.
- ❖ 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 caused by the mining activities must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- ❖ Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas.
- ❖ 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. 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.
- ❖ All fuels and chemicals used on site must be contained within fit for purpose containers and stored within designated storage areas. 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.

- Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.
- All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas.
- After heavy rainfall events, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.

TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)

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.
- The Applicant must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.
- A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc.
- A pre-commencement walkthrough must be done to identify and demarcate important species that would need destruction/removal permits.
- Species occurring on the site that may be affected by the development include *Olea europaea* subsp*. africana*. Where development will affect these species, the necessary permits must be obtained and a significant proportion of the smaller specimens transplanted to adjacent areas where it will remain unaffected.
- Bush-clearance may only commence once the plant permits were received, and the important plants were relocated.
- Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- The 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 most of the 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 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 open fires must be allowed on site.
- Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses.
- A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.

Management of Invasive 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 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- All stockpiles 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. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.

Fire Management

- No open fires to be permitted on site.
- Fire prevention facilities must be present at all hazardous storage facilities.
- Ensure adequate fire-fighting equipment is available and train workers on how to use it.
- Ensure that all workers on site know the proper procedure in case of a fire occurring on site.
- Smoking must not be permitted in areas considered to be a fire hazard.

FAUNA

Protection of Fauna

- The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.
- 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.
- No snares may be set, or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects

- All mining must be confined to the development footprint area.
- 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 must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.
- The Chance Find Protocol that forms part of the desktop PIA (attached as Appendix E) must be implemented on site.

LAND USE

Loss of agricultural land for duration of mining

- The Applicant will sign a memorandum of agreement with the landowner to compensate (if necessary) for the loss of agricultural land for the duration of the mining period. If needed, mined/rehabilitated areas could revert to agricultural use once the grass layer stabilised.

Management of the Internal Access Road

- Storm water must be diverted around the internal access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the internal 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 the off-site 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.
- Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater.
- 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 registered 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 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 registered 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 recognised 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.
- Accessible ablution facilities must be provided. If a chemical toilet is used it 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 toilet facilities must not result in the pollution of any water sources or pose a health hazard. Furthermore, the disposal of refuse or sewage must be managed to prevent any form of secondary pollution. Should any pollution issues arise from these activities, they must 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.

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.

Not applicable.

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

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

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.
(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

During the impact assessment process the following potential impacts were identified of each main activity in each phase of the Final Project Proposal.

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

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Final Project Proposal**		**Degree of Mitigation: None**		
1	4	1	2	5	5	5	**10**

Visual intrusion because of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	1	2	3	5	4	**8**

Impact on vegetation structure and plant species composition

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
2	4	1	2.3	4	2	3	**6.9**

Impact on protected plant species within mining footprint

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	4	2.3	2	1	1.5	**3.4**

Potential change of natural runoff and drainage patterns

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

Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	5	1	2.6	1	1	1	**2.6**

Additional job opportunities because of the mining operation **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Final Project Proposal**		**Degree of Mitigation: N/A**		
4	4	5	4.3	5	5	5	**21.5**

STRIPPING AND STOCKPILING OF TOPSOIL

Visual intrusion caused by mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	1	2	3	5	4	**8**

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
1	2	1	1.3	2	1	1.5	**1.9**

Dust nuisance because of the disturbance of soil

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

Noise nuisance generated by earthmoving machinery

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

Infestation of the topsoil heaps and mining area with invader plant species

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

Potential increase in runoff from bare areas and associated accelerated erosion

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

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices.

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

EXCAVATION, LOADING AND HAULING TO PROCESSING AREA

Visual intrusion associated with the excavation activities

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

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

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

Noise nuisance because of the mining activities

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

Unsafe working environment for employees

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	2	1	1.5	**1.9**

Soil contamination from hydrocarbon spills and/or littering

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

Facilitation of erosion due to mining activities

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

Potential impact on palaeontological features

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Partial**		
4	5	1	3.3	1	1	1	**3.3**

Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading

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

CRUSHING, SCREENING AND STOCKPILING OF MATERIAL

Dust nuisance generated at the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	1	1	1.3	3	3	3	**3.9**

Noise nuisance stemming from operation of the processing plant

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

Potential contamination of environment due to improper waste management

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

Infestation of the area with invader plant species

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

Potential increase in runoff from bare areas and associated accelerated erosion

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

Loss of stockpiled material due to ineffective stormwater control

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

Increased fire risk due to mining activities

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

CUMULATIVE IMPACTS

Cumulative impact on overall species and ecosystem diversity

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	1	1.5	**3.4**

Cumulative impact of invader plants in both the borrow pit and surrounding areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	3	5	3.3	2	2	2	**6.6**

Cumulative impact on the internal access road when borrow pit is operational

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Final Project Proposal**		**Degree of Mitigation: Partial**		
1	4	2	2.3	3	3	3	**6.9**

SLOPING, LANDSCAPING AND REHABILITATION UPON CLOSURE OF THE SITE

Safety risk posed by un-sloped areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Final Project Proposal**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	1	1.5	**3.4**

Erosion of returned topsoil after rehabilitation

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

Infestation of the reinstated areas by invader plant species

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

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

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

Return of the mining area to agricultural use upon closure **(Positive Impact)**

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			**Final Project Proposal**		**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 24: Assessment of each identified potentially significant impact and risk

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
❖ 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 phase	N/A	Control through management and monitoring.	N/A
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of mining.	The impact may disrupt the agricultural	Site Establishment &	❖ Medium	Should the proposed project be approved, the operation will temporarily	❖ Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		operations of the farm.	Operational Phase		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 (if needed).	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	❖ Medium ❖ Medium ❖ Medium	Control: Implementing proper housekeeping.	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	❖ Medium ❖ High ❖ Low-Medium	Control: Implementing proper housekeeping and the mitigation measures proposed in this report.	❖ Low-Medium ❖ Low ❖ Low
❖ Site establishment and infrastructure development.	❖ Potential change of natural runoff and drainage patterns.	This could impact the hydrology as well as the soil structure of the	Site Establishment-, Operational and	❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium	Control & Remedy: Proper housekeeping and stormwater management.	❖ Low ❖ Low ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.	receiving environment. The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Decommissioning Phase	❖ Low-Medium ❖ Medium		❖ Low ❖ Low
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to processing area.	❖ Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities. ❖ Potential impact on palaeontological features.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	❖ Low ❖ Low	<u>Control & Stop:</u> Implementing good management practices, as well as the chance-find protocols.	❖ Low ❖ Low
❖ Site establishment and infrastructure development.	❖ Additional job opportunities because of the mining operation (+)	Contribution to the socio-economic status of the area.	Site Establishment, & Operational Phase.	❖ High+	N/A	❖ High+
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance due to excavation and from	Increased dust generation will impact on the air quality of the	Site Establishment-, Operational-, and Decommissioning Phase	❖ Medium ❖ Medium ❖ Medium	<u>Control:</u> Dust suppression methods and proper housekeeping.	❖ Low ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
hauling to processing area. ❖ Crushing, screening and stockpiling of material.	loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	receiving environment.				
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low ❖ Low-Medium ❖ Low-Medium	<u>Control:</u> Noise suppression methods and proper housekeeping.	❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil. ❖ Crushing, screening and stockpiling of material. ❖ Cumulative impacts. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Infestation of the topsoil heaps and mining area with invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas. ❖ Infestation of the reinstated areas by invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	❖ Medium ❖ Medium-High ❖ High ❖ Medium-High	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	❖ Low ❖ Low ❖ Low-Medium ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste 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	❖ Medium ❖ Medium ❖ Medium ❖ Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	❖ Low ❖ Low ❖ Low ❖ Low
❖ Excavation, loading and hauling to processing area. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ 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	❖ Medium ❖ Medium	<u>Stop & Control:</u> Adherance to the health and safety rules and regulations, demarcation of the mining area and proper housekeeping.	❖ Low ❖ Low
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	❖ Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading.	Collapse of the internal road infrastructure will affect the landowner negatively. If the	Operational phase	❖ Medium-High ❖ Medium	<u>Control & Remedy:</u> Maintaining the internal access road for the duration of the operational phase, as well as leaving it in a	❖ Low-Medium ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	❖ Cumulative impact on the internal access road when borrow pit is operational.	mine negatively affects public traffic, it may incur additional costs and complaints from the public.			representative or better condition than prior to mining.	
❖ Crushing, screening and stockpiling of material.	❖ Increased fire risk due to mining activities.	Uncontrolled fire may affect the neighbouring farms, cause losses and result in financial costs to the mine.	Operational phase	❖ Low-Medium	<u>Control & Stop:</u> Control activities that may have a fire risk and snuff fires that may occur.	❖ Low
❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Return of the mining area to agricultural use upon closure. (+)	The area will be returned to the landowner for future use.	Decommissioning Phase	❖ Medium-High+	N/A	❖ Medium-High+

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

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 25: Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Palaeontological Impact Assessment September 2025 *(See Appendix E for a full copy of the report)*	**Recommendation:** Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the dolerite or the overlying soils of the Quaternary. There is a very small chance that fossils may occur in the adjacent mudstones or shales of the Adelaide Subgroup so a Fossil Chance Find Protocol should be added to the EMPr. If fossils are found by the environmental officer, or other responsible person once mining has commenced then they should be rescued and a palaeontologist called to assess and collect a representative sample. The impact on the palaeontological heritage would be low, as far as the palaeontology is concerned, so the project should be authorised.	The recommendations of the specialist were incorporated into this report.	Part A(1)(h)(iv) The environmental attributes associated with the alternatives. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Part A(1)(k) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR. Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon….

l) Environmental impact statement

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

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

Project proposal

- The proposed project entails the mining of gravel from a 2.75 ha borrow pit over Portion 2 of the farm Glen Thorne No 2163, Mangaung District of the Free State.
- The existing borrow pit of the farm will be expanded and the material will be sold to the construction/building industry.
- The mining method will involve direct excavation using earthmoving equipment. When necessary, a crusher and screening plant will be utilised to size the material, after which it will be stockpiled. Stockpiled material will be loaded onto client trucks for removal from the site.
- The existing access road will be used, water will be obtained from the farm, generators / solar energy will power the crusher, and the off-site offices, stores and workshop of the farm will be used.

Topography

- Mining the proposed borrow pit into the eastern face of the hill should create an excavation with more or less two faces that will be benched as the mining depth increases. The rehabilitation proposal is therefore (upon closure) to render the borrow pit safe and leave it as a landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area will be of medium significance.

Visual Characteristics

- The viewshed analyses shows that the proposed visual impact will be of very low-medium significance as the mining area will mainly be visible from the northern to south-eastern adjacent areas. The terrain layout will screen the proposed development from most of the north-western to southern areas. As the distance between the development and the observer increases the visual impact will decrease and perception of the 2.75 ha excavation will diminish to negligible at the periphery of 10 km.

Air and Noise Quality

- The proposed activity does not require an air emissions licence.
- Emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening, and the transport of material on gravel roads. Due to the small scale and nature of the proposed project and should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance.
- The noise to be generated at the proposed borrow pit will contribute to the daily noise levels of the receiving environment through excavation, crushing/screening and transporting of material. It is expected that the mine will be visited by approximately two trucks per day. Due to the small scale of the proposed project the noise nuisance value is expected to be of low significance.
- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will be temporary and take place in an area where gravel has sporadically been removed in the past, the impact is therefore deemed compatible with the property's operations and of low significance.

Hydrology

- The proposed mining area is >100 m from the southern non-perennial (ephemeral) drainage line and mining activities is not expected to have an impact on this feature.
- The anticipated impact on the hydrology of the receiving environment should remain low as long as the mitigation and monitoring measures proposed in this document and the EMPR are implemented throughout all the project phases.

Terrestrial Biodiversity (including Fauna and Flora)

- This application entails the expansion of an existing borrow pit where ±41% of the natural vegetation has previously been disturbed/removed.
- Wild Olive trees (*Olea europaea* subsp. *africana*) occur in the area that are protected species in terms of the NFA and the Free State Nature Conservation Ordinance 8 of 1969 and therefore requires permission from DESTEA prior to disturbance and/or removal.
- The project footprint represents a very small and localised disturbance when considered in the context of the surrounding landscape, which remains largely

intact. Provided that the Applicant obtains the necessary plant removal permits from DESTEA and strictly confines vegetation clearance to the approved mining footprint, the ecological impact will be contained and of low significance.

- A site inspection confirmed that there is currently no resident fauna within the proposed mining footprint. Given the small size of the application area (2.75 ha) and the fact that the site has already been disturbed, the potential impact on local fauna is expected to be minimal. Mining activities will progress gradually, allowing any transient or mobile species sufficient time to vacate the area in response to increased human presence and noise. Furthermore, the project will not result in habitat fragmentation or the creation of barriers that could impede the movement of wildlife across the broader landscape. As such, the proposed activity is unlikely to have significant or lasting impacts on faunal populations in the area.

Archaeology, Cultural, Heritage and Palaeontology Environment

- The DFFE Screening Report characterises the archaeological and cultural heritage theme sensitivity of the study as low, while the palaeontological theme is of medium significance.
- Given the small scale of the proposed activity (2.75 ha) and the disturbed nature of the site, the likelihood of encountering significant heritage or archaeological resources is considered low. Nonetheless, as a precautionary measure, the Applicant must adhere to the chance finds protocol.
- The geological structures suggest that the rocks to be mined are the wrong kind (dolerite) to contain fossils. Since there is a small chance that fossils from the adjacent Adelaide Subgroup may be disturbed a Fossil Chance Find Protocol must be adhered to. The PIA concluded that the potential impact to fossil heritage resources is Low, and the project can therefore be authorised from a palaeontology point.

Existing Infrastructure

- No infrastructure exists in the proposed 2.75 ha footprint that could be affected by the proposed activity. The permit holder will need to implement the mitigation measures proposed in this report and the EMPR to minimise potential impacts to the nearby auction pens. The permit holder will need to maintain the internal access road for the duration of the mining operations. However, should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

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;

POSITIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

- **Effective Use of Previously Disturbed Land:** The project makes use of an existing borrow pit, minimising the need to disturb new, undisturbed land;
- **Low Environmental Footprint:** The mining footprint is small (2.75 ha) and will be confined to a defined area, reducing the overall ecological impact;
- **Support for Local Infrastructure Development:** The gravel extracted will supply the local construction industry, contributing to roads, housing, and service delivery projects.
- **Short-Term Employment Opportunities:** The project will create jobs for local community members, supporting livelihoods and skills development.
- **Stimulation of Local Economy:** Local businesses may benefit from the supply of goods and services such as transport, and equipment hire.
- **Reduced Transportation Emissions:** Proximity to Bloemfontein and surrounding development areas reduces the need for long-distance transport of gravel, lowering fuel use and emissions.
- **Rehabilitation and Land Stewardship:** The project includes a rehabilitation plan that will restore the site post-mining, potentially improving its ecological condition over time.
- **No Significant Impact on Fauna, Hydrology or Heritage Resources:** The site has no resident fauna or known heritage features and is more than 100 m from the non-perennial drainage line. Mining will proceed in a way that avoids habitat fragmentation or cultural disturbance.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE FINAL PROJECT PROPOSAL

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

Table 26: Potential negative impacts associated with the proposed activity with a Low-Medium or higher significance/risk.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of mining.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrusion associated with the excavation activities.	❖ Medium ❖ Medium ❖ Medium	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium
❖ Cumulative Impacts	❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas.	❖ High	❖ Low-Medium
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	❖ Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading. ❖ Cumulative impact on the internal access road when borrow pit is operational.	❖ Medium-High ❖ Medium	❖ Low-Medium ❖ Low-Medium

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

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

Table 27: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
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.	❖ Use the excavated area for the final depositing of unwanted material. ❖ Return unwanted rocks and coarse material removed from the excavation into the excavation. ❖ Remove coarse natural material used for the construction of ramps and dump it into the excavations. ❖ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. ❖ Do not permit any waste to be deposited into the excavations. ❖ Return the previously stored topsoil to its original depth, once unwanted rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. Only use topsoil removed during the site establishment phase to rehabilitate the disturbed surface. ❖ If required by the Regional Manager (DMPR) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. ❖ 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).	❖ Effectively rehabilitating the mined area to allow the proposed agricultural end-use.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ On completion of mining operations, scarify the surface of all plant-, and stockpile areas, if compacted due to hauling and dumping operations, to a depth of at least 200 mm and graded it to an even 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 always kept in good condition. ❖ 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, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	❖ 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 using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment. ❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the internal 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 conveyor belts. ❖ 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. ❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.	❖ Dust prevention measures are applied to minimise the impact.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ 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. ❖ Implement best practice measures to minimise potential noise impacts. ❖ Only conduct mining between 05:00 and 20:00 Monday to Saturdays. Do not mine on Sundays.	❖ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Strip and stockpile the topsoil before mining. ❖ 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 areas. ❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 2 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species.	❖ Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Vegetate the topsoil heaps to be stored longer than 3 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 on-site stockpile area to prevent erosion. ❖ Spread the available topsoil evenly 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. ❖ Plant an indigenous grass layer immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ 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.	❖ Implement a storm water management plan for the duration of the mining activities. ❖ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. ❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes.	❖ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing 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. ❖ Do not discharge dirty water emanating from the mining area into the natural environment or any watercourse. Channel all runoff into the stormwater system. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems within the mining area caused by of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.	
SITE SPECIFIC TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) Management of vegetation removal.	Permit holder to apply for a removal plant permit from DESTEA-FS. Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc. ❖ Arrange a pre-commencement walkthrough to identify and demarcate important species that would need destruction/removal permits. ❖ Species occurring on the site that may be affected by the development include *Olea europaea* subsp. *africana*. Where development will affect these species, obtain the necessary permits and relocate a significant proportion of the smaller specimens to adjacent areas where it will remain unaffected. ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated. ❖ Do not burn cleared vegetation to be retained at any time but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation.	❖ Vegetation clearing is restricted to the authorised development footprint of the mine. ❖ No protected plants removed prior to receipt of the relevant permit.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Arrange that the ECO 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 most of the vegetation clearing is taking place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow open fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) 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 free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority.	❖ Mining area is kept free of invasive plant species.
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA) Fire Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Do not permit open fires on site. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it.	❖ Mining is not the cause of uncontrolled fires.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard.	
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.	❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous. ❖ Arrange that all personnel 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. 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. ❖ Ensure all vehicles adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. ❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.	❖ Disturbance to fauna is minimised.
CULTURAL AND HERITAGE ENVIRONMENT Archaeological, heritage and palaeontological aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ 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	❖ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA. ❖ Implement the Chance Find Protocol that forms part of the desktop PIA (attached as Appendix E).	
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.	❖ If necessary, sign a memorandum of agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, sign mined/rehabilitated areas back to the landowner once the grass layer stabilised.	❖ Mining has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Management of the internal 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 internal access road to prevent erosion. ❖ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ❖ Repair rutting and erosion of the internal 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 internal 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 ACTIONS	MANAGEMENT OUTCOMES
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 off-site 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 refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Ensure mixing and/or decanting of all chemicals and hazardous substances take place on an impermeable surface that is protected from the ingress and egress of stormwater. ❖ 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 registered 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. ❖ Clean spills immediately, within two hours of occurrence 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 registered facility. File proof.	❖ Wastes are appropriately handled and safely disposed of at registered waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ 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 accessible ablution facilities. If a chemical toilet is used, anchor the toilet (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. ❖ Prevent the use of toilet facilities resulting in the pollution of any water sources or pose a health hazard. Furthermore, manage the disposal of refuse or sewage to prevent any form of secondary pollution. Immediately address any pollution issues that may arise from these activities. ❖ 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	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Ensure that workers have access to the correct PPE as required by law. ❖ Locate sanitary facilities within 100 m from any point of work.	❖ Employees work in a healthy and safe environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
Management of health and safety risks	Compliance to be monitored by the Environmental Control Officer.	❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	

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, specialist and desktop studies, and background information provided by the Applicant. 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 at least five-years 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 annual amount required to manage and rehabilitate the environment was estimated to be ±R 108 500.00. Please see the explanation as to how this amount was derived at attached as Appendix G – 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).

Gravel North (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 G 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)

Refer to the following relevant sections of this report:

- *Part A(1)(f) Need and desirability of the proposed activities;*
- *Part A(1)(h)(i) Details of the development footprint alternatives considered;*
- *Part A()(h)(vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected;*
- *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 through the life of the activity;*
- *Part A()(l)(i) Summary of the key findings of the environmental impact assessment.*

(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).

No sites or artefacts classified as national estate as referred to in section 3(2) of the NHRA, 1999 occur within the footprint of the proposed mining area.

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

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

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

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Ms Christine Fouché of Greenmined Environmental (Pty) Ltd that acts as EAP on this project has been included in *Part A(1)(a) Details of Greenmined Environmental (Pty) Ltd* as well as Appendix L 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 environmental management programme has been described and included in *Part A(1)(h) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (in respect of the final site layout plan) through the life of the activity.*

c) Composite Map

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

As mentioned under *Part A(1)(l)(ii) Final Site Map* 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)

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

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Mineral and Petroleum Resources.

- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all invader plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix H), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the borrow pit into a landscape feature. This will entail creating a series of irregular benches along the pit faces thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the borrow pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

Upon rehabilitation, the area around the excavation will be landscaped and return to agricultural use (grazing), and the planting of the indigenous grass layer (to protect the topsoil) will tie in with the proposed land use.

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

- Rehabilitation of the excavated area:

  The excavated area must serve as a final depositing area for the placement of unwanted material. Rocks and coarse material removed from the excavation must be dumped into the excavation.

  No waste may be permitted to be deposited in the excavations.

  Once the unwanted material, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

  The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

  If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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 vegetation seed mix to his or her specification.

- Rehabilitation of processing area:

  Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

  Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil 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.

Photographs of the camp and office sites, 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. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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, seeding (if required) and maintenance, and invasive plant species clearing.

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

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

Water will only be required for dust suppression at the plant and internal access road, as no washing activities are planned for the project. All water will be sourced from the farm in line with the property's current Water Use Authorisation. Approximately 20 000 litres of water will be required per day during the dry months.

iii) Has a water use licence been applied for?

This project does not trigger listed activities in terms of the NWA and therefore no water use licence application is applicable.

iv) Impacts to be mitigated in their respective phases

Table 28: Impact to be mitigated in their respective phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
❖ Demarcation of site with visible beacons.	Site Establishment phase	2.75 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 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	2.75 ha	**<u>Loss of agricultural land for duration of mining</u>** ❖ The Applicant will sign a memorandum of agreement with the landowner to compensate (if necessary) for the loss of agricultural land for the duration of the	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix H)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			mining period. If needed, mined out/rehabilitated areas could revert to grazing once the grass layer stabilised		
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	Site Establishment & Operational Phase	2.75 ha	**Visual Mitigation** ❖ The site must have a neat appearance and 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 topsoil 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 site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment- and operational phases.
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	Site Establishment phase	2.75 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. ❖ The Applicant must be committed to a conservation approach, and the actual	Natural vegetated areas must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			footprint of disturbance must be kept to a minimum. ❖ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc. ❖ A pre-commencement walkthrough must be done to identify and demarcate important species that would need destruction/removal permits. ❖ Species occurring on the site that may be affected by the development include *Olea europaea* subsp. *africana*. Where development will affect these species, the necessary permits must be obtained and a significant proportion of the smaller specimens transplanted to adjacent areas where it will remain unaffected. ❖ Bush-clearance may only commence once the plant permits were received, and the important plants were relocated. ❖ Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ The 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 most of the vegetation clearing takes place. ❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. ❖ 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 open fires must be allowed on-site. ❖ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses. ❖ A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.		
❖ Stripping and stockpiling of topsoil. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Site Establishment- and Decommissioning Phase	2.75 ha	**<u>Topsoil Management</u>** ❖ The topsoil must be stripped and stockpiled before mining. ❖ 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 must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix H)	Throughout the site establishment-, and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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 areas. ❖ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Topsoil heaps may not exceed 2 m in height and are not to be sloped more than 1:2 to avoid collapse. ❖ The temporary topsoil stockpiles must be kept free of invasive plant species. ❖ Topsoil heaps to be stored longer than a period of 3 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 on-site stockpile area to prevent erosion. ❖ The available topsoil must be evenly spread over the rehabilitated area upon closure of the site.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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. ❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established. ❖ 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.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Site Establishment, Operational, and Decommissioning Phase.	2.75 ha	**Erosion Control and Storm Water Management** ❖ A stormwater management plan must be implemented for the duration of the mining activities. ❖ 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. ❖ Vegetation clearing activities must be put on hold when heavy rains are expected. ❖ Stormwater must be diverted around the topsoil heaps 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.	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998	Throughout the site establishment-, operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ No dirty water emanating from the mining area shall be discharged into the natural environment or any watercourse. All runoff must be channelled into the stormwater system. ❖ 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 caused by the mining activities must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas. ❖ 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:		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ 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. 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. ❖ All fuels and chemicals used on site must be contained within fit for purpose containers and stored within designated storage areas. 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		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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. ❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to processing area.	Site Establishment, and Operational Phase.	2.75 ha	**Archaeological, Heritage and Palaeontological Aspects** ❖ All mining must be confined to the development footprint area. ❖ 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 must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA. ❖ The Chance Find Protocol that forms part of the desktop PIA (attached as	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
			Appendix E) must be implemented on site.		
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	Site Establishment-, Operational-, and Decommissioning Phase	2.75 ha	**Fugitive Dust Emission Mitigation Measures** ❖ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ❖ The site manager must daily assess the efficiency of all dust suppression equipment. ❖ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the internal 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.	Dust generation on site 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-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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.		
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	Site Establishment-, and Operational Phase	2.75 ha	**<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 condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). ❖ Best practice measures shall be implemented to minimize potential noise impacts.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Mining must be conducted between 05:00 and 20:00 Monday to Saturday. No mining may be allowed on Sundays.		
❖ Stripping and stockpiling of topsoil. ❖ Crushing, screening and stockpiling of material. ❖ Cumulative impacts. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Site Establishment-, Operational, and Decommissioning Phase	2.75 ha	**Management of Invasive Plant Species** ❖ An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. ❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ❖ All stockpiles 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: ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:	Invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix I)	Throughout the site establishment-, operational, and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ 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. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.		
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Site Establishment-, Operational-, and Decommissioning Phase	2.75 ha	**<u>Waste Management</u>** ❖ Regular vehicle maintenance, repairs and services may only take place at the off-site 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 in order 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	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008	Throughout the site establishment-, operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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. ❖ Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater. ❖ 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 registered 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.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Spills must be cleaned up immediately, within two hours of occurrence 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 registered facility. Proof must be filed. ❖ Suitable covered receptacles must always be 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. ❖ Accessible ablution facilities must be provided. If a chemical toilet is used it 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		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes. ❖ The use of toilet facilities must not result in the pollution of any water sources or pose a health hazard. Furthermore, the disposal of refuse or sewage must be managed to prevent any form of secondary pollution. Should any pollution issues arise from these activities, they must 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.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Excavation, loading and hauling to processing area. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Operational-, and Decommissioning Phase	2.75 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 on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001	Throughout the site establishment-,operational and decommissioning phases.
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	Site Establishment & Operational Phase	±500 m	**Internal Access Road Management** ❖ Storm water must be diverted around the internal access road to prevent erosion. ❖ Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited. ❖ Rutting and erosion of the internal 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.	The internal access road must be managed in accordance with the: ❖ MPRDA, ❖ MHSA.	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Crushing, screening and stockpiling of material.	Site establishment-, and operational phase	2.75 ha	**Fire Management** ❖ No open fires to be permitted on site. ❖ Fire prevention facilities must be present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Smoking must not be permitted in areas considered to be a fire hazard.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment-, and operational phases.
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	Site Establishment & Operational Phase	2.75 ha	**Protection of Fauna** ❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with. ❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person. ❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual. ❖ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes,	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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. ❖ No snares may be set, or nests raided for eggs or young. ❖ All vehicles must adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. ❖ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.		
❖ Sloping, landscaping and rehabilitation upon closure of the site.	Decommissioning Phase	2.75 ha	**<u>Rehabilitation/landscaping of mining area</u>** ❖ The excavated area must serve as a final depositing area for the placement of unwanted material. ❖ Unwanted rocks and coarse material removed from the excavation must be dumped into the excavation. ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. ❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium. ❖ No waste may be permitted to be deposited in the excavations.	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix H)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Once unwanted rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area. ❖ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. Only removed topsoil (during site establishment phase) may be utilised to rehabilitate the disturbed surface. ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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 vegetation seed mix to his or her specification. ❖ 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-, and stockpile 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 29: 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 approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development**.**	❖ Loss of agricultural land for duration of mining.	The impact may disrupt the agricultural operations of the farm.	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	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix H)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
				mine. The impact could be controlled through progressive rehabilitation (if needed).	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping and the mitigation measures proposed in this report.	Natural vegetated areas must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Potential change of natural runoff and drainage patterns. ❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion.	This could impact the hydrology as well as the soil structure of the receiving environment. The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Soil and stormwater management must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ NWA, 1998 ❖ Closure Plan (Appendix H)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Loss of stockpiled material due to ineffective stormwater control. ❖ Erosion of returned topsoil after rehabilitation.				
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to processing area.	❖ Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities. ❖ Potential impact on palaeontological features.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment, and Operational Phase.	Control & Stop: Implementing good management practices, as well as the chance-find protocols.	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation on site 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. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant.	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
❖ Stripping and stockpiling of topsoil. ❖ Crushing, screening and stockpiling of material. ❖ Cumulative impacts. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Infestation of the topsoil heaps and mining area with invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas. ❖ Infestation of the reinstated areas by invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	Control & Remedy: Implementation of an invasive plant species management plan.	Invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix I)
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste 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
❖ Excavation, loading and hauling to processing area.	❖ 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	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the health and safety 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

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Sloping, landscaping and rehabilitation upon closure of the site.		that may enter the mining footprint.			❖ OHSAS 18001
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	❖ Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading. ❖ Cumulative impact on the internal access road when borrow pit is operational.	Collapse of the internal road infrastructure will affect the landowner negatively. If the mine negatively affects public traffic, it may incur additional costs and complaints from the public.	Operational phase	Control & Remedy: Maintaining the internal 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: ❖ MPRDA, ❖ MHSA.
❖ Crushing, screening and stockpiling of material.	❖ Increased fire risk due to mining activities.	Uncontrolled fire may affect the neighbouring farms, cause losses and result in financial costs to the mine.	Operational phase	Control & Stop: Control activities that may have a fire risk and snuff fires that may occur.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998

f) Impact Management Actions

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

Table 30: 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.	Control through management and monitoring.	Beacons need to be in place throughout the life of the mine.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of mining.	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.	Throughout site establishment- and operational phases.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix H)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area.	❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities.	Control: Implementing proper housekeeping.	Throughout site establishment- and operational phases.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	Control: Implementing proper housekeeping and the mitigation measures proposed in this report.	Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.	Areas of conservation importance must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential change of natural runoff and drainage patterns. ❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Loss of stockpiled material due to ineffective stormwater control.	Control & Remedy: Proper housekeeping and storm water management.	Throughout site establishment-, operational- and decommissioning phases.	Soil and stormwater management must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ NWA, 1998 ❖ Closure Plan (Appendix H)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	❖ Erosion of returned topsoil after rehabilitation.			
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to processing area.	❖ Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities. ❖ Potential impact on palaeontological features.	Control & Stop: Implementing good management practices, as well as the chance-find protocols.	Throughout site establishment-, and operational phase.	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	Control: Dust suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Dust generation on site 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. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant.	Control: Noise suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
❖ Stripping and stockpiling of topsoil. ❖ Crushing, screening and stockpiling of material. ❖ Cumulative impacts.	❖ Infestation of the topsoil heaps and mining area with invader plant species. ❖ Infestation of the area with invader plant species.	Control & Remedy: Implementation of an invasive plant species management plan.	Throughout operational- and decommissioning phases.	Invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas. ❖ Infestation of the reinstated areas by invader plant species.			❖ Invader Plants Species Management Plan (Appendix I)
❖ Stripping and stockpiling of topsoil. ❖ Excavation, loading and hauling to processing area. ❖ Crushing, screening and stockpiling of material. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste left at the mining area.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Throughout operational- and decommissioning phases.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008
❖ Excavation, loading and hauling to processing area. ❖ Sloping, landscaping and rehabilitation upon closure of the site.	❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	Stop & Control: Adherance to the health and safety rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational- and decommissioning phases.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001
❖ Excavation, loading and hauling to processing area. ❖ Cumulative Impacts.	❖ Deterioration of the internal access road to the mining area as a result of transporting	Control & Remedy: Maintaining the internal access road for the duration of the operational phase, as well as	Throughout the operational phase.	The access road must be managed in accordance with the: ❖ MPRDA, ❖ MHSA.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	material from site and/or overloading. ❖ Cumulative impact on the internal access road when borrow pit is operational.	leaving it in a representative or better condition than prior to mining.		
❖ Crushing, screening and stockpiling of material.	❖ Increased fire risk due to mining activities.	Control & Stop: Control activities that may have a fire risk and snuff fires that may occur.	Throughout operational phase.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the borrow pit into a landscape feature. This will entail creating a series of irregular benches along the pit faces thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil. 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.

The Draft Basic Assessment Report including all the environmental objectives in relation to closure was available for perusal by the landowner, I&AP's and stakeholders over a 30-days commenting period. Subsequently, no comments were received on the DBAR that could be incorporated into this final BAR to be submitted to the DMPR for decision making.

(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 D.

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

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done on all areas to be rehabilitated. The rehabilitation of the mining area as indicated by the rehabilitation plan attached as Appendix D will comply with the minimum closure objectives as prescribed by DMPR and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area

- The excavated area must serve as a final depositing area for the placement of unwanted material.
- Unwanted rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once unwanted rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager (DMPR) 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 vegetation seed mix to his or her specification

Rehabilitation of the Processing Area

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil 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.
- Photographs of the camp and office sites, 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. Where applicable/possible topsoil needs to be returned to its original depth over the area.

- ❖ The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the 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, seeding (if required), maintenance, and clearing of invasive plant species.
- ❖ All equipment, plant, 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) need to be eradicated from the site.
- ❖ Final rehabilitation must be completed within a period specified by the Regional Manager (DMPR).

(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	Gravel
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	Extensive

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	**NO**
2(A)	Demolition of steel buildings and structures	-	**NO**
2(B)	Demolition of reinforced concrete buildings and structures	-	**NO**
3	Rehabilitation of access roads	-	**NO**
4(A)	Demolition and rehabilitation of electrified railway lines	-	**NO**
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	**NO**
5	Demolition of housing and facilities	-	**NO**
6	Opencast rehabilitation including final voids and ramps	**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	-	**NO**

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from the DMPR Master Rates Table for Financial Provision of 2025 was used.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	338 597	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	178 817	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	-	-

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00
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 31: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Gravel North Borrow Pit			**Location:**	Bloemfontein		
Evaluators:	C Fouché			**Date:**	14 October 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	1.00	R 0.00
2(A)	Demolition of steel buildings and structures	m²	0	323	1.00	1.00	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m²	0	476	1.00	1.00	R 0.00
3	Rehabilitation of access roads	m²	0	58	1.00	1.00	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	561	1.00	1.00	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	306	1.00	1.00	R 0.00
5	Demolition of housing and/or administration facilities	m²	0	646	1.00	1.00	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	2.4	338 597	0.04	1.00	R 32 505.31
7	Sealing of shaft, audits and inclines	m³	0	174	1.00	1.00	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	225 731	1.00	1.00	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	281 144	1.00	1.00	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	816 575	0.51	1.00	R 0.00
9	Rehabilitation of subsided areas	ha	0	189 016	1.00	1.00	R 0.00

10	General surface rehabilitation	ha	0.3	178 817	1.00	1.00	R 53 645.10
11	River diversions	ha	0	178 817	1.00	1.00	R 0.00
12	Fencing	m	0	204	1.00	1.00	R 0.00
13	Water Management	ha	0	67 992	0.17	1.00	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	0	23 797	1.00	1.00	R 0.00
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 86 150.41
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 86 150.41		**Sub Total 1**	R 90 457.93

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 5 427.48
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 9 045.79
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 104 931.20
		Vat (15%)	R 15 739.68
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 120 670.88**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of **R 120 670.88.**

(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 32: 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	Maintenance of beacons	❖ Beacons to place at the corners of the mining area.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Assessment Practitioner (EAP) during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ Ensure beacons are in place throughout the life of the mine.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.
LAND USE MANAGEMENT	**Land Use** ❖ Loss of agricultural land for duration of mining.	❖ Mining schedule.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
			Mitigation / Monitoring to be Implemented ❖ If necessary, sign a memorandum of agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, sign mined/rehabilitated areas back to the landowner once the grass layer stabilised.	
VISUAL IMPACTS	**Visual Characteristics** ❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities.	❖ Parking areas for equipment. ❖ Good housekeeping practices.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ 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, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
VEGETATION MANAGEMENT	**Terrestrial Biodiversity (including Fauna & Flora)** ❖ Impact on vegetation structure and plant species composition. ❖ Impact on protected plant species within mining footprint. ❖ Cumulative impact on overall species and ecosystem diversity.	❖ Visible beacons indicating the boundary of the mineable area. ❖ Destruction or removal permit to relocate protected species. ❖ Indigenous grass mix to seed reinstated areas upon closure.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Qualified person to identify plants of importance. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc. ❖ Arrange a pre-commencement walkthrough to identify and demarcate important species that would need destruction/removal permits. ❖ Species occurring on the site that may be affected by the development include *Olea europaea* subsp. *africana*. Where development will affect these species, obtain the necessary permits and relocate	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
			a significant proportion of the smaller specimens to adjacent areas where it will remain unaffected. ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated. ❖ Do not burn cleared vegetation to be retained at any time but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ❖ Arrange that the ECO 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 most of the vegetation clearing takes place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow open fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	
SOIL MANAGEMENT	**<u>Geology and Soil</u>** ❖ Topsoil management.	❖ Earthmoving equipment to strip,	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	❖ Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		stockpile and spread the topsoil. ❖ Stormwater control infrastructure. ❖ Designated team to control invader plant species that may germinate on the topsoil heaps. ❖ Cover crop to vegetate topsoil heaps (when needed) and reinstated soil.	❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Strip and stockpile the topsoil before mining. ❖ 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 areas. ❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 2 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 3 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 on-site stockpile area to prevent erosion.	❖ Annual compliance monitoring by independent EAP.

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
			❖ Spread the available topsoil evenly 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. ❖ Plant a grass layer (indigenous) immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
SOIL MANAGEMENT	**<u>Geology and Soil & Hydrology</u>** ❖ Potential change of natural runoff and drainage patterns. ❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas	❖ Storm water management structures such as berms to direct storm- and runoff water around work areas.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Implement a stormwater management plan for the duration of the mining activities.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
	and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Erosion of returned topsoil after rehabilitation.		❖ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. ❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes. ❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing 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. ❖ Do not discharge dirty water emanating from the mining area into the natural environment or any watercourse. Channel all runoff into the stormwater system. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems within the mining area caused by the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.	

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
			❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once	

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			vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.	
CULTURAL AND HERITAGE MANAGEMENT	**<u>Archaeology, Heritage and Palaeontological Aspects</u>** ❖ Potential impact on areas/infrastructure of heritage or cultural concern as a result of mining activities. ❖ Potential impact on palaeontological features.	❖ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</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.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
			▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA. ❖ Implement the Chance Find Protocol that forms part of the desktop PIA (attached as Appendix E).	
DUST MANAGEMENT	**<u>Air Quality</u>** ❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	❖ Dust suppression equipment such as a water car or water dispenser and sprayers on the crusher plant. ❖ Signage that clearly reduce the speed on the access roads.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
			❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the internal 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 conveyor belts. ❖ 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. ❖ 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.	
NOISE MANAGEMENT	**Noise Ambiance** ❖ Noise nuisance generated by earthmoving machinery.	❖ Signage indicating noise zones. ❖ Silencers fitted to all project related vehicles, and the use of vehicles	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit.	❖ Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant.	that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Mitigation / Monitoring to be Implemented</u> ❖ 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. ❖ Implement best practice measures to minimise potential noise impacts. ❖ Only conduct mining between 05:00 and 20:00 Monday to Saturdays. Do not mine on Sundays.	❖ Annual compliance monitoring by independent EAP.
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)	**<u>Management of Invasive Plant Species</u>** ❖ Infestation of the topsoil heaps and mining area with invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the borrow pit and surrounding areas.	❖ Designated team to cut or pull out invasive plant species that germinated on site. ❖ Herbicide application equipment.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</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. 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.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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	❖ Infestation of the reinstated areas by invader plant species.		❖ Keep all stockpiles free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. ❖ Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority.	
WASTE MANAGEMENT	<u>Waste Management</u> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages/bad waste management practices. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	❖ Oil spill kit. ❖ Drip trays. ❖ Formal waste disposal system with waste registers.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Ensure regular vehicle maintenance, repairs and services only take place at the off-site 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 in order 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, equip it with a drip tray at all times. Use drip trays during each and	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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			every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Ensure mixing and/or decanting of all chemicals and hazardous substances take place on an impermeable surface that is protected from the ingress and egress of stormwater. ❖ 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 registered 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. ❖ Clean spills immediately, within two hours of occurrence 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 registered facility. File proof. ❖ Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste. ❖ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a	

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			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 accessible ablution facilities. If a chemical toilet is used, anchor the toilet (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. ❖ Prevent the use of toilet facilities resulting in the pollution of any water sources or pose a health hazard. Furthermore, manage the disposal of refuse or sewage to prevent any form of secondary pollution. Immediately address any pollution issues that may arise from these activities. ❖ Do not discharge water containing waste into the natural environment. ❖ Implement measures to contain the waste water 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.	

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			❖ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
HEALTH AND SAFETY MANAGEMENT	**Management of Health and Safety Risks** ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Stocked first aid box. ❖ Level 1 certified first aider. ❖ All appointments in terms of the Mine Health and Safety Act, 1996.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ 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).	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.
EXISTING INFRASTRUCTURE MANAGEMENT	**Management of the Internal Access Road** ❖ Deterioration of the internal access road to the mining area as a result of transporting material from site and/or overloading. ❖ Cumulative impact on the internal access road when borrow pit is operational.	❖ Grader or similar machinery to restore the road surface when needed.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ Divert storm water around the internal access road to prevent erosion.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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			❖ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ❖ Repair rutting and erosion of the internal 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.	
TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)	<u>Fire Management</u> ❖ Increased fire due to mining activities.	❖ Fire fighting equipment. ❖ Fire fighting training for employees.	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Do not permit open fires on site. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)	**Fauna Management**	❖ Toolbox talks to educate employees how to handle fauna that enter the work areas.	Responsible Person ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. Mitigation / Monitoring to be Implemented ❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous. ❖ Arrange that all personnel 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. 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. ❖ Ensure all vehicles adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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
			❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.	
TOPOGRAPHY MANAGEMENT	**<u>Landscaping of Mining Area</u>**	❖ Earthmoving equipment to reinstate mined areas. ❖ Indigenous grass mix to be established on reinstated area. ❖ Erosion control infrastructure (when needed).	<u>Responsible Person</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented</u> ❖ Use the excavated area for the final depositing of unwanted material. ❖ Dump unwanted rocks and coarse material removed from the excavation into the excavation. ❖ Remove coarse natural material used for the construction of ramps and dump it into the excavations. ❖ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. ❖ Do not permit any waste to be deposited into the excavations. ❖ Return the previously stored topsoil to its original depth, once unwanted rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. Only use topsoil removed during	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring by independent EAP.

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 site establishment phase to rehabilitate the disturbed surface. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ❖ If required by the Regional Manager (DMPR) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. ❖ 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-, and stockpile areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	

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 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 hazardous 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.

- Do not swim in or drink from excavations.

❖ **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 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, a [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]

Christine Fouché

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

11 December 2025

Date:

UNDERTAKING

I,…..…George Frederik Griesel…….the undersigned and duly authorised thereto by……..…*Gravel North (Pty) Ltd*……..……..

Company / ~~Closed Corporation / Municipality or Council~~
(Delete whichever is not applicable)

hereby undertake to implement all the aspects contained in the BAR and EMPR / ~~EIA and EMPR~~ and accept full responsibility therefore.
(Delete whichever is not applicable)

SIGNED at …Bloemfontein…….. this ……11…… day …December……2025

GF Griesel Signed Electronically
SIGNATURE

WITNESSES:

1. Christine Foucha
Signed Electronically

2. A Olivier
Signed Electronically

Official use

APPROVAL

Approved in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended.

SIGNED at …… this …… day …… 202…….

REGIONAL MANAGER
FREE STATE

Undertaking/eg

-END-

APPENDIX A
REGULATION 2(2) MINE MAP

APPENDIX B
LOCALITY AND LAND USE MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

REHABILITATION PLAN

APPENDIX E

PALAEONTOLOGY IMPACT ASSESSMENT

APPENDIX F

SUPPORTING IMPACT ASSESSMENT

APPENDIX G

FINANCIAL AND TECHNICAL COMPETENCE REPORT

APPENDIX H

CLOSURE PLAN

APPENDIX I

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX J

PHOTOGRAPHS OF THE SITE

APPENDIX K1

COMMENTS AND RESPONSE REPORT

APPENDIX K2

PROOF OF PUBLIC PARTICIPATION

APPENDIX L

CV AND EXPERIENCE RECORD OF EAP