PROPOSED AGGREGATE MINE ON PORTION OF PORTION 7 OF THE FARM ROODEKRANS 457, ADMINISTRATIVE DISTRICT IS, MPUMALANGA PROVINCE

DRAFT BASIC ASSESSMENT REPORT

APRIL 2025

REFERENCE NUMBER: MP 30/5/1/3/2/15448 MP

PREPARED FOR:
Inzalo Crushing and Aggregates (Pty) Ltd
PO Box 26730
East Rand
Kempton Park
1462
Contact Person: Mr. Chris Weideman
Tell: 082 602 6133
E-mail: chris@beinternational.co.za

PREPARED BY:
Greenmined Environmental
Unit MO1, Office No 37
AECI Site, Baker Square
Paardevlei
De Beers Avenue
Somerset West
7130
Tel: 021 851 2673
Cell: 076 792 6327
Fax: 086 546 0579
E -mail: zoe@greenmined.co.za

EXECUTIVE SUMMARY

The Applicant, Inzalo Crushing and Aggregates (Pty) Ltd, applied for environmental authorisation (EA) and a mining permit to mine stone aggregate/ gravel on a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province.

The proposed mining footprint will be 4.9ha and will be developed over an undisturbed area of the farm. The mining method will make use of blasting to loosen the hard rock; decking will be employed as part of the blasting technique to minimize fly rock and protect the nearby graves. The material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended 2017) 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 Resources and Energy) when considering the environmental authorisation. This report, the Draft Basic Assessment Report, forms part of the departmental requirements, and presents the first report of the EIA process.

Site Alternative 1 (Preferred and Only Site Alternative):

Site Alternative 1 (S1) (Preferred Alternative and only site alternative): The Applicant, applied for a 4.9ha mining permit to mine stone aggregate / gravel a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province. The proposed mining area is over an undisturbed and inactive area of the farm that is adjacent to existing mining permit.

The proposed area was selected as the preferred site due to its proximity to the mineral reserve and its compliance with the 60-meter buffer zone recommended by the Heritage Specialist and approved by SAHRIS for the recently discovered graves, making mining operations more practical for the applicant.

An alternative layout for the quarry, has been assessed in the pre application phase – Site Alternative 2 but not found viable as explained below.

Site Alternative 2:

Site Alternative 2 (S2) was assessed for the proposed mining area but was found not practically suitable due to the 100-meter buffer as suggested by the Heritage Specialist (Please refer to Appendix M1). Site alternative 1, was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the aggregate reserve. Site Alternative 2 is not suitable for quarry development, as it does not fall within the mineral reserve location. It is believed that the impact and impracticality associated with this site alternative is of higher significance without the need or motivation justifying it.

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. The aggregate to be mined will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant could not utilise the mineral resource on this property and the construction industry of Morgenzon will not benefit from diversification of gravel sources which will escalating product costs.

Public Participation Process:

In accordance with the timeframes stipulated in the EIA Regulations, as amended, the Draft Basic Assessment Report will be compiled and distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period will be allowed for perusal of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

During the upcoming public participation process the relevant stakeholders and I&AP's will be informed of the project by means of an advertisement in the Standerton Advertiser and two on-site notices were placed at visible locations, one on the farm boundary fence at the entrance, and one at a public space in Morgenzon.

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:

Topography:

- The natural topography of the proposed excavated area can be considered to be a moderately rippling topography with many perennial pans and non-perennial streams. The average slope of the area varies between 0 and 3 %, but areas close to streams where valleys and an increase in slope forms can be observed. The elevation loss from the proposed mining footprint to the town of Morgenzon to be 119 m over 6.7 km.

Visual Characteristics:

- The viewshed analysis showed that the visual impact of the proposed aggregate mining operation will be of low significance. The small scale of the proposed operation, and the proposed mining area is approximately 6km from the nearest town and is semi-visible from the R35. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

Air and Noise Quality:

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

Geology and Soil:

- Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types. The soil varies from 0 - 300 mm in the discussed site

Hydrology:

- The proposed mining activities will be in close proximity to the Knopkieriespruit river and quarry lake. However, it should be noted that B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and *(i), altering the*

bed, banks, course, or characteristics of a watercourse. There is no other water bodies present on the mining site and the entire quarry will be rehabilitated upon closure.

Mining, Biodiversity and Groundcover:.

- According to the Terrestrial Compliance Statement (Appendix M), the proposed area exists in a predominantly modified state, having been subjected to various anthropogenic impacts such as mining, infrastructure development, pollution, unregulated livestock grazing, agriculture and edge effects associated with the nearby activities. This habitat is unlikely to fully recover without human intervention and will continue to degrade without further active rehabilitation. It is the opinion of the specialist stipulated herein that the proposed development is favourable only if all mitigation measures provided in this and other specialist reports are implemented.

Fauna

- Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. If the mining permission is approved, the farm owner will be contacted before the start of any activities to ensure the safety of the workers and the animals on the site. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low-speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

Cultural and Heritage Environment:

- According to the Heritage Impact Assessment (Appendix M1), the Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations have been provided and surveyed in order to assess the heritage significance.

- During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected.

- From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004.

- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect.

- The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in the HIA and this report /are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.

Site Specific Infrastructure:

- The following is located within proximity:

    - A batch plant and an existing quarry is located south of the site.
    - Farm house approximately 1.24km away.
    - The R35 – ± 900m towards the north-east side of the site.

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

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 721,197.78.**

LIST OF ABBREVIATIONS

BGIS	Biodiversity GIS
ABSA	Aquatic Biodiversity Specialist Assessment
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DBAR	Draft Basic Assessment Report
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DMRE	Department of Mineral and Resources and Energy
DoT	Department of Transport
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
FEL	Front-end-loader
GDP	Gross Domestic Product
GNR	Government Notice
I&AP's	Interested and Affected Parties
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)

PCB’s	Polychlorinated Biphenyl
PCO	Pest Control Officer
PAOI	Project Area of Influence
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RA	Risk Assessment
REC	Recommended Ecological Category
S1	Site Alternative 1
SAIIAE	South African Inventory of Inland Aquatic Ecosystems
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WMA	Water Management Area
WULA	Water Use Licence Application

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: Inzalo Crushing and Aggregates (Pty) Ltd
TEL NO: (+27) 011 966 4300
FAX NO: (+27) 086 512 4530
POSTAL ADDRESS: PO Box 26730, East Rand, Kempton Park, 1462
PHYSICAL ADDRESS: 93 – 94 Maple Street, Pomona, Kempton Park, 1619

FILE REFERENCE NUMBER SAMRAD: MP 30/5/1/3/2/15448 MP

IMPORTANT NOTICE

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

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

In terms of section 16(3) (b) of the EIA Regulation, 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 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 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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process-

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

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

(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment,

(d) determine the –

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives, and

(ii) degree to which these impacts-

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity;

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

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

PART A

SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) of any activities regulated in terms of the Act. Inzalo Crushing and Aggregates (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Inzalo Crushing and Aggregates (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

Prepared by:

Name of the Practitioner:	Ms Zoë Norval (Junior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	zoe@greenmined.co.za

Reviewed by:

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

ii) Expertise of the EAP

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

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

Ms Z. Norval has a Bsc degree in Environmental Science and an Honours degree in Botany. In her Honours year, she focused mainly on environmental assessments and geographic information systems.

Please find CV's of both EAP's attached in Appendix J.

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

Sonette Smit is an Environmental Consultant with 16 years' experience in the environmental sector. She specialized the last 8 years in the mining sector where she conducted the mining related report and programs. She has also been involved in a number of other environmental and water use application projects where she compiled environmental management plans, environmental impact assessments, environmental audits, IWULA's/IWWMP's.

Zoë Norval is a Junior Environmental Consultant with two years of experience in environmental services, Environmental Control and Environmental Performance Assessments / Compliance Audits, preparation of environmental related documentation, Mining Right and Permit applications and applications for Environmental Authorisations.

b) Description of the property

Farm Name:	Portion 7 of the farm Roodekrans 457
Application area (Ha)	4.9ha
Magisterial district:	Lekwa Local Municipality
Distance and direction from nearest town	The site is situated approximately 1.7 km West of the R35 turnoff 5 km North West of Morgenzon on the Hendrikspan secondary road.
21 digit Surveyor General Code for each farm portion	T0IS00000000045700007

c) Locality map

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

Figure 1:Satellite view of the proposed mining permit area (blue polygon) of Inzalo Crushing and Aggregates (Pty) Ltd (image obtained from Google Earth).

d) Description of the scope of the proposed overall activity

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

Inzalo Crushing and Aggregates (Pty) Ltd intends to apply for a mining permit to mine 4.9ha of a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province for the mining of aggregates/stone gravel. The proposed mining site will be an extension of the existing quarry pit previously disturbed by aggregate mining activities. The mining methods will make use of blasting by means of explosives in order to loosen the hard rock; the material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. The aggregate will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

The proposed mining area is approximately 4.9ha in extent and the applicant intents to win material from the area for at least three years with a possibility of a two year extension. The aggregate / stone gravel to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry will therefore contribute to the upgrading/maintenance of road infrastructure in and around the Morgenzon and Bethal area. Inzalo Crushing and Aggregates (Pty) Ltd will make use of temporary infrastructure during the mining operations.

See attached as Appendix B a copy of the plan and schematic indication of the proposed processing activities.

(i) Listed and specified 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.	4.9ha	N/A	Not listed
Site establishment and infrastructure development.	±0.9 ha	X	GNR 983 Listing Notice 1 Activity 21:
Stripping and stockpiling of topsoil and/or overburden.	±4ha	X	
Drilling and blasting.	±4ha	X	
Excavation, loading and hauling to processing area.	±4ha	X	
Processing, stockpiling, and transporting of material.	±0.9 ha	X	
Sloping and landscaping upon closure of the mining area.	4.9ha	X	

NAME OF ACTIVITY	Aerial extent of the activity	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
Replacing the topsoil and vegetating the disturbed area.	4.9ha	X	
GNR 983 Listing Notice 1 Activity 21: *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.*			

(ii) Description of the activities to by undertaken

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

Inzalo Crushing and Aggregates (Pty) Ltd intends to apply for a mining permit to mine 4.9ha of a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province for the mining of aggregates/stone gravel. The mining procedure will entail Strip mining.

Table 1:GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	26°40'58,48"	29°34'48,745"	-26,682911°	29,580207°
B	26°41'3,588"	29°34'51,535"	-26,68433°	29,580982°
C	26°41'3,588"	29°34'51,535"	-26,683712°	29,580775°
D	26°41'2,256"	29°34'50,473"	-26,68381°	29,580698°
E	26°41'2,8"	29°34'50,52"	-26,68396°	29,580687°
F	26°41'3,379"	29°34'50,758"	-26,684272°	29,580766°
G	26°41'3,901"	29°34'51,251"	-26,684417°	29,580903°
H	26°41'4,175"	29°34'51,895"	-26,684493°	29,581082°
I	26°41'4,351"	29°34'52,554"	-26,684542°	29,581265°
J	26°41'4,29"	29°34'53,054"	-26,684481°	29,581557°
K	26°41'4,132"	29°34'53,605"	-26,684481°	29,581557°
L	26°41'4,79"	29°34'56,23"	-26,684664°	29,582286°
M	26°41'8,052"	29°34'56,046"	-26,68557°	29,582235°
N	26°41'12,815"	29°34'57,554"	-26,686893°	29,582654°
O	26°41'14,197"	29°34'55,97"	-26,687277°	29,582214°
P	26°41'12,3"	29°34'55,258"	-26,68675°	29,582016°
Q	26°41'9,985"	29°34'52,392"	-26,686107°	29,58122°

R	26°41'8,498"	29°34'53,382"	-26,685694°	29,581495°
S	26°41'3,466"	29°34'46,304"	-26,684296°	29,579529°

Project Proposal:

Considering the above, the Applicant identified the need to apply for environmental authorisation (EA) and a mining permit (MP) on the area as mentioned above. The hard rock will be loosened by blasting as part of the mining process; the material will then be loaded and transported to the crushing plant and sorted into stockpiles of different sizes. The aggregate will be stacked up until tipper trucks are brought in to remove it from the site. All mining related activities will be contained within the limits of the authorized mining permit.

The applicant, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The aggregate to be removed from the quarry will be used for construction industry in the vicinity. The proposed quarry will contribute to the upgrading / maintenance of road infrastructure, renewable energy projects and building contracts in and around the area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The proposed mining activities will entail the following:

- The 4.9ha proposed mining location is located over an undeveloped, inactive portion of the property.
- The mining method will make use of blasting to loosen the hard rock; decking will be employed as part of the blasting technique to minimize fly rock and protect the nearby graves. The material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the

approved mining permit boundaries. The aggregate will be stockpiled and transported to clients via trucks and trailers.

- All activities will be contained within the boundaries of the site.

Should the MP be issued, and the mining of gravel 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 permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment.

(2) Operational phase that will entail the mining of aggregate from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting to loosen the hard rock; decking will be employed as part of the blasting technique to minimize fly rock and protect the nearby graves. The material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles before it is sold and transported from site to clients.

(3) Decommissioning phase which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding (only if needed) of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE 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).

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), and weed / alien clearing.

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

- Waste material of any description, including receptacles, scrap, rubble, and tyres, will be removed entirely from the mining area and disposed of at a

recognised landfill facility. It will not be permitted to be buried or burned on the site.

- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species categorised as weeds according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) [NEMBA] Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.

- Final rehabilitation shall be completed within a period specified by the Regional Manager. Once the mining area was rehabilitated, the mining permit holder will submit a closure application to the DMRE 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).

PHASES OF THE PROJECT

1. *Site Establishment Phase:*

   Site establishment entails the demarcation of the mining boundaries, clearance of vegetation and stripping and stockpiling of topsoil (if needed) from the mining area, and the introduction of the mining equipment as detailed below:

   - **Demarcation of Mining Boundaries:**

     Pursuant to receipt of an Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

   - **Access Road:**
     The farm Roodekranz 457 can be accessed off the public road R35 approximately 6.6 km North of Morgenzon in the Mpumalanga Province. The quarry will be access by the existing access road as this in is only an extension of an existing quarry and therefore no new access roads will be required.
     The section of the R406 from the R35 turn off to the entrance of the mining area should be maintained in order to prevent erosion and

deterioration of the access road caused the high amount of vehicular movement of trucks currently collecting material.

In the event that new roads need to be constructed, these roads will be selected as far as possible to avoid watercourses and steep gradients. Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

Any new roads to be established to the site will be below the threshold of the EIA regulations of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended June 2014.

The existing farm road will be used as access road to the site. Should a portion of the access road need to be newly constructed in future the following will be adhered to:

The route will be selected that a minimum number of bushes or trees are felled, and existing fence lines will be followed as far as possible.

Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

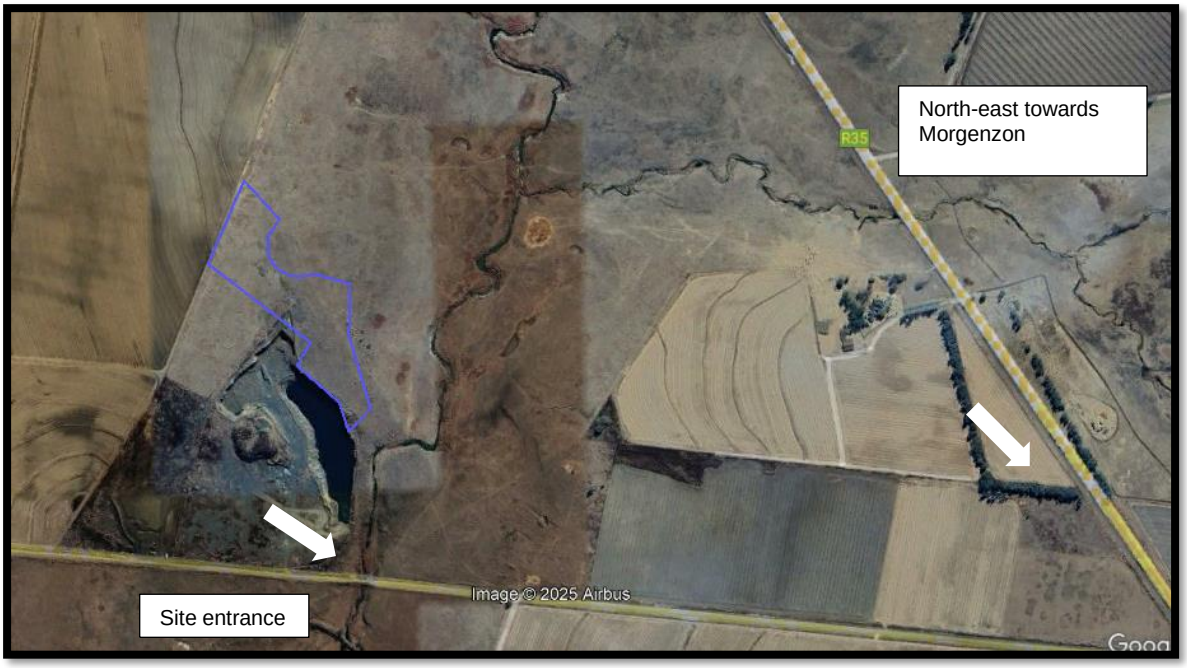


Figure 2: Satellite view showing the site entrance to the proposed mining area (blue polygon) and the direction towards the nearest town.

- **Clearing of Vegetation:**

According to Mucina and Rutherford (2012) the mining permit area extends over a vegetation type known as the Soweto Highveld Grassland and is classified as Endangered. According to the 2014 Mpumalanga Biodiversity Sector Plan (MBSP) – the area is classified as Critical Biodiversity Area (CBA). However, ground truthing done by the specialist has concluded that area has been heavily disturbed by previous mining activities. To mitigate this, the clearing of vegetation must be contained to the approved mining footprint, and no vegetation/bush clearance, outside the approved area, may be allowed. Please see mitigation measures as described in Appendix M.

- **Topsoil Stripping:**

  Upon removal of the vegetation, the topsoil will be stripped of the areas to be affected by the proposed activities. Topsoil stripping will be restricted to the areas needed during the operational phase of the activity. The complete A-horizon (topsoil – the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil will be stockpiled in the form of a berm alongside the boundary of the mining area where it cannot be driven over, contaminated, flooded, or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and must be planted with an indigenous grass seed mix if it does not naturally vegetate within 6 months. The grass will bind the soil and thus serve to control both wind and water erosion of the stockpiles, as well as assist in keeping the soil viable for rehabilitation purposes.

- **Introduction of Mining Machinery:**

  The mining site will contain the following:

  - Excavating equipment;
  - Earth moving equipment;
  - Mobile crushing and screening plants;
  - Site vehicles;

The Applicant will not construct/establish any permanent infrastructure (such as a workshop or storage facilities) within the permitted mining area.

2. *Operational Phase:*

During the operation phase, blasting will be done to loosen the quarry's hard rock, after which it will be mechanically retrieved using drilling, digging, and earthmoving equipment. After being transported to the crushing and screening facility, the rock will be reduced to different sizes of aggregate. The screened material will be transported to stockpiles of varied sizes. Transportation of the final product will be from the stockpile area to the end point by means of trucks. The contractor will make use of permanent employees, and any additional employees required will be sourced from the surrounding area. All activities will be contained within the boundaries of the site.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Drilling and blasting
- Excavating;
- Crushing and screening;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

- <u>Water Use:</u>

  Dust generated on the access road will as far as possible be managed through alternative dust suppression methods to prevent the use of water for dust suppression.

  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.
  - When the truck leaves the mining area it will be covered (e.g. shade cloth material) to minimise windblown dust from the loads;

- The Applicant will attempt to lessen denuded areas (dust source) to the absolute minimum.

Under very windy/dusty conditions the permit holder might have to substitute the above-mentioned dust suppression methods with the spraying of water, in which case water will be bought and transported to the mining area in a water truck that will moisten the problem area. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage. Should additional water be required at any stage of the process, water will be bought and transported to site.

- Electricity:

The proposed project will make use of generators for power supply.

- Waste Handling:

Due to the nature of the project, the small scale of the proposed operation, and the fact that no permanent infrastructure will be established, very little to no general waste will be generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be removed from site and incorporated in an approved waste disposal system of the contractor.

Likewise, very little (if any) generation of hazardous waste is expected. Hazardous waste 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 contaminated soil will be contained in designated hazardous waste containers to be removed daily to the hazardous waste storage area at a designated off-site workshop where it will be disposed of as part of the hazardous waste by a registered hazardous waste handling contractor.

The chemical toilet, to be placed on site, will be serviced by a registered contractor.

- Servicing and Maintenance:

A temporary workshop and wash bay will be established on site where minor servicing and emergency repairs of mining related equipment/machinery will take place. The wash bay will have an impermeable floor and drain into an oil sump that will be serviced by a qualified contractor. No wash water will be allowed to drain into the surrounding environment. Bulk storage of fuel (<60 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet specifications in temporary containers/secured cages.

Regular vehicle maintenance, repairs and services may only take place in a demarcated service area. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.

Decommissioning Phase:

The decommissioning phase will entail the reinstatement of the proposed mining footprint (4.9ha). The closure objective is for the mining area to be rendered safe and the mining area to return to agricultural use. No buildings/infrastructure, need to be demolished and the access road will remain intact.

The applicant will comply with the minimum closure objectives as prescribed by DMRE and detailed 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 quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate grass mix if

vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix L for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry 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.

The future land use of the proposed area will revert back to its previous state. The current state of the area is undisturbed and inactive area. Upon replacement of the topsoil, the area around the excavation will once again return to the previous state, and the planting of the cover crop (to protect the topsoil) will tie in with the rehabilitation.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

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

  The excavated area must serve as a final depositing area for the placement of overburden. 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 overburden, 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 plant, office, and service areas:

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.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the plant, office and service areas, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE 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 DMRE 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 Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ℑ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-WC. Ref No: MP 30/5/1/3/2/15448 MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) • GNR 327 Listing Notice 1 Activity 21	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-WC. Ref No: MP 30/5/1/3/2/15448 MP
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 – *Dust Handling*.	The mitigation measures proposed for the site take into account the NEM:AQA, 2004 and the National Dust Control Regulations.

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

f) Need and desirability of the proposed activities.

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

The applicant Inzalo Crushing and Aggregates (Pty) Ltd is well aware of the demand of aggregates for road upgrades and the construction industry that is used in the Bethal and Morgenzon area.

In the light of the above the applicant has applied for a mining Permit to commercially source the available aggregates on a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province. The mining of aggregates from the property will also enable the landowner to diversify the income generating activities on the property, extending it from agriculture to include small scale mining.

As the current and any additional workforce is sourced from the local community, the project has a positive impact on the socio-economic structure of the area. This activity also has a positive impact on the regional socio-economic structure through its support of the development industry, profit generation, employment opportunities and the skills development of its employees.

Table 2: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
<u>How will this development impact on the ecological integrity of the area?</u>		
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?	According to the Terrestrial Compliance Statement (Appendix M), the proposed area exists in a predominantly modified state, having been subjected to various anthropogenic impacts such as mining, infrastructure development, pollution, unregulated livestock grazing, agriculture and edge effects associated with the nearby activities. This habitat is unlikely to fully recover without human intervention and will continue to degrade without further active rehabilitation. It is the opinion of the specialist stipulated herein that the proposed development is favourable only if all mitigation measures provided in this and other specialist reports are implemented. Also refer to: ⁜ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation; ⁜ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity; ⁜ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas; ⁜ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ⁜ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas and Groundcover, ⁜ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.	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 this development pollute and/or degrade the biophysical environment?	Given the nature of the proposed mining permit activity, the removal of existing vegetation within the designated footprint is unavoidable to access the underlying aggregate and gravel resources. Partial restoration of the vegetation cover is anticipated during the rehabilitation phase. Based on this context, the terrestrial biodiversity assessment concludes that the proposed quarry is expected to have a limited impact on surrounding vegetation and fauna, provided that all recommended mitigation measures are properly implemented. Consequently, if the permit holder complies with the prescribed mitigation strategies outlined in this report, the overall impact on the biophysical environment is considered to be within acceptable limits. Also refer to: ᔑ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.	Highly Desirable
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 office, workshop and processing area. All general waste will be contained in sealable refuse bins that will be placed at the office area until it is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets and be responsible for the removal of the sewerage to a registered sewerage handling facility. 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 in a bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned or treated on the 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**
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	According to the Heritage Impact Assessment (Appendix M1), the Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations have been provided and surveyed in order to assess the heritage significance. During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected. From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004. According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect. The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in the HIA and this report /are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.	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**
How will this development use and/or impact on non-renewable natural resources?	The proposed quarry is an aggregate resource of at least 4 million tons that shows a potential life of mine of would still be available for many years. In light of this, it is believed that the mining permit holder could responsibly consume the aggregate resource on the property over a period of 5 years.	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 approximately 30 000 litres of water will be needed per day during the dry months to manage dust emissions from the proposed operation. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. Presently, it is proposed that water accumulated in the adjacent quarry pit will be used for dust suppression. The contractor will be encouraged to consider the use of non-potable water for mining related activities. The use of solar power should also be considered as an alternative power source to the offices and/or workshops.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that ecological impacts should be fully mitigated. Refer to the following sections: ⋉ Part A(1)(d)(ii) Description of the activities to be undertaken; ⋉ Part A(1)(h)(i) Details of the development footprint alternatives considered; ⋉ Part A(1)(h)(iv) The environmental attributes associated with the alternatives; ⋉ Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity; ⋉ Part A(1)(l) Environmental impact statement.	Desirable

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?	Should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	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.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will it impact negatively on the socio-economic status of the area.	Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		

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**
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 Heading 2(h)(iv)(1)(a) 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?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities. • The people/businesses of Morgenzon will benefit from diversification of aggregate sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will it impact negatively on the socio-economic status of the area.	Highly Desirable

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**
Will the development result in equitable impact distribution, in the short- and long-term?	The mining activities proposes to operate in a socially and economically sustainable manner during both the short- and long term.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	As mentioned above the proposed area is over an undisturbed area of the farm . The position of the proposed site is ideal due to it being superimposed over the aggregate ridge present on the face of the hill. This Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the surrounding area in general is deemed to be of low significance thereby keeping the impact on the receiving environment as low as possible.	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.	Highly Desirable
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Heading *3(j)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question	If approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity.	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**
and how the development's socio-economic impacts will result in ecological impacts?		
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 is adhered to, the project entails the mining of a 4.9ha area. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the employment, and support of the local economy. Please refer to: • Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	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 mining site will (if approved) 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

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**
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;	
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.	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • The people/businesses of Morgenzon will benefit from diversification of aggregate sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mining activities will be in accordance with the specifications of the Mine Health and Safety Act, 1996. Site management will have daily discussions with the drill rig operators regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings.	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**
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • The people/businesses of Morgenzon will benefit from diversification of an aggregate sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	Should the mining permit be approved the activities will operate under a valid mining permit issued by the DMRE. Compliance of the site with the approved EMPR, EA- and WUL conditions will be reported on as per departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable
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 needed) by the proposed activities. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the residual impact on the environment is of low significance.	Highly Desirable
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity.	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**
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.		
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)(g)(i) Details of the development footprint alternatives considered; - Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Socio-Economic Environment; - Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
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.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not cause a cumulative socio-economic impact should the mining permit application be approved, seeing that there are no other rated activities in the vicinity.	Highly Desirable

g) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved 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.

The open cast mining of the quarry has been identified as the most cost-effective method to produce the desired aggregate. The proposed method will not produce any residual waste that has to be disposed of. Due to the remote location of the quarry the potential impacts on the surrounding environment, associated with open cast mining, is deemed to be of low significance. It is proposed that all mining related infrastructure will be contained within the boundary of the mining area. As no permanent infrastructure will be established on site the layout/position of the temporary infrastructure will be determined by the mining progress and available space within the 4.9ha mining area.

The proposed mining area (site alternative 1) is approximately 4.9ha in extent and the applicant intents to win material from the area for at least three years with a possibility of a two year extension. The aggregate / stone gravel to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry (site alternative 1) will therefore contribute to the upgrading/maintenance of road infrastructure in and around the Bethal and Morgenzon area.

The applicant will:

- Drill and blast the hard rock after the topsoil of the area has been stripped and stockpiled,
- Load and haul the material out of the excavation to the crushing and screening plants,
- Crush and screen the recovered material at the crusher plant in order to reduce it to various size aggregate,
- Stockpile the aggregate at a stockpile area until it is collected by clients.

The proposed activity will not require any beneficiation or processing of the aggregate/gravel prior to it being sold. A site office, workshop and service area, weigh bridge and ablution facilities will be established at the site. A generator will be used to power the infrastructure on site. Process water will be obtained from the existing quarry pit (the applicant has got a Water Use license for this use). The water will

mainly be used for dust suppression purposes on the crusher plant, roads and mining area. The mining activities will not require any process water. Potable water will daily be transported to site. The solid waste produced during the operational phase of the project will be transported from site to the nearest landfill site.

Trucks leaving the site will use the existing gravel farm road that connects to the Hendrikspan dirt road from where the trucks will either turn left on to the R35 tar road towards Bethal or right towards the Morgenzon.

The mining activities will consist of the following:

- Stripping and stockpiling of topsoil,
- Blasting,
- Excavating,
- Crushing,
- Stockpiling and transporting,
- Sloping and landscaping,
- Replacing the topsoil and vegetating the disturbed area.

The mining site will contain the following:

- Drilling Equipment
- Excavating Equipment
- Earth Moving Equipment
- Crushing and Screening infrastructure
- Site Office
- Site vehicles
- Parking area for visitors and site vehicles
- Vehicle service area with wash bay
- Site Storage Area
- Bunded diesel and oil storage facilities
- Generator on bunded area
- Ablution Facilities
- Weigh Bridge
- Demarcated general and hazardous waste area

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.

Inzalo Crushing and Aggregates (Pty) Ltd identified the need for gravel/aggregate in the area due to an increase in building, construction and road maintenance projects. As mentioned earlier the quarry pit on the property of the applicant has previously been used for mining purposes. In light of this, the applicant identified the proposed (site alternative 1) area as preferred and only viable site alternative. The establishment of a quarry (site alternative 2) would place the pit outside the 100-meter buffer zone of the designated graves, making mining impractical as it would fall outside the mineral reserve.

Various project alternatives were considered during the planning phase of the project. These included the following:

1. Site Alternative 1 (preferred site) entails the mining of a 4.9ha area within the boundaries of the following GPS Coordinates:

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	26°40'58,48"	29°34'48,745"	-26,682911°	29,580207°
B	26°41'3,588"	29°34'51,535"	-26,68433°	29,580982°
C	26°41'3,588"	29°34'51,535"	-26,683712°	29,580775°
D	26°41'2,256"	29°34'50,473"	-26,68381°	29,580698°
E	26°41'2,8"	29°34'50,52"	-26,68396°	29,580687°
F	26°41'3,379"	29°34'50,758"	-26,684272°	29,580766°
G	26°41'3,901"	29°34'51,251"	-26,684417°	29,580903°
H	26°41'4,175"	29°34'51,895"	-26,684493°	29,581082°

I	26°41'4,351"	29°34'52,554"	-26,684542°	29,581265°
J	26°41'4,29"	29°34'53,054"	-26,684481°	29,581557°
K	26°41'4,132"	29°34'53,605"	-26,684481°	29,581557°
L	26°41'4,79"	29°34'56,23"	-26,684664°	29,582286°
M	26°41'8,052"	29°34'56,046"	-26,68557°	29,582235°
N	26°41'12,815"	29°34'57,554"	-26,686893°	29,582654°
O	26°41'14,197"	29°34'55,97"	-26,687277°	29,582214°
P	26°41'12,3"	29°34'55,258"	-26,68675°	29,582016°
Q	26°41'9,985"	29°34'52,392"	-26,686107°	29,58122°
R	26°41'8,498"	29°34'53,382"	-26,685694°	29,581495°
S	26°41'3,466"	29°34'46,304"	-26,684296°	29,579529°

Figure 3:Satellite view indicating the position of Site Alternative 1 (blue polygon) in relation to the graves and 60m buffer (white polygon).

Site Alternative 1 was identified during the inspection phase, and was selected as the preferred alternative due to the following (positive) reasons:

- The desired aggregate mineral can be found at this site.

- The proposed area falls outside the 60m buffer zone (approved by SAHRA) minimizing any disturbance to the existing graves.
- B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and (i), *altering the bed, banks, course, or characteristics of a watercourse*.

Negative aspects associated with Site alternative 1 entails:

- The mining activities will be in close proximity to the Knopkieriespruit river and quarry lake.
- The processing area will be lost to agricultural production for the duration of the mining permit.
- The applicant and the landowner have a land use agreement. Upon laps of the mining permit, the area will revert to agricultural use.

Should the mitigation measures and monitoring programs 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.

Figure 4: Satellite view showing the position of Site Alternative 2 in relation to Site Alternative 1, along with the graves, a 60-meter buffer (white polygon), and a 100-meter buffer (yellow polygon).

Site Alternative 2 was identified during the assessment phase of the environmental impact assessment and was selected as an alternative to the preferred site (site alternative 1) due to the following (negative) reasons:

- According to the Heritage Impact Assessment, a 100-meter buffer around the graves was recommended. However, this area falls outside the mineral reserve, making mining impractical. The Heritage Specialist suggested a reduced buffer of 40 meters or 20 meters, that was subjected to SAHRA's approval to which they only approved a buffer zone of 60 meters.
- As the site alternative 2 is in a new area, vegetation clearance and topsoil removal need to be done in the riparian zone if pursued.
- A new access road will have to be commissioned due to the position of the existing quarry.

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the

preferred and only site alternative due to the distance from the graves and the presence of the aggregate reserve.

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. The aggregate to be mined from the proposed quarry will be sold to the building, road rehabilitation/maintenance and associated construction industry. If, however, the no-go alternative is implemented:

- the mineral resource on this land cannot be used by the applicant.
- the proposed employment opportunities will be lost;
- the diversification of aggregate sources, which would result in rising product costs, will not be advantageous to the residents or enterprises in Morgenzon.

(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 attend public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land).

During the upcoming public participation process the relevant stakeholders and I&AP's will be informed of the project by means of an advertisement in the Standerton Advertiser and two on-site notices were placed at visible locations, one on the farm boundary fence at the entrance, and one at a public space in Morgenzon.

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

Table 3: List of the I&AP's and stakeholders that were notified of the proposed aggregate mine project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Surrounding landowners & lawful occupiers: • Roodekrans 457 Portion 7 – JP Swart Familie Trust (Landowner) • Roodekrans 457 Portion 6, 21 & 22– JP Swart Familie Trust • Roodekrans 457 Portion 8, 14 & 24 (Remaining Extent) - Hendrik Petrus Bekker • Roodekrans 457 Portion 23 - Roodekrans Familie Trust	• Gert Sibande District Municipality • Lekwa Local Municipality • Department of Social Development • Department of Social Development Mpumalanga Province • Department of Economic Development, Environmental Affairs and Tourism • Department of Labour • Department Of Rural Development and Agrarian Reform, Mpumalanga Province • Department Of Rural Development and Land Reform • Department of Transport • Department of Water and Sanitation

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
	• Department of Public Works • ESKOM • South African Heritage Resources Agency • South African National Roads Agency
I&AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD	
• Any comments received on the draft BAR will be incorporated into the final BAR.	

An advertisement will be placed in the Standerton Advertiser and two on-site notices were placed at visible locations, one on the farm boundary fence at the entrance, and one at the public library in Morgenzon

In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report will be compiled and distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period will be allowed for perusal of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

(iii) Summary of issues raised by I&AP's

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

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					
Roodekrans 457 Portion 7 – JP Swart Familie Trust (Landowner)		There is an existing site usage agreement between the landowner and the contractor.			
Lawful occupier/s of the land					
N/A					
Landowners or lawful occupiers on adjacent properties	**X**				
Roodekrans 457 Portion 6, 21 & 22– JP Swart Familie Trust		Any comments received on the draft BAR will be incorporated into the final BAR.			
Roodekrans 457 Portion 8, 14 & 24 (Remaining Extent) - Hendrik Petrus Bekker		Any comments received on the draft BAR will be incorporated into the final BAR.			
Roodekrans 457 Portion 23 - Roodekrans Familie Trust		Any comments received on the draft BAR will be incorporated into the final BAR.			
Municipal councillor					
Mr MJ Lamola		Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Municipality					
Lekwa Local Municipality		Any comments received on the draft BAR will be incorporated into the final BAR.			
Gert Sibande District Municipality		Any comments received on the draft BAR will be incorporated into the final BAR.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Transport and Public Works		Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Public Works and Infrastructure;		Any comments received on the draft BAR will be incorporated into the final BAR.			
Eskom		Any comments received on the draft BAR will be incorporated into the final BAR.			
Communities	N/A	No community were identified within the study area.			
Dept. Land Affairs					

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.
Department of Agriculture;		Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Agriculture Forestry and Fisheries;		Any comments received on the draft BAR will be incorporated into the final BAR.			
Traditional Leaders	N/A				
Dept. Environmental Affairs					
Department of Environmental Affairs and Development Planning		Any comments received on the draft BAR will be incorporated into the final BAR.			
Other Competent Authorities affected					
Department of Labour - Mpumalanga Provincial Office;		Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Public Works and Infrastructure		Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Rural Development and Land Reform – Mpumalanga District Offices		Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Water and Sanitation		Any comments received on the draft BAR will be incorporated into the final BAR.			
South African Heritage Resources Agency		Any comments received on the draft BAR will be incorporated into the final BAR.			

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

(iv) The Environmental attributes associated with the development footprint alternatives. **(**The environmental attributed 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).

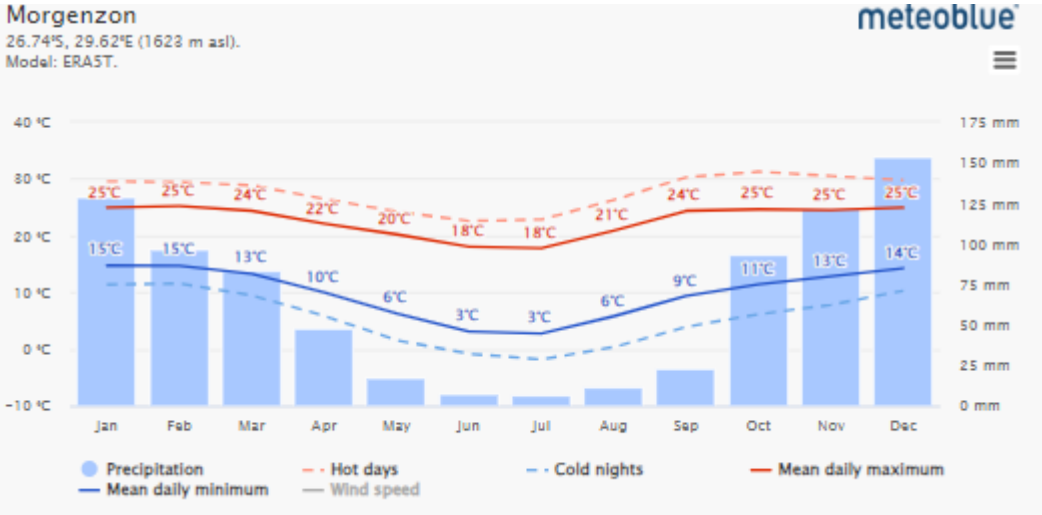
This section describes the biophysical, cultural and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed processing activity.

A detailed site selection and sensitivity analysis were conducted for the proposed processing project and it was indicated that the proposed site (Site alternative 1) is in a preferred and acceptable development area. A comprehensive Environmental Management Programme (EMPr) has been developed and need to be implemented to mitigate and minimise the impacts during the site establishment/construction and operational phases.

PHYSICAL ENVIRONMENT

CLIMATE

According to SA Explorer Morgenzon normally receives about 560mm of rain per year, with most rainfall occurring during summer. The chart below shows the average rainfall values for Morgenzon per month. It receives the lowest rainfall (0mm) in June and the highest (153mm) in December. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Morgenzon range from 18°C in June to 25.2°C in January. The region is the coldest during June when the mercury drops to 0°C on average during the night. Consult the chart below for an indication of the monthly variation of average minimum daily temperatures.



AIR AND NOISE QUALITY

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. Factors contributing to air pollution are the burning of veld, coal power stations, mines and agriculture in the area. Given the surrounding extent of mostly covered areas, no extreme dust generation under windy conditions is experienced.

The surrounding areas are characterised by an agricultural setting in which heavy equipment, e.g. tractors and trucks operate and the noise from the gravel mine operation will be very similar during the day with periods of activity when the decibel will increase. Daily operations are not dissimilar to that of surrounding activity, however after hour operations may become noticeable.

The quarry is located within considerable distance from the majority of surrounding landowners, with the exception of one, Mr. Ackerman.

The impact that dust will have on the site is of moderate significance. The negative impacts experienced caused by dust can be mitigated by means of dust suppression via water cart. The dust is however localised on site through the processing of water across the operation chain (such as blasting, crushing, screening, etc.). Dust monitors will be installed around the site area in order to monitor the dust and provide data as to the intensity of airborne dust.

Noise:

There are no influences on noise levels from industrial or other mining operation in the area. The noise generated from the mining machinery will be similar to noise generated along the R35 by public vehicles except after hours when the absence of surrounding activity and agricultural operations may exacerbate the presence of noise. Blasting noise will be instantaneous and of short duration. This will only occur once every two to three weeks. Loading and transportation of the material will generate noise daily. The significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures should be implemented to ensure employees conduct them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

TOPOGRAPHY

The area of Morgenzon is considered to be a moderately rippling topography with many perennial pans and non-perennial streams. The average slope of the area varies between 0 and 3 %, but areas close to streams where valleys and an increase in slope forms can be observed.

Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types. The soil varies from 0 - 300 mm in the discussed site. The elevation loss from the proposed mining footprint to the town of Morgenzon to be 119 m over 6.7 km.

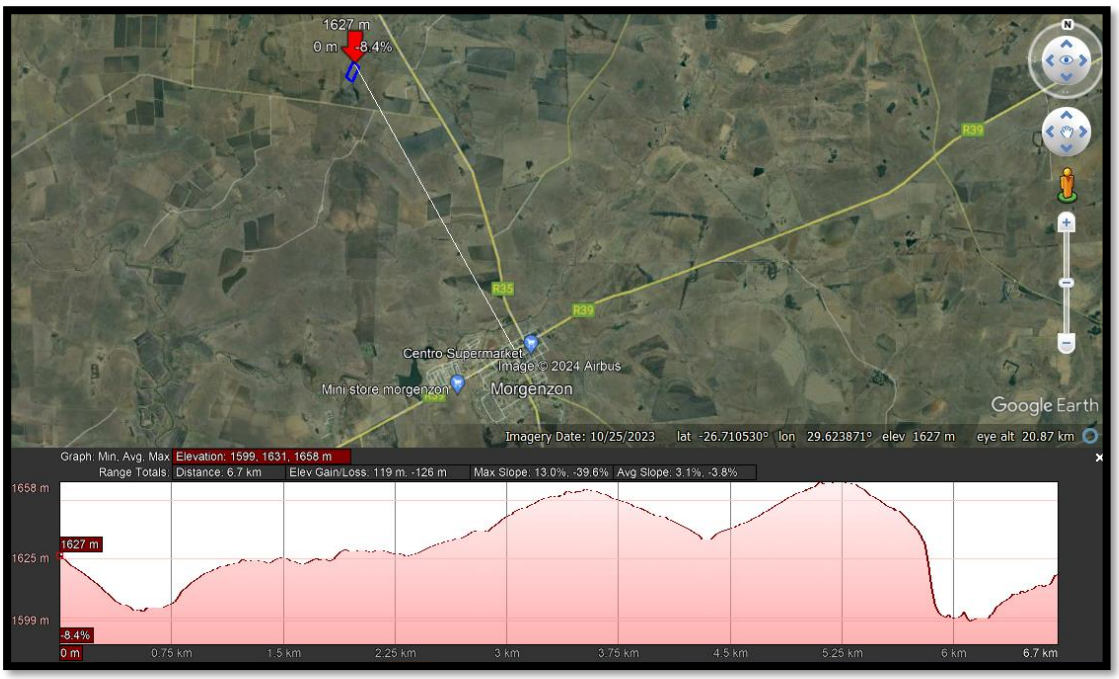


Figure 5:Elevation profile showing the topography between the proposed mining footprint (white line) and the town of Morgenzon (Image obtained from Google Earth).

HYDROLOGY

The proposed mining area falls within the C11H quaternary catchment which falls within the upper reaches of the Upstream Vaal Dam Sub Water Management Area that is situated in the Upper Vaal Water Management Area which is managed by the Department of Water and Sanitation (DWS).

Table 4: Aquatic characteristics of the greater study area

Water Management Area	Upper Vaal
Sub Water Management Area	Upstream Vaal Dam
Quaternary cathment	C11H
FEPA Status	No fresh water priority area status

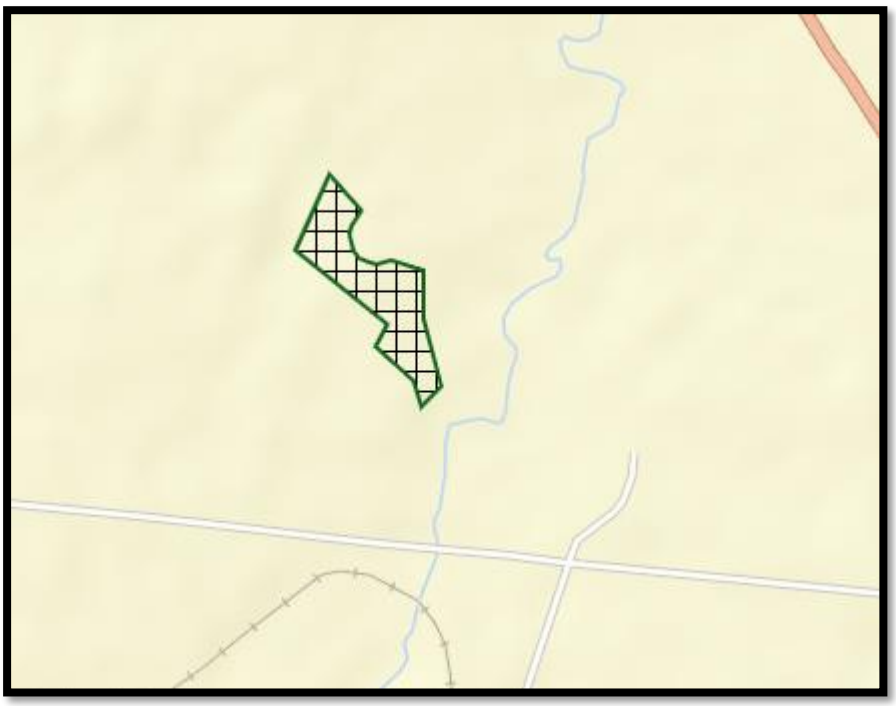


Figure 6: Map showing the proposed mining footprint (green polygon) and the nearby river (Image obtained from BGIS map viewer)

Ground water on the farm was not analysed to determine the water quality in the area, because of the impact that the gravel mine will have on ground water quality. Groundwater is not extensively been used in the area and is primarily used for stock watering and domestic purposes at farmhouses. The ground water quality is in general good and complies with required water quality guidelines for domestic use.

BIOLOGICAL ENVIRONMENT

MINING AND BIODIVERSITY

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

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

When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, the area falls over an area of low risk for mining therefore the risk is seen to be insignificant. The Mining and Biodiversity Guideline's describes areas of high-risk biodiversity importance as: "*Critically endangered and endangered ecosystems."*

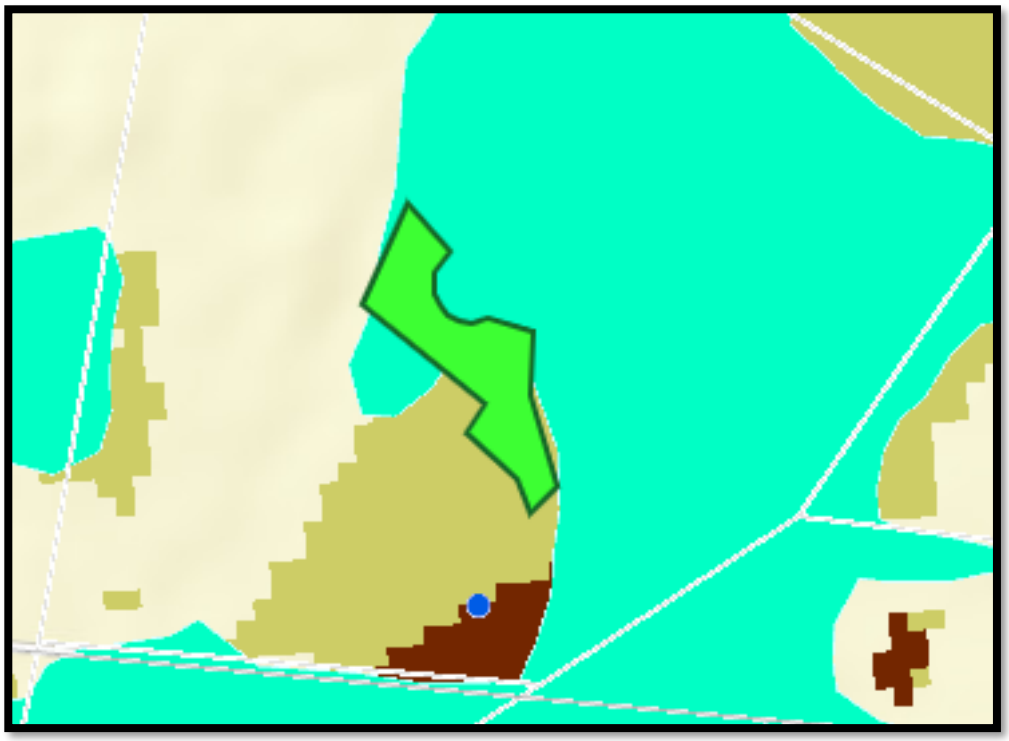


Figure 7: The Mining and Biodiversity importance map with the proposed mining footprint (green polygon).

BIODIVERSITY CONSERVATION AREAS

The 2014 Mpumalanga Biodiversity Sector Plan shows that the proposed mining footprint falls within a Critical Biodiversity Area as presented in the figure below. However, ground truthing, by the specialists, showed that the proposed footprint of the area has been heavily modified by previous mining and agricultural activities.

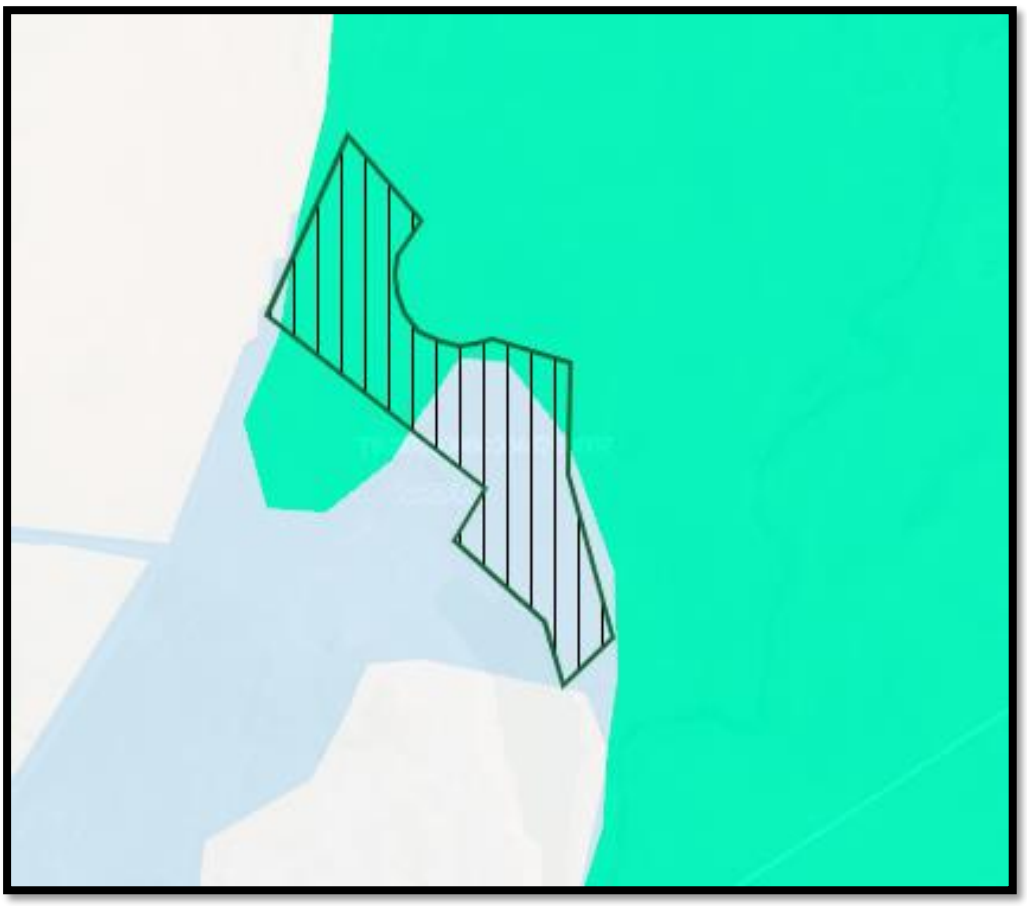


Figure 8:The 2014 Mpumalanga Biodiversity Sector Plan showing the mining area (green polygon) in relation to the critical biodiversity areas (green area). (Image obtained from BGIS Map Viewer)

GROUNDCOVER

Gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra.* Previous land uses on the study area were agriculture.

This vegetation has largely been transformed as a result of the previous mining activities. The development of the proposed mining area will therefore not have a negative impact on the surrounding area. The mining site itself next to the proposed area is largely overpopulated with alien vegetation because of the previously mined area. The proposed mine is a good way to ensure mitigation of these alien plants in the rehabilitation period of the mining site

It is proposed that the applicant remove as little vegetation as possible. This will lessen the area to be managed for erosion and weed invasion purposes.

Topsoil management should be implemented to ensure that topsoil is available upon rehabilitation of the area.

Due to the subsurface nature of bulbs the possibility of their occurrence cannot be excluded. If during construction any possible finds such plants must be replanted in a demarcated area.

FAUNA

Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. The study area falls over a property that is noted to be for agricultural use, should this mining permit be granted the local tribal chiefs will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low-speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

HUMAN ENVIRONMENT:

SOCIO-ECONOMIC ENVIRONMENT

The proposed processing area is situated within the Morgenzon District under the Lekwa Local Municipality. According to the 2012/2016 IDP, the municipality's population for 2023 is 140 970 which makes up 10.8% of Gert Sibande's population. It is further projected that the municipality's population will increase to 155 094 in 2031. The municipality will continue to experience population growth as per the table below. Lekwa LM will experience pressure on infrastructure, service delivery and the need for economic/employment opportunities.

Table 5: Lekwa LM Population Figures, Stats SA 2021 Mid-year population estimates

Year	Estimated Population	Year	Estimated Population
2021	137 124	**2027**	148 176
2022	139 046	**2028**	149 892
2023	140 970	**2029**	151 626
2024	142 846	**2030**	153 366
2025	144 687	**2031**	155 094
2026	146 472		

Employment by industry in Lekwa

In 2021, 25.7% of the employed worked in the trade industry. According to Stats SA, the trade industry comprises of wholesale, motor, accommodation, food, and beverages (i.e., restaurants and catering), and retail. This means that most economic activity within the municipality is related to goods rather than services. The mining industry only employs approximately 2.3% of people in Lekwa LM.

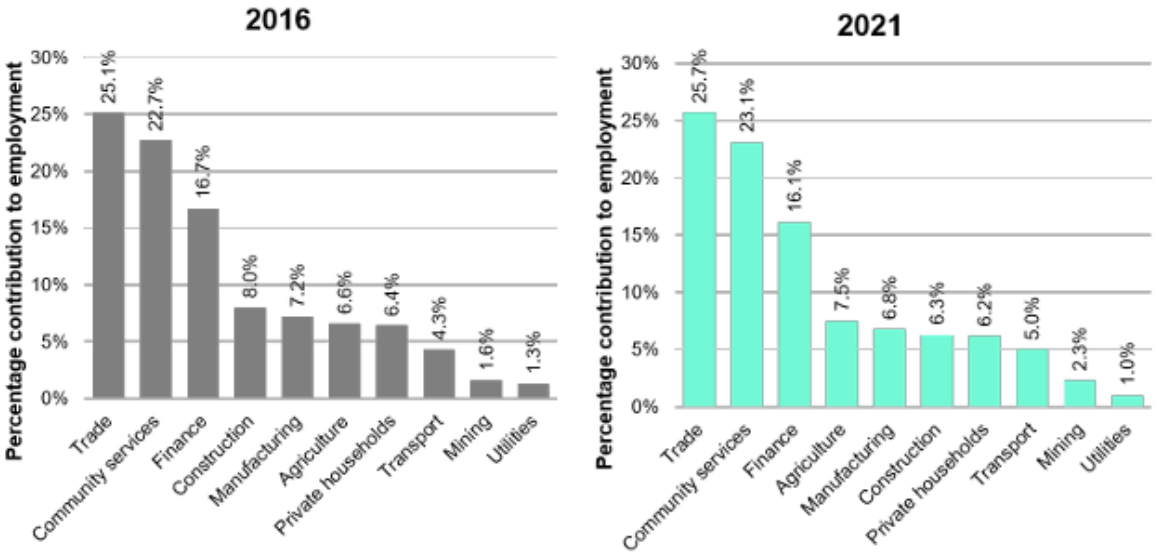


Figure 9:mployment by industry, SERO Report 2022

Education

Lekwa's grade 12 pass rates deteriorated from 84.7% in 2014 to 75.9% in 2021. In 2022, the pass rate improved to 80.5% - the 7th highest of the 17 municipal areas in 2022. Decline in the pass rate by more than 10 percentage points between 2019 and 2020. Negative impact of COVID-19. Improved with 1.1 percentage point in 2021. The area achieved an admission rate to university/degree studies of 30.6% in 2022, which is an improvement from the 27.9% recorded in 2021. The challenge is to accommodate/ retain the educated young people in the area due to inadequate economic opportunities.

Due to an increase in building and infrastructure development in the municipal area the need for aggregate has increased. By using the proposed site the applicant will be able to obtain a reasonable amount of material that can supply the Lekwa Local Municipality area with aggregate for infrastructure development and road building.

The proposed activity will not only assist the applicant and landowner but also indirectly contribute to the economy of the immediate municipal area and infrastructure development. The proposed activity will generate approximately thirty-eight work.

(b) Description of the current land uses

Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province is surrounded by other farms. The land use on the farm and surrounding areas are mainly for agricultural purposes. Additional workers required will be sourced from the local community. The aggregate from the mining area will be used for base source in the upgrading of roads in the immediate vicinity. The activity will therefore have a positive impact on the surrounding environment as it will aid infrastructure development of the area. On the opposite side of the proposed mining site is pivot irrigation used for agriculture but will not be affected directly.

Natural area - The land use of the surrounding properties mainly consists of agriculture and Coal mining. There is a watercourse (Knopkieriespruit) running East of the existing quarry.

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

Table 6: Land uses and/or prominent features that occur within 500 m radius of S1.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural (small holding) purposes.
Low density residential	-	**NO**	
Medium density residential	-	**NO**	
High density residential	-	**NO**	
Informal residential	-	**NO**	
Retail commercial & warehousing	-	**NO**	
Light industrial	-	**NO**	

LAND USE CHARACTER	YES	NO	DESCRIPTION
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, gravel or borrow pit	-	**NO**	
Dam or reservoir		**NO**	
Hospital/medical centre	-	**NO**	
School/ crèche	-	**NO**	
Tertiary education facility		**NO**	
Church	-	**NO**	
Old age home	-	**NO**	
Sewage treatment plant	-	**NO**	
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	**-**	**NO**	The proposed footprint is inactive but still forms part of an agricultural active farm.
River, stream or wetland	**YES**		River within 500m from proposed project.
Nature conservation area	-	**NO**	
Mountain, hill or ridge	-	**NO**	
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.

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The area of Morgenzon is considered to be a moderately rippling topography with many perennial pans and non-perennial streams. The average slope of the area varies between 0 and 3 %, but areas close to streams where valleys and an increase in slope forms can be observed.

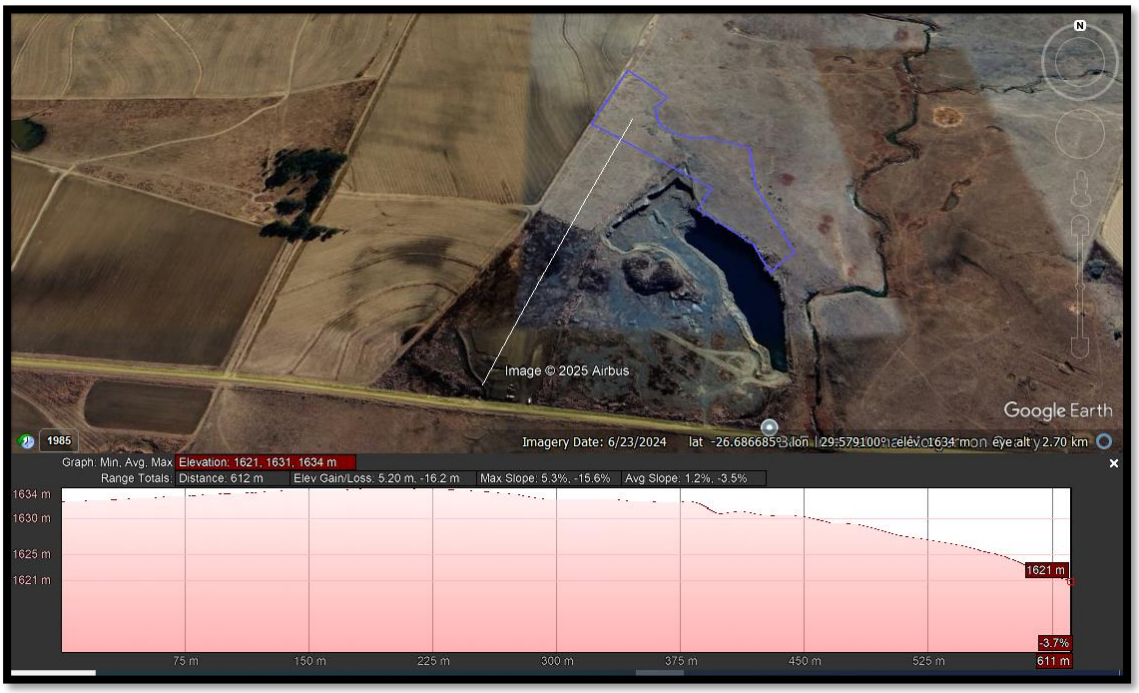


Figure 10:Elevation profile of the proposed mining footprint (Image obtained from Google Earth).

SITE SPECIFIC GEOLOGY:

Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types. The soil varies from 0 - 300 mm in the discussed site.

SITE SPECIFIC VISUAL CHARACTERISTICS

The proposed mining activities will be visible within close proximity (±1 km radius) of the footprint. However, as one moves away the visibility of the area greatly lessens. The figure below shows the viewshed analysis for the footprint within a ±10 km radius. The green shaded areas show the positions from where the mining area will be visible. From this analysis it is proposed that the visual impact of the proposed gravel mining operation will be of low significance, especially as no permanent structures will be constructed. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

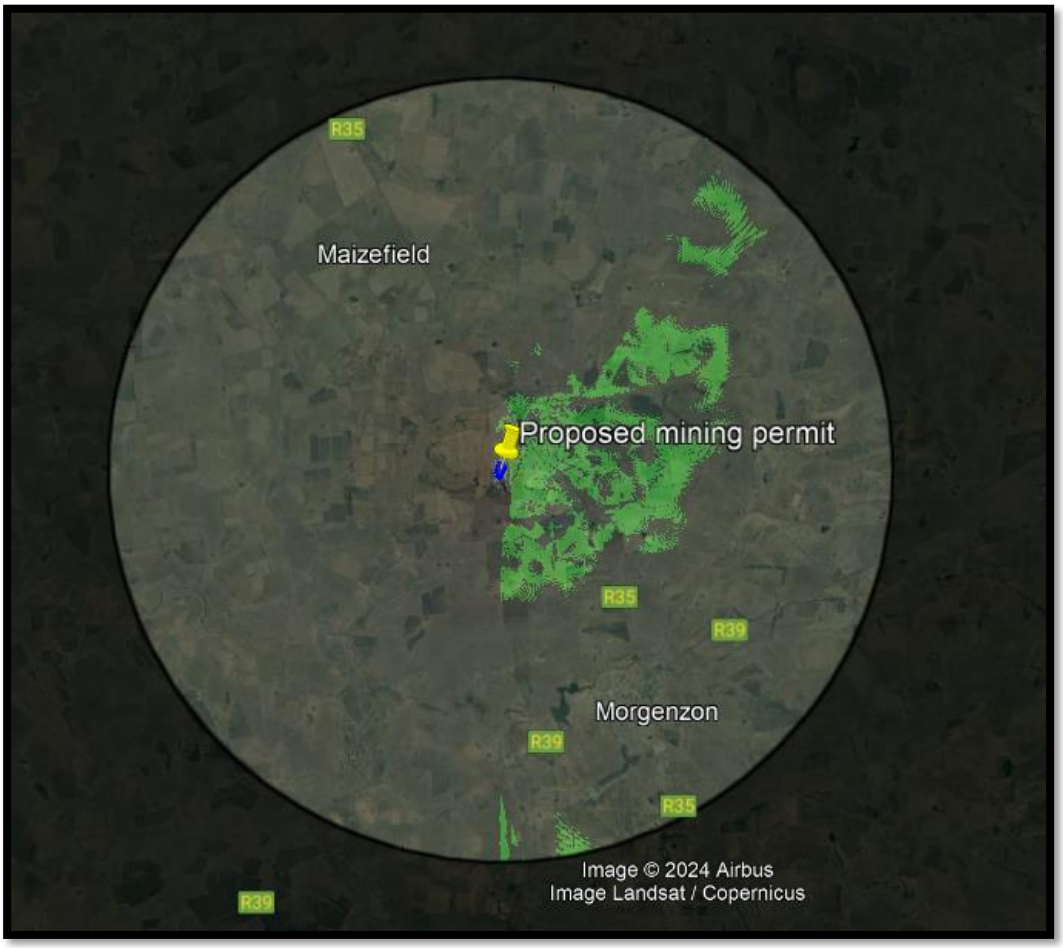


Figure 11:Viewshed of the proposed mining footprint where the green shaded areas shows the positions from where the mining area (Proposed mining area) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The nearest town to the proposed footprint is approximately 6.6 km away (south). Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act. The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

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

SITE SPECIFIC GROUNDCOVER:

According to the Terrestrial Compliance Statement (Appendix M), the proposed area exists in a predominantly modified state, having been subjected to various anthropogenic impacts such as mining, infrastructure development, pollution, unregulated livestock grazing, agriculture and edge effects associated with the nearby activities. This habitat is unlikely to fully recover without human intervention and will continue to degrade without further active rehabilitation.

The completion of this terrestrial biodiversity assessment led to a dispute of the ‘Very High’ Terrestrial Biodiversity Theme Sensitivity as set out in the National Environmental Screening Tool. Instead, the PAOI is assigned an overall ‘Low’ Terrestrial Theme Sensitivity.

A summary of the terrestrial field assessment is provided in the table below. The PAOI was surveyed to establish the overall ecological condition of the vegetation and to determine the likelihood of any flora and fauna SCC occurring within the area. Any potential sensitive habitat features were also assessed.

Table 7: Summary of the field survey conducted within the PAOI.

Habitat	GPS co-ordinates	Description	SEI	Photographs
Transformed Grassland	26°40'58.15"S 29°34'52.69"E; 26°41'3.41"S 29°34'51.39"E	This habitat type is predominantly disturbed and has been impacted by edge effects from modified habitats, as well as impacts associated with historic and ongoing livestock grazing, vegetation clearing, agriculture and infringement. These habitats exist in a constant state of disturbance and cannot recover to a more natural state due to ongoing disturbances and impacts.	Low	
Cropland	N/A	Croplands have little to no remaining natural vegetation due to land transformation attributed to agriculture. These habitats exist in a constant state of disturbance and cannot recover to a more natural state due to ongoing disturbances and impacts.	Low	No corresponding photos of croplands were taken as these fell beyond the proposed development footprint.
Modified	26°41'19.72"S 29°34'48.83"E; 26°41'14.30"S 29°34'52.87"E	The modified areas have little to no remaining natural vegetation due to land transformation attributed to human-induced impacts such as mining and infrastructure development.	Very Low	

Site Sensitivity Verification

Habitats and Site Ecological Importance (SEI)

Based on the criteria provided in Appendix B of the specialist report, all habitats within the PAOI were assigned a sensitivity category, i.e., a SEI category. Habitats within the PAOI varied in sensitivity from Very Low

(i.e., modified habitats) to Low (i.e., disturbed bushveld and cropland habitats). The findings of the specialist report therefore contradict the findings set forth by the Screening Tool with regards to the combined Terrestrial Biodiversity Theme Sensitivity.

Table 8: Summary of habitat types and associated SEIs delineated within the PAOI.

Habitat	Description	Ecosystem Processes and Services	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Transformed Grassland	This habitat type is predominantly disturbed and has been impacted by edge effects from modified habitats, as well as impacts associated with historic and ongoing livestock grazing, vegetation clearing, agriculture and infringement. These habitats exist in a constant state of disturbance and cannot recover to a more natural state due to ongoing disturbances and impacts.	Provides limited grazing and foraging resources for indigenous fauna and livestock. Aids in the filtration of water permeating through the soil into the drainage areas. Corridor for fauna dispersion within the landscape.	Low	Low	**Low**	Medium	**Low**
Croplands	Croplands have little to no remaining natural vegetation due to land transformation attributed to agriculture. These habitats exist in a constant state of disturbance and cannot recover to a more natural state due to ongoing disturbances and impacts	Despite the lack of indigenous vegetation, croplands attract numerous insect pollinators that, in turn, attract a high diversity of avifauna species. Further, ecosystem services attributed with croplands include carbon storage, and water and nutrient retention.	Low	Low	**Low**	Medium	**Low**
Modified	The modified areas have little to no remaining natural vegetation due to land transformation attributed to (predominantly) human expansion and infrastructure development.	The ecological services provided by this habitat are limited due to the extensive cover of impermeable surfaces and the large amount of bare land. Parts of the area may be considered a movement corridor.	Very Low	Very Low	**Very Low**	Medium	**Very Low**

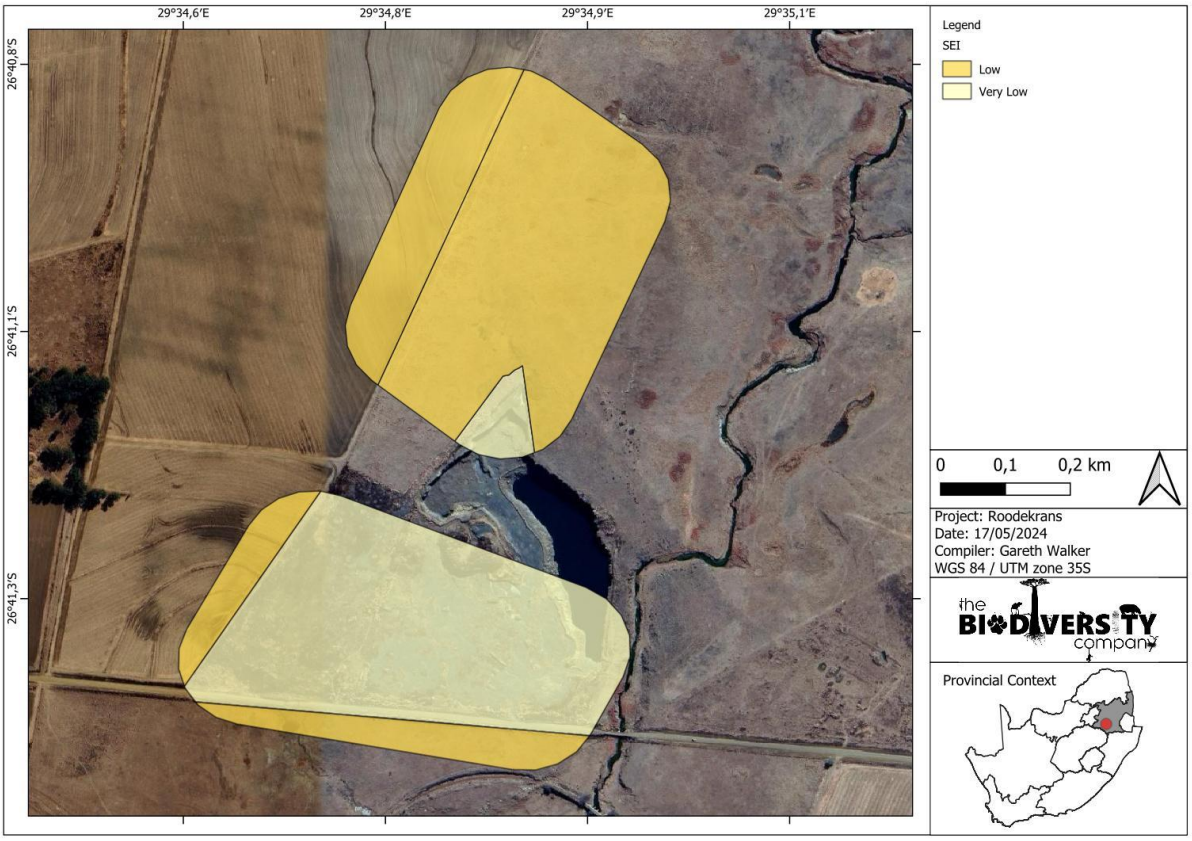


Figure 12:Map depicting the Site Ecological Importance (SEI) sensitivity for the PAOI.

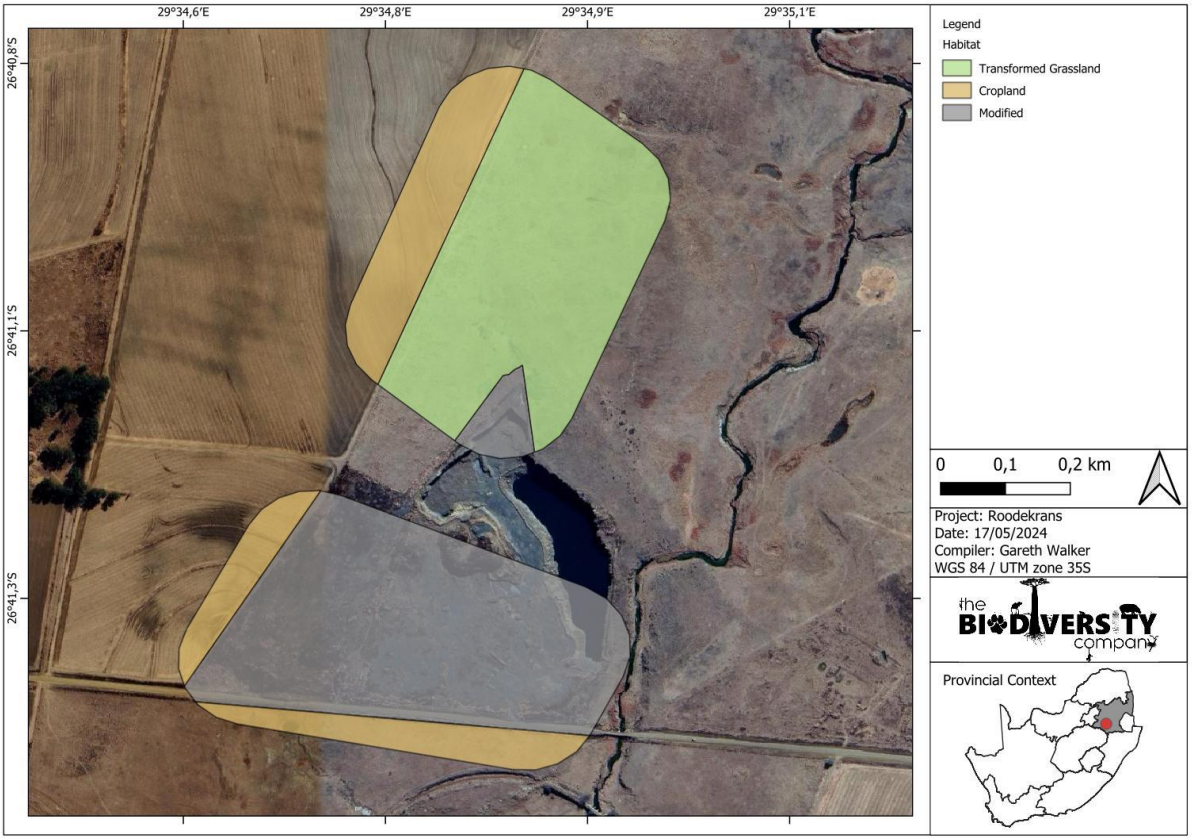


Figure 13:Map depicting the habitat types defined within the PAOI.

Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated in the table below. A summative explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC or protected species.

Table 9: Summary of the screening tool vs specialist assigned sensitivities.

Screening Tool Theme	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Terrestrial Theme	**Very High**	**Low**	Disputed – Habitat exists in a predominantly modified state with high levels of anthropogenic disturbance that has contributed to an overall loss in ecosystem functionality. Habitat will not recover without human intervention and will continue to degrade over time without rehabilitation. Habitat no longer viable constituent of a CBA2 and VU ecosystem.
Animal Theme	**Medium**	**Low**	Disputed – Habitat exists in a modified and disturbed state with high levels of anthropogenic disturbance. No SCC were observed, and none are expected to occur within the PAOI.
Plant Theme	**Low**	**Low**	Validated – Habitat exists in a degraded state with high levels of anthropogenic disturbance. High numbers of alien and invasive plants are present. No flora SCC were observed, and none are expected to occur within the PAOI.

SITE SPECIFIC FAUNA:

The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers should be informed and managed to ensure that no fauna at the site is harmed. The fauna that has been spotted on site comprise of hares and goats. Upon commencement of the proposed mining activities, the fence surrounding the property should be maintained to prevent large animals such as goats entering the site

SITE SPECIFIC HYDROLOGY

A portion of the existing quarry is currently filled with rain water; mining at the site is not anticipated to be affected by the water in the quarry as a wall will be left between the existing pit and the proposed mining area.

The Knopkieriespruit is within close proximity to the preferred site. However, as mentioned earlier, B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and (i), *altering the bed, banks, course, or characteristics of a watercourse*.

SITE SPECIFIC INFRASTRUCTURE.

As the proposed footprint area is currently used for grazing purposes, no infrastructure exists within the boundaries of the proposed mining area that could be impacted by the proposed activity. The existing roads will be used to gain access to the mining area. Continuous maintenance of the access road will be done by the applicant for the duration of the operational phase.

CULTURAL AND HERITAGE ENVIRONMENT

According to the Heritage Impact Assessment (Appendix D1), the vegetation of the Project area belongs to the Soweto Highveld Grassland of the Grassland Biome. It is described as gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus, Eragrostis racemosa, Heteropogon contortus and Tristachya leucothrix.* In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover (Mucina and Rutherford 2006).

The farm area is used as grazing land for cattle. The land is largely covered with low-growing grasses and shrubs, and no trees were located within the surveyed area. The ground cover is mostly open, resulting in high visibility across most of the site.

The quarry site is characterised by extensive recent human activity. Large piles of crushed stone and gravel are evident, indicating active material extraction and processing. The terrain is visibly altered, with exposed bedrock and soil, steep artificial embankments, and areas of excavation forming water-filled depressions. The surrounding

landscape includes scattered vegetation on the margins of the disturbed area, contrasting with the uniform and heavily modified quarry floor. General site conditions are indicated in (Figure 14 to 17).

Figure 14:General site conditions showing shrubs across the Project area.

Figure 15:Previously mined areas in the Project area.

Figure 16:Overgrown grasses in large sections of the Project area.

Figure 17: Ridge traversing the area.

HERITAGE RESOURCES

Heritage observations within the study area included a burial site (RD001) and structures (RD002, RD003 and RD004) along the ridgeline and were recorded as waypoints. The General site distribution of the recorded observations in relation to the Project layout is spatially illustrated in Figure 18 and briefly described in Table 10. Selected features are illustrated in Figure 19 to 28.

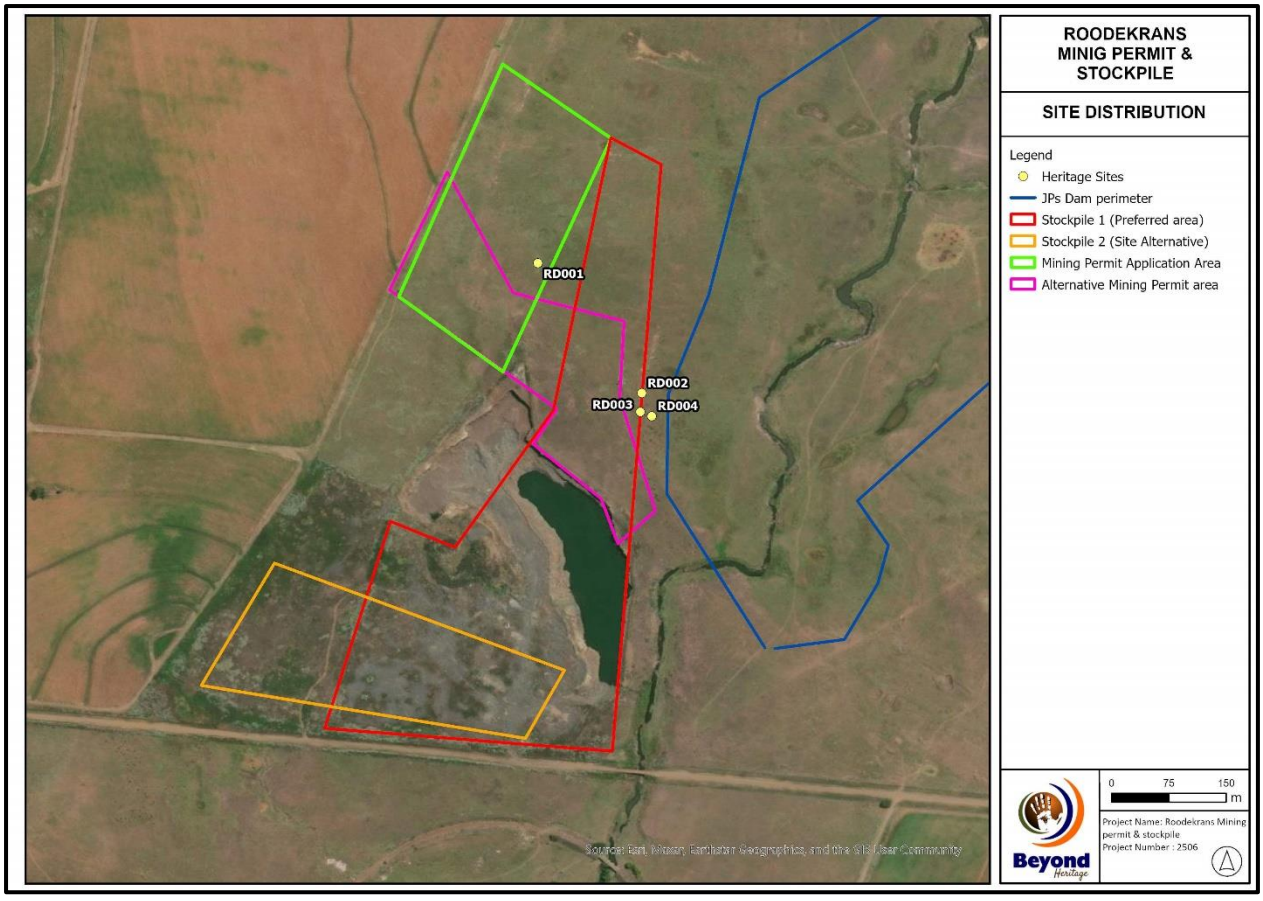


Figure 18:Site distribution map

Table 10. Sites recorded in the study area

Label	Longitude	Latitude	Description	Significance
RD001	29°34'52.59"E	26°41'2.32"S	Approximately 32 Graves are visible in the burial site. The burial site is approximately 32m x 12 m in size. One of the graves – dates to 1957. 31 Graves are unmarked. No grave goods were visible. The headstones are made of cement and stones. The grave dressing is made of cement and packed stones.	High Social Significance 3A
RD002	29°34'56.97"E	26°41'7.83"S	The overgrown stonewalling appears to be composed of roughly hewn, medium-sized stones, with an irregular arrangement indicative of dry-stone construction or a structure in a state of significant weathering and disrepair. The stones are partially obscured by dense vegetation, including shrubs and grasses, which have grown over and between the stones, further concealing their layout and structure. The wall seems to follow the natural contours of the surrounding landscape, potentially blending into the hillside. It is difficult to discern the original use of these structures as no additional context was found during the survey. The stone structures are circular in shape. The stonewalling for the RD002 and RD003 is approximately 60cm high and has a diameter of approximately 4 m. The third structure RD004 consists of a single layer 40 cm high and a diameter of approximately 5 m.	
RD003	29°34'56.92"E	26°41'8.63"S		
RD004	29°34'57.40"E	26°41'8.80"S		Medium Significance GP B

Figure 19:General view of burial site RD001.

Figure 20: View of graves at the burial site RD001

Figure 21:View of a stone packed grave at RD001.

Figure 22:Grave dating to 1957 in the burial site RD001.

Figure 23:Overgrown structure RD002.

Figure 24: Packed walling at RD002.

Figure 25:Site overview of RD003.

Figure 26:Packed walling at RD003.

Figure 27: Overview of RD004.

Figure 28:Packed walling at RD004.

CULTURAL LANDSCAPE

The Project area is rural in character and devoid of developments. The surrounding environment has been extensively utilised for agricultural activities. The area south of the Project area has been largely disturbed through mining. The structures RD002, RD003, RD004 are not indicated on the Historical topographic maps but due to their small size they may not have appeared on these maps or may be of an older age. Vegetation clearance of the sites would be required to determine an approximate age and purpose of the structures and whether an archaeological deposit is present.

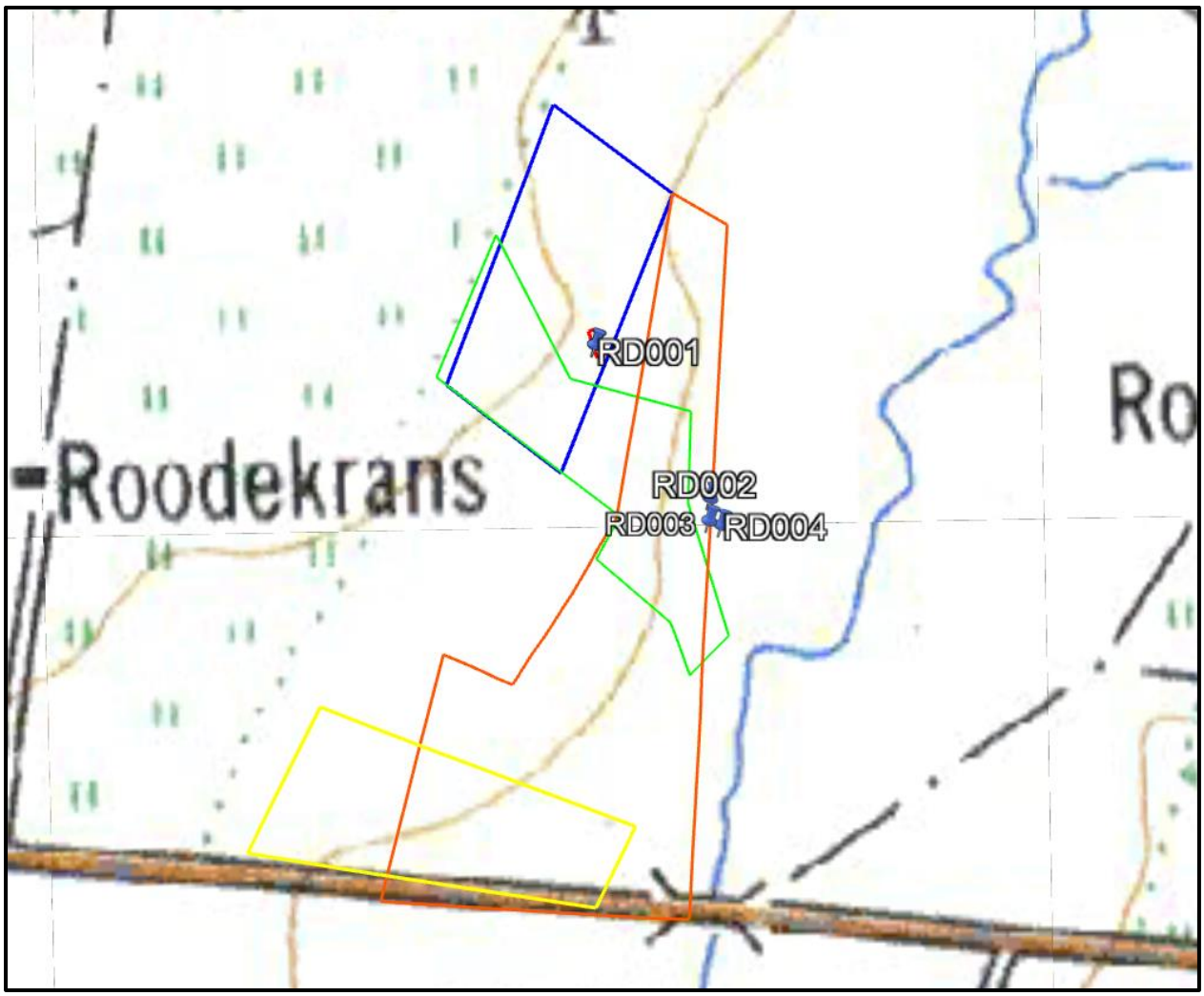


Figure 29:Extract of the 1962 topographic map showing no developments within the Project area.

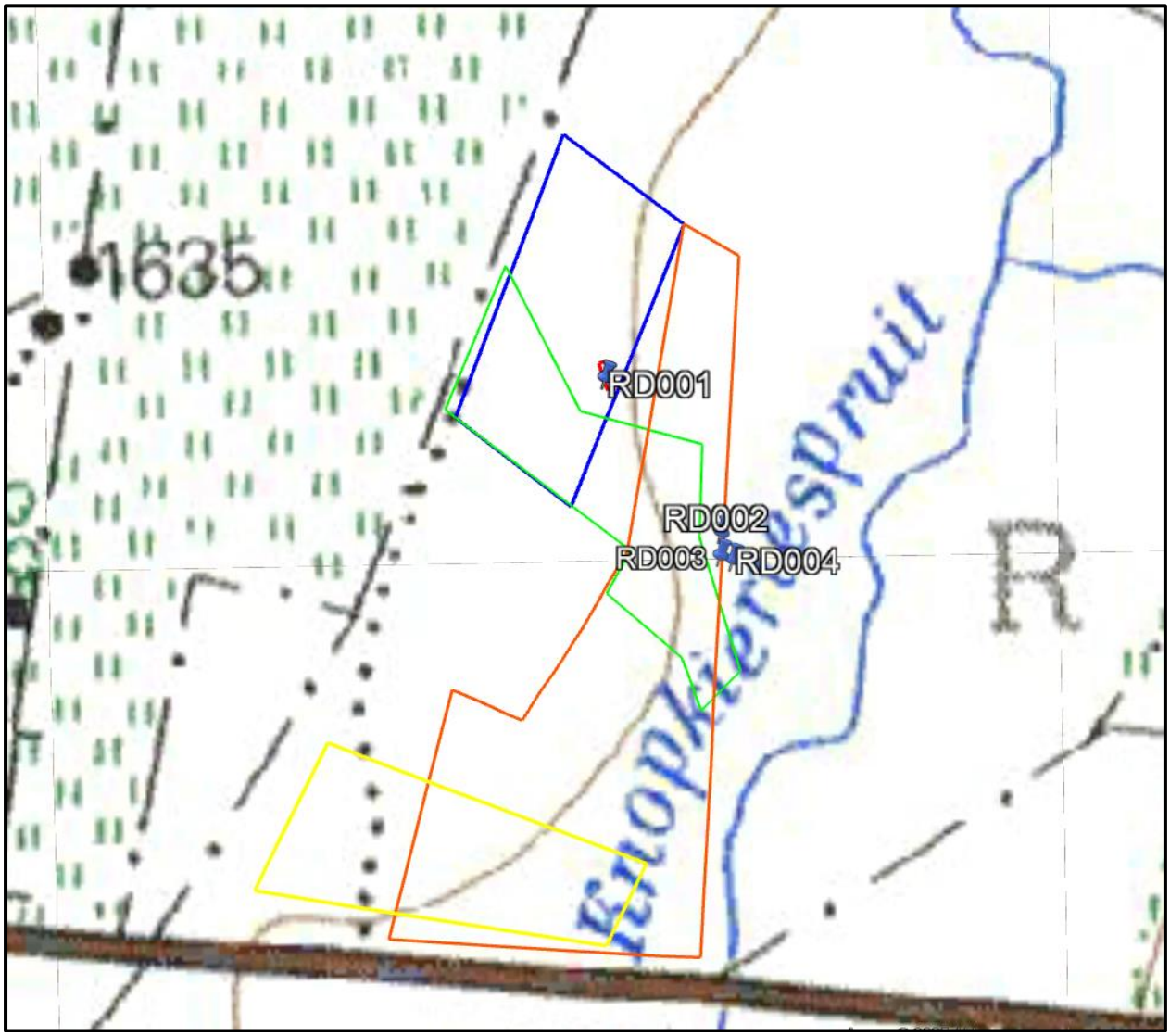


Figure 30:.Extract of the 1973 topographic map showing no developments within the Project area.

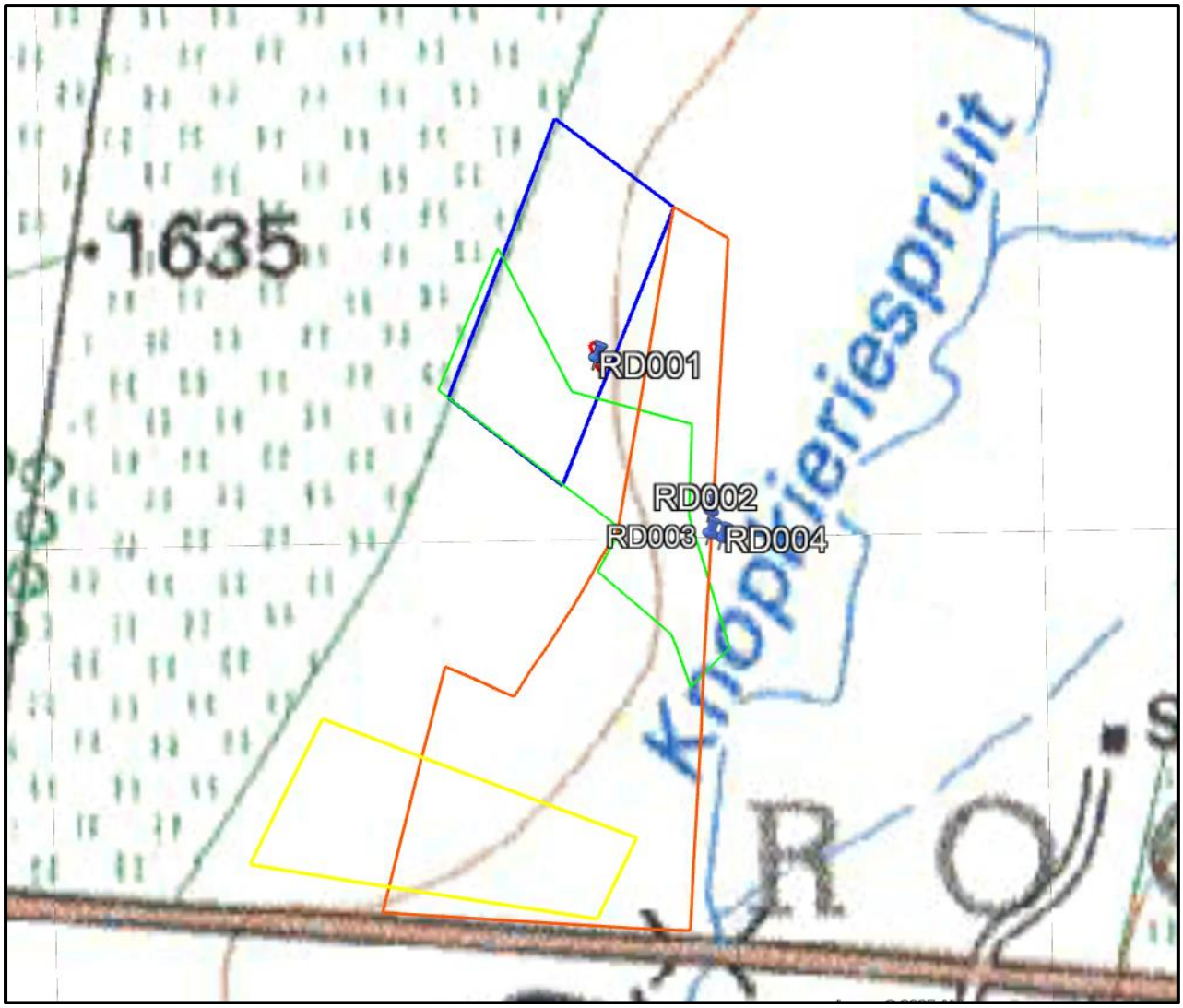
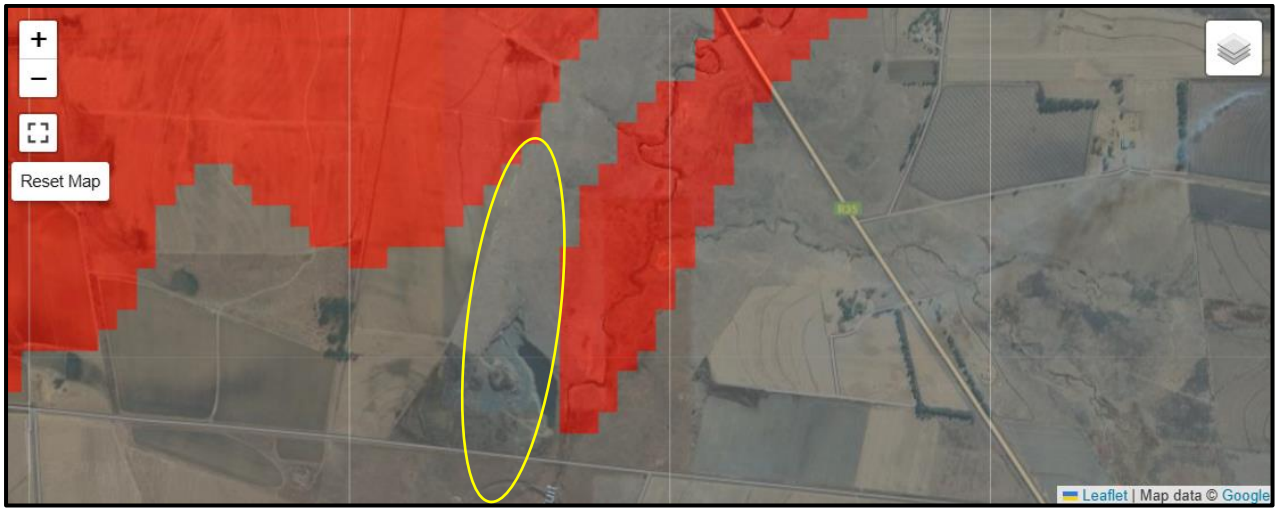


Figure 31:Extract of the 1996 topographic map showing no developments within the Project area.

PALEONTOLOGICAL HERITAGE

According to the SAHRA palaeontological sensitivity map, the study area is indicated as insignificant/zero palaeontological sensitivity (Figure 32), and no palaeontological studies are required for his aspect.



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 32:Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

Conclusion and recommendations

The Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations have been provided and surveyed in order to assess the heritage significance.

During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has

requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected (see below).

The structures RD002, RD003, RD004 along the ridgeline are extremely overgrown and it was not possible to determine the full extent and purpose of the structures nor if an archaeological deposit is present at these sites. If Stockpile 1 is selected, these sites will be impacted and should be avoided with a 100m buffer zone. If avoidance is not possible, vegetation clearance will first be required in order to determine the extent of required recording process in a Phase 2 archaeological mitigation of the sites. Only after a Phase 2 mitigation is complete can a destruction permit be applied for.

From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect.

Ways of reducing the buffer zone around the grave site as proposed by the Applicant:

The following measures were provided by the Applicant to ensure the graves are protected with a relaxed buffer zone of 40m, that was subjected to SAHRA's approval for which the decision was approved to establish a 60-meter buffer zone:

1) Obtaining a report from a blast expert on the effects of fly rock and Blast vibrations and possible impacts to the grave site (kindly refer to the report by Sefara, Letoka and Phiri (2025) (Appendix M2));

2) The Blast design can be modified as mining gets closer to the grave site to minimize any blast vibrations (Sefara, Letoka and Phiri (2025) (Appendix M2));

3) The Applicant/ ECO can measure and monitor the blast vibrations on every blast and record results and submit regular reports to SAHRA;

4) The site will be monitored and photographs taken after each blast to see that no damage has occurred;

5) The grave area will be fenced, maintained and kept clean of excess vegetation.

Please refer to Appendix M2 – Blast Proposal Report.

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in this report are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.

(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 C.

(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 for the proposed project. The significance rating was determined using the methodology as explained under VI) Methodology Used in Determining and Ranking the Significance. The impact rating listed below was determined for each impact prior to bringing the proposed mitigation measures into consideration, therefore the worst case scenario and should be seen as a preliminary assessment.

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the mining area

	Consequence		Likelihood	**Significance**

							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**			**Degree of Mitigation: None**					
2	4	2	2.6	4	1	2.5	**6.5**				

Impact on archaeological and heritage artefacts

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**			**Degree of Mitigation: Partial**					
5	4	2	3.6	5	5	5	**18**				

Dust nuisance caused by the disturbance of the soil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**			**Degree of Mitigation: Partial**					
2	4	2	2.6	4	5	4.5	**11.7**				

Noise nuisance caused by machinery stripping and stockpiling the topsoil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**			**Degree of Mitigation: Partial**					
2	4	1	2.3	5	5	5	**11.7**				

Infestation of the topsoil heaps by weeds or invader plants

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

Loss of topsoil due to incorrect storm water management

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

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
			Consequence			Likelihood					

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

BLASTING:

Health and safety risk posed by blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
4	4	1	3	5	2	3.5	**10.5**				

Potential impact on the graves due to blasting

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
5	4	2	3.6	5	5	5	**18**				

Dust nuisance caused by blasting activities

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

Noise nuisance caused by blasting activities

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

EXCAVATION:

Visual intrusion associated with the excavation activities

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

Dust nuisance due to excavation activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	2	2.6	5	5	5	**13**				

Noise nuisance generated by excavation equipment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	1	2.3	4	5	4.5	**10.4**				

Contamination of surface or groundwater due to effluent runoff from excavation area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
3	4	2	3	4	3	3.5	**10.5**				

Unsafe working conditions for employees

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
3	4	1	2.6	5	5	5	**13**				

Negative impact on the fauna and flora of the area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	1	1	1.3	5	1	3	**3.9**				

Contamination of area with hydrocarbons or hazardous waste materials

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

Weed and invader plant infestation of the area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	5	2	2	**5.2**				

CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE:

Visual intrusion associated with the crushing and screening activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	2	2.6	4	5	4.5	**11.7**				

Dust nuisance due to crushing activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	1	2.3	5	5	5	**11.5**				

Noise nuisance generated by crushing activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	1	2.3	4	5	4.5	**10.4**				

Contamination of area with hydrocarbons or hazardous waste materials

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

Weed and invader plant infestation of the area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	4	1	2.3	3	2	2.5	**5.75**				

LOADING AND TRANSPORTING:

Dust nuisance due to loading and vehicles transporting the material

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	2	2.6	5	5	5	**13**				

Degradation of access roads

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
3	4	2	3	4	4	4	**12**				

Noise nuisance caused by vehicles

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	2	2.6	5	5	5	**13**				

Contamination of area with hydrocarbons or hazardous waste materials

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

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
4	4	1	3	3	4	3.5	**10.5**				

Health and safety risk posed by un-sloped areas

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

Dust nuisance caused during sloping and landscaping activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	3	1	2	4	5	4.5	**9**				

Noise nuisance caused by machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	`1	2	1.6	3	5	4	**6.4**				

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
4	4	1	3	3	2	2.5	**7.5**				

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA:

Loss of reinstated topsoil due to the absence of vegetation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**			**Degree of Mitigation: None**					
3	3	1	2.3	3	2	2.5	**5.8**				

Infestation of the area by weed and invader plants

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**			**Degree of Mitigation: None**					
3	4	1	2.6	4	2	3	**7.8**				

POTENTIAL POSITIVE IMPACTS

- Work opportunities for the local community,
- Reduction of aggregate cost to the district due to short traveling distance.
- Contribution to the construction and road building industry that is an important economic sector in the Morgenzon area.
- Opportunity to landowner to diversify income on the property.

Associated Positive Impacts – Temporary Infrastructure:

- Low intensity site establishment,
- Easy movement of infrastructure as project progress,
- Complete removal of infrastructure at closure of the activity.

(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 recognized from the various interpretations:

- Environmental significance is a value judgment
- 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 realized (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 organization 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 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 affects the biophysical and socio-economic environment.

Table 1 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Rating of Severity:

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignifiant / 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/	Low cost to mitigate	Substantial cost to mitigate/	High cost to mitigate	Prohibitive cost to mitigate/

	High potential to mitigate impacts to level of insignificance/ Easily reversible		Potential to mitigate impacts/ Potential to reverse impact		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.

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.

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/neighboring 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.

Example of calculating Overall Consequence

Consequence	Rating
Severity	Example 4

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

Determination of Likelihood:

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

Determination of Frequency

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

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.

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 summarized below, and then dividing the sum by 2.

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.

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 prioritizations and decision-making process associated with this event, aspect or impact.

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 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)

Inzalo Crushing and Aggregates (Pty) Ltd identified the need for gravel/aggregate in the area due to an increase in building, construction and

road maintenance projects. As mentioned earlier the quarry pit on the property of the applicant has previously been used for mining purposes. In this light the applicant identified the proposed (site alternative 1) area as preferred and only viable site alternative. The establishment of a quarry (site alternative 2) would place the pit outside the 100-meter buffer zone of the designated graves, making mining impractical as it would fall outside the mineral reserve.

Various project alternatives were considered during the planning phase of the project. These included the following:

The applicant investigated the possibility of establishing the alternative (site alternative 2) mining area at the lower corner of the previously used field. This site alternative 2 was however found not to be the preferred alternative due to the site being outside the mineral reserve which wouldn't make mining possible.

Site Alternative 1 was identified during the inspection phase, and was selected as the preferred alternative due to the following (positive) reasons:

- The proposed area has an already existing access road due to the previous mining activities
- The desired aggregate mineral can be found at this site.
- The proposed processing area falls only Portion 7 of the farm Roodekrans 457, which was previously used for mining and agriculture.

Negative aspects associated with Site alternative 1 entails:

- The processing area will be lost to agricultural production for the duration of the mining permit.
- The applicant and the landowner have a land use agreement. Upon laps of the mining permit, the area will revert to agricultural use.

Should the mitigation measures and monitoring programs 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.

(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 mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

The 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 overburden.
- 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 overburden, 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.
- If necessary, the area can be fertilized to hasten the establishment of flora. Should the site's natural vegetation not grow back within six months of its closure to spread the naturally existent flora in the area, the site could be seeded with a local or adapted indigenous seed mix. This area is seen to have low agricultural potential due to the rocky surface therefore the use of seed mixes should only be done after consultation with a qualified specialist with experience in the area as it might not apply.
- 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-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and be always kept in good condition.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of 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 by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.

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

Noise Handling:

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blasting occasion.
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound

mufflers. If at all possible, the generators must be placed as far away from the nearby land users as practicable, on the western portion of the mining area (S1). Also, to reduce vibration noise, all generators must be set up on a level surface or footing.

- Best practice measures shall be implemented to minimize potential noise impacts.

GEOLOGY AND SOIL

Topsoil Management:

- The upper 300 mm of the soil 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 must be stripped and stockpiled separately during site preparation and replaced over disturbed areas on completion.
- Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed and inactive areas.
- Topsoil 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.

- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, 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.
- A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop 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.
- Revegetation should occur naturally where topsoils were not severely altered.

HYDROLOGY

Erosion Control and Storm Water Management:

- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Stormwater must be diverted around the 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.

- 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 as a result of the mining activities observed 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 so as 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. You must prevent clean water from running or spilling into dirty water systems.
- Dirty water must be collected and contained in a system separate from the clean water system.
- Dirty water must be prevented from spilling or seeping into clean water systems.
- A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
- The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.
- Polluting activities including storage of mining fleet, equipment wash area facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.

- All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. 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.

TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER

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.
- A pre-construction walk-through should be conducted in the flowering season by a suitably qualified botanist for SCC or protected plant species that will be affected (also to comply with provincial permit conditions), and to develop a more comprehensive plant species list of the area.
- For threatened species that may not be destroyed, it is recommended that professional search and rescue service providers be used to remove such plants and to use them either for later rehabilitation work or other conservation projects.
- 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.
- Clearing of vegetation should be minimized and avoided where possible.
- Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.

- The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No plant species, whether native or exotic, should be brought into, ore removed from, the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.
- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- No fires must be allowed on-site.
- If deemed necessary by the ECO, a firebreak must be made around the periphery of the site in autumn every year. Vegetated areas inside the break should be burned (upon recommendation of the ECO) on a biennial basis if deemed necessary. The relevant veld burning legislation must be adhered to.
- The following mitigation measures were provided by the terrestrial biodiversity specialist (Appendix M):
    - Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage.
    - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon
    - All laydown areas, chemical toilets etc. should be restricted to Low SEI areas. No materials may be stored for extended periods of time and must be removed from the PAOI once the construction/closure phase has been concluded.
    - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will

also reduce the likelihood of encroachment by alien invasive plant species.

- All footprints to be rehabilitated after construction is complete. Rehabilitation of the disturbed areas existing in the PAOI must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type.
- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers
- Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair
- It should be made an offence for any staff to /take bring any plant species into/out of any portion of the PAOI without permission. The only exception to this involves the removal of exotic or invasive species from the PAOI, and the introduction of indigenous species for rehabilitation of the PAOI post development. Introductions and removals, however, must be closely monitored to ensure that the correct species are being removed/reintroduced.

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 (topsoil & overburden) 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.

FAUNA

Protection of Fauna:

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

- Ensure that cables and connections are insulated successfully to reduce electrocution risk.
- Use environmentally friendly chemical products.
- No litter, food or other foreign material may be thrown or left around the site.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

- If any significant archaeological remains are located during this survey which cannot be avoided by, or excluded from the quarrying, they will require mitigation prior to any quarry-related activities on the site. A Workplan application will need to be made to SAHRA to conduct this work.

- Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately to make a decision about how to deal with the remains.

- 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 following mitigation measures were provided by the heritage specialist (Appendix M1):
  - Avoidance of the burial site RD001 with a 100m buffer zone was preferable with access provided to family members wishing to visit the graves
  - However, the Applicant requested a relaxation of the buffer zone, management plans presented by the Applicant are outlined below;
  - The following was provided by the Applicant as measures to ensure the graves stay protected with a relaxed buffer zone of 100m to 40m or 20m buffer zone, for which the decision was approved by SAHRA to establish a 60-meter buffer zone.
    - Obtaining a report from a blast expert on the effects of fly rock and Blast vibrations and possible impacts to the grave site (kindly refer to the report by Sefara, Letoka and Phiri (2025) (Appendix M2));
    - The Blast design can be modified as mining gets closer to the grave site to minimize any blast vibrations (Sefara, Letoka and Phiri (2025) (Appendix M2));
    - The Applicant/ ECO can measure and monitor the blast vibrations on every blast and record results and submit regular reports to SAHRA;
    - The site will be monitored and photographs taken after each blast to see that no damage has occurred;
    - The grave area will be fenced, maintained and kept clean of excess vegetation.
  - The structures RD002, RD003, RD004 should preferably be avoided with a 30m buffer zone
  - If avoidance is not possible then Phase 2 archaeological mitigation will be required with vegetation clearance to determine the extent of the sites in order to determine the level of mitigation required for the site;
  - Development activities must be confined to the approved development footprint only;
  - Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9 of the HIA.

- Development of a Heritage Site Management Plan for the recorded burial site including an access protocol for Next of Kin (NoK).

LAND USE

Loss of agricultural land for duration of mining:

- According to Soil and Agricultural Potential Assessment Report (Appendix M), the proposed mining will have an overall low residual impact on the agricultural production ability of the land. This is because the majority of the site consists of low potential soil, such as Glenrosa and Mispah with limited soil profile which restrict profile water storage capacity, aeration, and drainage, and no active crop fields either under rainfed or irrigation condition. Therefore, is the specialist`s opinion that, the proposed development may be favourably considered and the implementation of mitigation measures to ensure low residual expected significant impacts occurrence.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the

workshop, where it is incorporated into the hazardous waste removal system.

- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.
- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.
- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.

- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the wastewater and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

Storage/Handling of Hazardous Substances/Chemicals:

- Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- All tanks for fuel/used oil must have additional containment in the form of an impermeable bund wall and foundation, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.
- The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must

be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.

- Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump.

Management of health and safety risks:

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- The surrounding landowners must be informed in writing ahead of each blasting event.
- The compliance of ground vibration and air blast levels must be monitored to USBM standards with each blasting event.
- A vibro recorder must be used to record all blasts.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

(ix) Motivation where no alternative sites were considered.

N/A

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

Inzalo Crushing and Aggregates (Pty) Ltd identified the need for gravel/aggregate in the area due to the Ummbila Emoyeni Wind Farm project

as well as the increase in building, construction and other road maintenance projects. The applicant identified the proposed (site alternative 1) area as preferred and only viable site alternative. The establishment of a quarry (site alternative 2) would place the pit outside the 100-meter buffer zone of the designated graves, making mining impractical as it would fall outside the mineral reserve.

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

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

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

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the processing area

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

Impact on archaeological and heritage artefacts

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

3	4	2	3	3	1	2	**6**

Dust nuisance caused by the disturbance of the soil

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

Noise nuisance caused by machinery stripping and stockpiling the topsoil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	1	2	1.6	3	2	2.5	**4**				

Infestation of the topsoil heaps by weeds or invader plants

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

Loss of topsoil due to incorrect storm water management

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	2	2.6	2	2	2	**5.2**				

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	2	1	2.3	3	2	2.5	**5.75**				

BLASTING:

Health and safety risk posed by blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	1	2.5	3	2	2.5	**6.25**				

Potential impact on the graves due to blasting

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
3	4	2	3	3	1	2	**6**				

Dust nuisance caused by blasting activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	2	2	5	2	3.5	**7**				

Noise nuisance caused by blasting activities

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

EXCAVATION:

Visual intrusion associated with the excavation activities

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

Dust nuisance due to excavation activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	3	1	2	3	5	4	**8**				

Noise nuisance generated by excavation equipment

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	3	1	2	3	5	4	**8**				

Contamination of surface or groundwater due to effluent runoff from excavation area

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

Unsafe working conditions for employees

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

Negative impact on the fauna and flora of the area

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	1	1	1.3	5	1	3	**3.9**				

Contamination of area with hydrocarbons or hazardous waste materials

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

Weed and invader plant infestation of the area

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

CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE:

Visual intrusion associated with the crushing and screening activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
1	4	1	2	4	5	4.5	**9**				

Dust nuisance due to crushing activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	2	2.6	2	2	2	**5.3**				

Noise nuisance generated by crushing activities

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	4	1	2.3	3	4	3.5	**8.1**				

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	1	3	2	2	2	**6**				

Weeds and invader plant infestation of the area

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

LOADING AND TRANSPORTING

Dust nuisance due to loading and vehicles transporting the material

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

Impact on the access roads

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	2	3	3	1	2	**6**				

Noise nuisance caused by vehicles

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

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	1	3	2	1	1.5	**4.5**				

SLOPING AND LANDSCAPING UPON CLOSURE OF THE SITE

Soil erosion

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	1	3	2	1	1.5	**4.5**				

Health and safety risk posed by un-sloped areas

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

Dust nuisance caused during landscaping activities

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

Noise nuisance caused by machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Partial**				
2	1	2	1.6	3	1	2	**3.2**				

Contamination of area with hydrocarbons or hazardous waste materials

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	1	3	2	1	1.5	**4.5**				

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA

Loss of reinstated topsoil due to the absence of vegetation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	3	1	2.3	2	1	1.5	**3.5**				

Infestation of the area by weeds and invader plants

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	1	2.6	2	1	1.5	**3.9**				

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).

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 processing area.	N/A	Construction / Site Establishment phase	N/A	N/A	N/A
Establishment of mobile crusher and ablution infrastructure within boundaries of site.	If the infrastructure is established within the boundaries of the approved processing area no impact could be identified.	N/A	Construction / Site Establishment phase	N/A	N/A	N/A

STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low – Medium	Control: Implementation of proper housekeeping	Low – Medium
	Impact on archaeological and heritage artefacts	Mining activities will be contained within a 60m buffer zone (if approved by the SAHRA).	Operational phase	Medium - High	Control: Implementation of HIA mitigations measures.	Low – Medium
	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low – Medium
	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise	Operational phase	medium	Control: Noise control measures	Low

		levels of the farm.				
	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Low – Medium	Control & Remedy: Implementation of weed control	Low
	Loss of topsoil due to incorrect storm water management	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Medium	Control: Storm water management	Low – Medium
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low – Medium
CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Visual impact associated with the crushing and screening activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium	Control: Implementation of proper housekeeping	Medium

	Dust nuisance due to crushing activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low – Medium
	Noise nuisance generated by crushing activities	The noise impact should be contained within the boundaries of the property, and will relate to the existing equipment operating on-site.	Operational phase	Medium	Control: Noise management	Low – Medium
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low
	Weeds and invader plant infestation of the area	Biodiversity	Operational phase	Low – Medium	Control & Remedy: Implementation of weed control	Low – Medium

BLASTING	Health and safety risk posed by blasting activities	The impact on health and safety posed by blasting will be contained within the site	Operational phase	Medium	Control: Implementation of safety control measures	Low – Medium
	Potential impact on the graves due to blasting	The impact on the graves by blasting will be contained within the 60m buffer zone,	Operational phase	Medium	Control: Implementation of safety control measures	Low – Medium
	Dust nuisance caused by blasting activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low - Medium	Control: Dust suppression	Low – Medium
	Noise nuisance caused by blasting activities	The noise impact caused by blasting is instantaneous and has a short duration	Operational phase	Low-Medium	Control: Noise control measures	Low – Medium
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium - High	Control: Implementation of proper housekeeping	Low – Medium

	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low – Medium
	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	Control: Noise control measures	Low – Medium
	Contamination of surface or groundwater due to effluent runoff from excavation area	the impact of surface and groundwater contamination due to the excavated area will be mitigated through berms and topsoil stockpiling	Operational phase	Medium	Control: Measures will be implemented as subscribed by the DWA	Low

	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Medium	Control: Implementation of safety control measures	Low – Medium
	Negative impact on the fauna and flora of the area	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Low	Control: Implementation of fauna protection measures	Low
	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low - medium
	Weed and invader plant infestation of the area	Biodiversity	Operational phase	Low - Medium	Control & Remedy: Implementation of weed control	Low - medium
LOADING AND TRANSPORTING	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an	Operational phase	Medium	Control: Dust suppression	Low – Medium

		impact on surrounding landowners.				
	Impact on the access roads	All road users will be affected	Operational phase	Medium	Control & Remedy: Road management	Low – Medium
	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	Control: Noise control measures	Low - Medium
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	Medium	Control: Soil management and seeding of mined areas	Low
	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding land owners.	Decommissioning phase	Low – Medium	Control: Dust suppression	Low
	Health and safety risk posed by un-sloped areas	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	Decommissioning phase	Medium	Control: Sloping of area upon decommissioning	Low - Medium
	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding land owners.	Decommissioning phase	Low – Medium	Control: Noise management	Low

	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	Low – Medium	Control: Waste management	Low
	Loss of reinstated topsoil due to the absence of vegetation	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Low – Medium	Control: Storm water management	Low
	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Low – Medium	Control & Remedy: Implementation of weed control	Low

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

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):

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.
• Agricultural Impact Assessment (AIA): The applicant tends to develop over an undisturbed area of the above-mentioned farm. As per the screening tool the agricultural potential of the farm is of medium sensitivity. Therefore, Greenmined is of the opinion that a specialist AIA is not needed as the application footprint extends into an area previously used for mining purposes. The proposed project will not necessitate the loss of any agricultural field, center pivot or similarly operated agricultural area. • Archaeological and Cultural Heritage Impact Assessment (HIA) & Paleontology Impact Assessment (PIA): According to the Heritage Impact Assessment (Appendix M1), the Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations have been provided and surveyed in order to assess the heritage significance. During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected.			

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.

The structures RD002, RD003, RD004 along the ridgeline are extremely overgrown and it was not possible to determine the full extent and purpose of the structures nor if an archaeological deposit is present at these sites. If Stockpile 1 is selected, these sites will be impacted and should be avoided with a 30m buffer zone. If avoidance is not possible, vegetation clearance will first be required in order to determine the extent of required recording process in a Phase 2 archaeological mitigation of the sites. Only after a Phase 2 mitigation is complete can a destruction permit be applied for.

From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect.

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in the HIA and this report /are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.

- Terrestrial Biodiversity Impact Assessment (TBIA) & Plant Species Assessment (PSA) & Animal Species Assessment (ASA):

As mentioned earlier, the proposed mining footprint extends close to an area that has previously been used for mining. However, as per the screening report, the terrestrial biodiversity theme has a very high sensitivity. According to the Terrestrial Compliance Statement (Appendix M), the proposed area exists in a predominantly modified state, having been subjected to various anthropogenic impacts such as mining, infrastructure development, pollution, unregulated livestock grazing, agriculture and edge effects associated with the nearby activities. This habitat is unlikely to fully recover without human intervention and will continue to

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.

degrade without further active rehabilitation. It is the opinion of the specialist stipulated herein that the proposed development is favourable only if all mitigation measures provided in this and other specialist reports are implemented.

- Aquatic Biodiversity Impact Assessment (ABIA) & Hydrology Assessment (HA):

  The proposed mining activities will be in close proximity to the Knopkieriespruit river and quarry lake. However, it should be noted that B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and (i), *altering the bed, banks, course, or characteristics of a watercourse.* There is no other water bodies present on the mining site and the entire quarry will be rehabilitated upon closure

- Noise Impact Assessment (NIA):

  The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the machinery already operational on the property. Due to the small scale of the operation a NIA is not deemed applicable.

- Radioactivity Impact Assessment

  A radioactivity impact assessment is not deemed necessary for the proposed mining operation that will not store any chemicals on site, perform activities of radioactive nature or generate hazardous waste of radioactive nature.
- Traffic Impact Assessment (TIA):

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.

The Applicant will use the existing road to access the mining area and transport material from the mine. The existing road has a formal entrance and was also used by the previous permit holder to transport material. No upgrading of the road is needed prior to commencement. In light of the small scale of the proposed operation a TIA is not deemed necessary, should the Applicant implement the mitigation measures to be proposed in the EMPR.

- Geotechnical Assessment:

No reason for a geotechnical assessment could be identified as no permanent infrastructure will be established at the proposed mining area, and mining will not create a deep void with high faces.

- Socio-economic Assessment (SEA):

The material to be sourced from the mining area will be used for the upgrading of the road infrastructure in the vicinity of the site. The proposed mine will be operated on an area previously used for mining. Should any additional workers to be required on this mining activity they will be sourced from the local community. Workers will daily be transported to the site. The establishment of the mining area on the farm will also assist the property owner in the diversification of their income. In light of this a SEA is not deemed applicable to this project.

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:

- Inzalo Crushing and Aggregates (Pty) Ltd intends to apply for a mining permit to mine 4.9ha of a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province for the mining of aggregates/stone gravel. The proposed mining site will be an extension of the existing quarry pit previously disturbed by aggregate mining activities. The mining method will make use of blasting to loosen the hard rock; decking will be employed as part of the blasting technique to minimize fly rock and protect the nearby graves. The material will then be loaded and hauled out of the excavation to the mobile crushing and screening plants. The aggregate will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site.

  The proposed mining area is approximately 4.9ha in extent and the applicant intents to win material from the area for at least three years with a possibility of a two year extension. The aggregate / stone gravel to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry will therefore contribute to the upgrading/maintenance of road infrastructure in and around the Morgenzon and Bethal area. Inzalo Crushing and Aggregates (Pty) Ltd will make use of temporary infrastructure during the mining operations. Workers will be transported to and from the site daily.

Topography:

The natural topography of the proposed excavated area can be considered to be a moderately rippling topography with many perennial pans and non-perennial streams. The average slope of the area varies between 0 and 3 %, but areas close to streams where valleys and an increase in slope forms can be observed.. The elevation loss from the proposed mining footprint to the town of Morgenzon to be 119 m over 6.7 km.

Visual Characteristics:

- The viewshed analysis showed that the visual impact of the proposed aggregate mining operation will be of low significance. The small scale of the proposed operation, and the proposed mining area is approximately 6km from the nearest town and is semi-visible from the R35. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

Air and Noise Quality:

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

Geology and Soil:

- Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types. The soil varies from 0 - 300 mm in the discussed site

Hydrology:

- The proposed mining activities will be in close proximity to the Knopkieriespruit river and quarry lake. However, it should be noted that B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and *(i), altering the bed, banks, course, or characteristics of a watercourse*. There

is no other water bodies present on the mining site and the entire quarry will be rehabilitated upon closure.

Mining, Biodiversity and Groundcover:

- According to the Terrestrial Compliance Statement (Appendix M), the proposed area exists in a predominantly modified state, having been subjected to various anthropogenic impacts such as mining, infrastructure development, pollution, unregulated livestock grazing, agriculture and edge effects associated with the nearby activities. This habitat is unlikely to fully recover without human intervention and will continue to degrade without further active rehabilitation. It is the opinion of the specialist stipulated herein that the proposed development is favourable only if all mitigation measures provided in this and other specialist reports are implemented.

Fauna

- Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. If the mining permission is approved, the farm owner will be contacted before the start of any activities to ensure the safety of the workers and the animals on the site. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low-speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

Cultural and Heritage Environment:

As mentioned earlier, (Appendix M1), the Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations

have been provided and surveyed in order to assess the heritage significance.

During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected (see below).

The structures RD002, RD003, RD004 along the ridgeline are extremely overgrown and it was not possible to determine the full extent and purpose of the structures nor if an archaeological deposit is present at these sites. If Stockpile 1 is selected, these sites will be impacted and should be avoided with a 30m buffer zone. If avoidance is not possible, vegetation clearance will first be required in order to determine the extent of required recording process in a Phase 2 archaeological mitigation of the sites. Only after a Phase 2 mitigation is complete can a destruction permit be applied for.

From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect.

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in the HIA and this report /are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.

Site Specific Infrastructure:

- The following is located within proximity:

- A batch plant and an existing quarry is located south of the site.
- Farm house approximately 1.24km away.
- The R35 – ± 900m towards the nort-east side of the site.

(ii) Finale Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structure 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 B.

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

<u>The positive impacts associated with the project include:</u>

- Work opportunities to the local community,.
- Contribution to the construction industry that is an important economic sector in the Morgenzon area.
- Opportunity for the landowner to diversify income on the property

POTENTIAL IMPACT	SIGNIFICANCE (AFTER MITIGATION)
ℑ Visual intrusion associated with the establishment of the processing area	ℑ Low-Medium
ℑ Impact on archaeological and heritage artefacts	ℑ Low-Medium
ℑ Dust nuisance caused by the disturbance of the soil	ℑ Low-Medium
ℑ Loss of topsoil due to incorrect storm water management	ℑ Low - Medium
ℑ Contamination of area with hydrocarbons or hazardous waste materials	ℑ Low – Medium
ℑ Health and safety risk posed by blasting activities	ℑ Low-Medium

POTENTIAL IMPACT	SIGNIFICANCE (AFTER MITIGATION)
ℑ Potential impact on the graves due to blasting	ℑ Low-Medium
ℑ Dust nuisance caused by blasting activities	ℑ Low-Medium
ℑ Noise nuisance caused by blasting activities	ℑ Low-Medium
ℑ Visual intrusion associated with the excavation activities	ℑ Low - Medium
ℑ Dust nuisance due to excavation activities	ℑ Low – Medium
ℑ Noise nuisance generated by excavation equipment	ℑ Low - Medium
ℑ Unsafe working conditions for employees	ℑ Low – Medium
ℑ Contamination of area with hydrocarbons or hazardous waste materials	ℑ Low – Medium
ℑ Weed and invader plant infestation of the area	ℑ Low – Medium
ℑ Visual intrusion associated with the crushing and screening activities	ℑ Low – Medium
ℑ Dust nuisance due to crushing activities	ℑ Low – Medium
ℑ Noise nuisance generated by crushing activities	ℑ Low-Medium
ℑ Dust nuisance due to loading and vehicles transporting the material	ℑ Low-Medium

POTENTIAL IMPACT	SIGNIFICANCE (AFTER MITIGATION)
ℑ Impact on the access roads	ℑ Low-Medium
ℑ Noise nuisance caused by vehicles	ℑ Low-Medium
ℑ Health and safety risk posed by un-sloped areas	ℑ 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 conditions of authorisation.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Use the excavated area for the final depositing of overburden. • Dump 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 overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. • If necessary, the area can be fertilized to hasten the establishment of flora. Should the site's natural vegetation not grow back within six months of its closure to spread the naturally existent flora in the area, the site could be seeded with a local or adapted indigenous seed mix. This area is seen to have low agricultural potential due to the rocky surface therefore the use of seed mixes should only be done after consultation with	• Effectively restoring the mined area to allow the return of land use to agricultural purposes.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		a qualified specialist with experience in the area as it might not apply. • If required by the Regional Manager (DMRE) 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-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	
VISUAL CHARACTERISTICS Visual Aspect	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Store mining equipment in a dedicated area when not in use. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. • Contain excavations to the approved footprint of the permitted area. • Upon closure, 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.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
AIR AND NOISE QUALITY Dust Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 40 km/h on the access road to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Install water sprayers at the crusher plant to alleviate dust generation from the 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. • Flatten loads to prevent spillage during transportation on public roads. • 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.	• Dust prevention measures are applied to minimise the impact.
AIR AND NOISE QUALITY Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site.	• Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• 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. • Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008. • Implement best practice measures to minimise potential noise impacts.	
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of invasive plant species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. • Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose. • Keep all stockpiles (topsoil & overburden) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas.	• Mining area is kept free of invasive plant species.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
GEOLOGY AND SOIL Topsoil management	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 upper 300 mm of the soil 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 and inactive 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion. • Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Keep temporary topsoil stockpiles free of invasive plant species. • Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. • Divert storm- and runoff water around the stockpile area to prevent erosion. • Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site.	• Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• 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 cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop 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.	
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of vegetation removal.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• 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. • For threatened species that may not be destroyed, it is recommended that professional search and rescue service providers be used to remove such plants and to use them either for later rehabilitation work or other conservation projects.	• Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Permits must be kept on-site and in the possession of the flora search and rescue team at all times. • Blanket clearing of vegetation must be limited to the proposed footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Clearing of vegetation should be minimized and avoided where possible. • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. • No plant species, whether native or exotic, should be brought into, ore removed from, the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • No fires must be allowed on-site. • If deemed necessary by the ECO, a firebreak must be made around the periphery of the site in autumn every year. Vegetated areas inside the break should be burned (upon recommendation of the ECO) on a biennial basis if deemed necessary. The relevant veld burning legislation must be adhered to. • The following mitigation measures were provided by the terrestrial biodiversity specialist (Appendix M): o Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage. o Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. It is recommended that areas to be developed be specifically demarcated so	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		that during the construction phase, only the demarcated areas be impacted upon ○ All laydown areas, chemical toilets etc. should be restricted to Low SEI areas. No materials may be stored for extended periods of time and must be removed from the PAOI once the construction/closure phase has been concluded. ○ Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. ○ All footprints to be rehabilitated after construction is complete. Rehabilitation of the disturbed areas existing in the PAOI must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type. ○ A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers ○ Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair ○ It should be made an offence for any staff to /take bring any plant species into/out of any portion of the PAOI without permission. The only exception to this involves the removal of exotic or invasive species from the PAOI, and the introduction of indigenous species for rehabilitation of the PAOI post development. Introductions and removals, however, must be closely monitored to ensure that the correct species are being removed/reintroduced.	
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.	• Site access should be controlled and no unauthorised persons should be allowed onto the site. • Any fauna directly threatened by the associated activities should be removed to a safe location by a site manager. • The collection/trapping, hunting, or poisoning of any animals at the site is strictly forbidden. Signs must be put up to enforce this. Personnel should not be allowed to wander off demarcated areas. • Fires must not be allowed on site. • All hazardous materials should be stored in the appropriate manner to prevent contamination of	• Disturbance to fauna is minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		the site. Any accidental chemical, fuel, and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. All vehicles should adhere to a low speed limit (40 km/h) to avoid collisions with susceptible species. • Construction vehicles must be limited to a minimal footprint on site (no movement outside of the earmarked footprint). • All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. • Ensure that cables and connections are insulated successfully to reduce electrocution risk. • Use environmentally friendly chemical products. • No litter, food or other foreign material may be thrown or left around the site. •	
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if	• Wastes are appropriately handled and safely disposed of at recognised waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. • If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Obtain an oil spill kit, and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. • Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		a designated hazardous waste bin until it is disposed of at a recognised facility. File proof. • Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. • Handle biodegradable refuse as indicated above. • Encourage re-use or recycling of waste products. • Do not bury or burn waste on the site. • Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical 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. • Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Do not discharge water containing waste into the natural environment.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• 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.	
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.	• Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. • 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. • 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 because of the mining activities immediately	• Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		(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. • Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces, which formally drain to a dirty water drainage system at the site. • Contain all fuels and chemicals stored or 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.	
EXISTING INFRASTRUCTURE Management of the access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Divert storm water around the access road to prevent erosion.	• The access road remains accessible to the landowner and lawful occupiers during the operational phase, and upon closure, the road is

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed and inactive areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. • Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.	returned in a better, or at least the same state as received by the permit holder.
After care on rehabilitated areas	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. • Only do topsoil spreading 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 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. • Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. • Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not	•

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		be considered complete until the first cover crop is well established. • Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.	
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 needed, sign mined-out/rehabilitated areas back to agricultural use once the cover crop stabilised.	• Mining has the least possible impact on the operation of the property.
GENERAL Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Ensure that workers have access to the correct PPE as required by law. • Locate sanitary facilities within 100 m from any point of work. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). • Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity. • Inform the surrounding landowners and communities in writing ahead of any blasting event. • Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. • Record all blasts with a vibro recorder.	• Employees work in a healthy and safe environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Give audible warning of a pending blast at least 3 minutes in advance of the blast. • Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.	
GENERAL Storage/handling of hazardous substances/chemicals.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Place chemical storage areas on level ground to prevent offsite migration of any spilled product. • Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. • Control access to the chemicals/substances and implement a notification system of an appropriate staff member. • Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. • Maintain a Hazardous Substances Register, and keep Safety Data Sheets (SDS) current for all chemicals used on site. • Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect	• The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. • Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water, and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump.	
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 any significant archaeological remains are located during this survey which cannot be avoided by, or excluded from the quarrying, they will require mitigation prior to any quarry-related activities on the site. A Workplan application will need to be made to SAHRA to conduct this work. • Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately to make a decision about how to deal with the remains. All	• Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		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. • The following mitigation measures were provided by the heritage specialist (Appendix M1): - Avoidance of the burial site RD001 with a 100m buffer zone was preferred with access provided to family members wishing to visit the graves - The Applicant has requested a relaxation of the buffer zone, management plans presented by the Applicant are outlined below; - The following was provided by the Applicant as measures to ensure the graves stay protected with a relaxed buffer zone of	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		100m to 40m or 20m buffer zone, that was subjected to SAHRA's approval to which they only approved a buffer zone of 60 meters: - Obtaining a report from a blast expert on the effects of fly rock and Blast vibrations and possible impacts to the grave site (Please refer to Appendix M2); - The Blast design can be modified as mining gets closer to the grave site to minimize any blast vibrations (Please refer to Appendix M2); - The Applicant can measure and monitor the blast vibrations on every blast and record results; - The site will be monitored and photographs taken after each blast to see that no damage has occurred; - The grave area will be fenced, maintained and kept clean of excess vegetation.	

Final proposed alternatives.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives, which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

As explained under point *g) Motivation for preferred development footprint.*

The initial proposal was updated to incorporate the matters raised during the assessment process. This led to the final layout of infrastructure and activities on the overall site as shown in the final site map attached Appendix B:

- The establishment of the processing area proposed under Site Alternative 1 using temporary infrastructure.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects, which have not formed part of the EMPr that 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 the property owner, as well as site inspections, and background information gathering. No uncertainty with regard to 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 authorized or not.

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

(ii) Conditions that must be included in the authorisation

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

q) Period for which the Environmental Authorisation is required.

The applicant requests the Environmental Authorisation to be valid for a five year period to correspond with the maximum 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 Environmental Impact 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 1,097,500. Please see the explanation as to how this amount was derived at attached as Appendix H – Financial and Technical Competence.

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

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

The processing operation will be self-funded through income generated by sales of the aggregate, and will therefore be funded by Inzalo Crushing and Aggregates (Pty) Ltd.

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 **Appendix 219.1** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein).

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

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

The viewshed analysis showed that the visual impact of the proposed aggregate mining operation will be of low significance. The small scale of the proposed operation, and the proposed mining area is approximately 6km from the nearest town and is semi-visible from the R35. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

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

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

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

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

area from residential infrastructure further lessens the potential noise impact.

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

  The proposed labour component of the activity will be between 40 to 60 people. The operation will contribute to the local economy in the area, both directly and through the multiplier effect that its continued presence will create.

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

- **Compliance Management:**

  Should the MP application be approved, compliance with the mitigation measures and conditions approved as part of the EMPR and the Environmental Authorisation (EA) will be compulsory to the Permit Holder as both the EMPR and EA are legally binding documents. In terms of Section 34 of the NEMA EIA Regulations, 2014 (as amended 2017) the holder of an EA must: "(a) ensure that the compliance with the conditions of the environmental authorisation and the EMPR, and where applicable the closure plan, I audited; and (b) submit an environmental audit report to the relevant competent authority". The regulations further stipulate that the environmental audit report (EAR) must be prepared by an independent person with the relevant environmental auditing expertise; provide verifiable findings on the level of performance against and compliance with the provisions of the requisite EA, EMP and Closure Plan, and the ability of the measures contained in the EMPR and Closure Plan to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking. Within 7 days of the date of submission of an EAR to the competent authority (DMRE) the holder of the EA must notify all potential and registered I&AP's of the submission of that report, and make such report immediately available to anyone on request, and on a publicly accessible website

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(*vi*) and (*vii*) of that Act, attach the investigation report as **Appendix 219.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

According to the Heritage Impact Assessment (Appendix M1), the Project area is characterised by extensive surface disturbances across large portions which have been previously used as a quarry and processing site. The Project consists of a Mining Permit Area and Stockpile area, both of which Alternative locations have been provided and surveyed in order to assess the heritage significance.

During the survey, a burial site (RD001), and three structures along the ridgeline (RD002, RD003, RD004) were identified. Due to mining activities, the burial site should be avoided with a 100m buffer zone but the Applicant has requested for a relaxation on the buffer zone with an outline of potential ways to still ensure the graves be protected (see below).

The structures RD002, RD003, RD004 along the ridgeline are extremely overgrown and it was not possible to determine the full extent and purpose of the structures nor if an archaeological deposit is present at these sites. If Stockpile 1 is selected, these sites will be impacted and should be avoided with a 30m buffer zone. If avoidance is not possible, vegetation clearance will first be required in order to determine the extent of required recording process in a Phase 2 archaeological mitigation of the sites. Only after a Phase 2 mitigation is complete can a destruction permit be applied for.

From a heritage perspective, both MP areas will require a buffer zone in order to preserve the graves at RD001. The Stockpile 2 would be preferable as no sites are present here, if however Stockpile 1 is selected, avoidance or mitigation will be required for structure RD002, RD003, RD004.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area of insignificant/zero palaeontological sensitivity, and no further studies are required for this aspect.

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in the HIA and this report /are adhered to. Based on the Blasting Report, SAHRA approved the reduction of the 100m buffer zone around site RD001 to 60m with decking due to the number of graves and unknown SDOB of all graves, and to mitigate the impacts of Fly rock. Please refer to Appendix M3.

u) Other matter 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)**

Site Alternative 1 (S1) (Preferred Alternative and only site alternative): The Applicant, applied for a 4.9ha mining permit to mine stone aggregate/ gravel a portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province. The proposed area was deemed as the preferred area due the 60m distance from the graves as well as to the location of the mineral reserve which is situated over an undisturbed and inactive area of the farm.

An alternative layout for the quarry, has been assessed in the pre application phase – Site Alternative 2 but not found viable as explained below.

Site Alternative 2:

Site Alternative 2 (S2) was assessed for the proposed mining area but was found not practically suitable due to the 100-meter buffer as suggested by the Heritage Specialist (Please refer to Appendix M1). Site alternative 1, was deemed the only viable site alternative as this is the only area that will be viable for the applicant due to the presence of the aggregate reserve. Site Alternative 2 is not suitable for quarry development, as it does not fall within the mineral reserve location. It is believed that the impact and impracticality associated with this site alternative is of higher significance without the need or motivation justifying it.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Zoë Norval and Sonette Smit of Greenmined Environmental that acts as EAPs on this project has been included in Part A Section 1(a) as well as Appendix K as required.

b) Description of the Aspects of the Activity

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

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

c) Composite Map

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

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

d) Description of Impact management objectives including management statements

(i) Determination of closure objectives.

(ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

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

- Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature.

- This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form slopes on the benches below, thereby reducing the overall face angle.

- Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the quarry should be capped with suitable soil material and re-vegetated.

- Rocks and coarse material removed from the excavation must be dumped into the excavation.

- No waste will be permitted to be deposited in the excavations.

- Once overburden, rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.

- The area shall be fertilized 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.

- 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 plant, office and service areas:

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

- Stockpiles will 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.

- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.

- 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 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.

- Prior to replacing the topsoil the material that was removed from these areas will be replaced in the same order as it originally occurred.

- 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 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 and maintenance, and weed / alien clearing.

- All infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.

- Waste material of any description, including receptacles, scrap, rubble and tyres, will 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.

- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site on final closure.

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

- Seeding of the area:

    - Once the pit slopes have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

(ii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation.

N/A

(iii) Has a water use license been applied for?

B&E International (Pty) Ltd (contractor) holds a General Authorization for a section 21(c), *impeding or diverting the flow of a watercourse* and *(i), altering the bed, banks, course, or characteristics of a watercourse*.

(iv) Impacts to be mitigated in their respective phases

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

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	Construction / Site Establishment phase	4.9ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the processing area and that work stay within approved area.	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993	Beacons need to be in place throughout the life of the activity.
Establishment of mobile crusher and ablution infrastructure within boundaries of site.	Construction / Site Establishment phase	0.8 ha	Site management must ensure that infrastructure is erected within the boundaries of the approved processing area.	Compliance to standards stipulated in the: • MPRDA, 2008 • OHSA, 1993	Throughout operational phase
STRIPPING AND STOCKPILING OF TOPSOIL **&**	Operational phase	4.9ha	**<u>Visual Mitigation:</u>** • The site must have a neat appearance and be kept in good condition at all times.	**<u>Land use zoning:</u>** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015	Throughout operational phase

CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE **&** **BLASTING** **&** **EXCAVATION**			• The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status.	• The property is zoned for agriculture as primary use.	
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL**	Operational phase & Decommissioning phase	4.9ha	**Dust Handling:** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • Water sprayers must be added to the crushing infrastructure to control dust emissions from the conveyor belts. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases

OVER DISTURBED AREA **&** **BLASTING** **&** **EXCAVATION**			allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.		
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Operational phase & Decommissioning phase	4.9ha	**<u>Noise Handling:</u>** • No crushing or screening allowed on Sundays. • The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	**<u>Noise Handling:</u>** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA**	Operational phase & Decommissioning phase	4.9ha	**<u>Management of weed- or invader plants:</u>** • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983). • Management must take responsibility to control declared invader or exotic species on the habilitated 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 with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**<u>Management of weed- or invader plants:</u>** • CARA, 1983 • All species regarded as Category 1 weeds according to CARA need to be eradicated from site.	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Operational phase	4.9ha	**<u>Loss of topsoil due to incorrect storm water management</u>** • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion	**<u>Loss of topsoil due to incorrect storm water management:</u>** • CARA, 1983 • NEMA, 1998 • NWA, 1998 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.	Throughout operational phase

			protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ▪ Storm water management must apply for the entire life cycle of the site 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 the storm water management.		
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **LOADING AND TRANSPORTING** **&** **BLASTING** **&** **EXCAVATION**	Operational phase	4.9ha	**<u>Negative impact on fauna that may enter the area:</u>** • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set, or nests raided for eggs or young.	**<u>Negative impact on fauna that may enter the area:</u>** • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phase
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF**	Operational phase & Decommissioning phase	4.9ha	**<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>** • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs is needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of	**<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The	Throughout operational and decommissioning phases

STOCKPILED ROCK/STONE **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**			in a 200 liter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMRE by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of 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, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	precautionary principal must apply.	
LOADING AND TRANSPORTING	Operational phase	Access road	**<u>Impact on the access roads:</u>** • Storm water must be diverted around the access roads to prevent erosion. • Vehicular movement must be restricted to existing access routes to prevent	**<u>Degradation of the gravel access road:</u>** • NRTA, 1996 • The gravel access road needs to be monitored for signs of	Throughout operational phase

			crisscrossing of tracks through undisturbed areas. • The applicant must repair Rutting and erosion of the access road caused because of the processing activities.	degradation. Should any signs become apparent immediate rectification action must be done.	
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Decommissioning phase	4.9ha	**<u>Erosion of returned topsoil after rehabilitation:</u>** • Storm water must be controlled via temporary banks to prevent run-off causing down-slope erosion. • Topsoil spreading may only be done at a time of year when vegetation cover can be established as quickly as possible. This will minimize erosion of returned topsoil by both rain and wind. 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. • A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. • The rehabilitated area must be monitored for erosion, and appropriately stabilized should any erosion occurs.	**<u>Erosion of returned topsoil after rehabilitation:</u>** • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.	Throughout decommissioning phase

FINAL REHABILITATION	Decommissioning phase	4.9ha	**<u>Final rehabilitation:</u>** • Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing. • All infrastructure, equipment, temporary equipment and other items used during the operational phase will be removed from the site (section 44 of the MPRDA). • Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site. • Weed / Alien clearing will be done in a sporadic manner during the operational phase. • Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site. • Final rehabilitation shall be completed within a period specified by the Regional Manager.	**<u>Final Rehabilitation:</u>** • MPRDA, 2008 • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015 • Final rehabilitation needs to be done within a period specified by the Regional Manager of DMRE.	Throughout decommissioning phase

e) Impact Management Outcomes

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

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 processing area.	N/A	Construction / Site Establishment phase	Control through management and monitoring	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993
Establishment of mobile crusher and ablution infrastructure within boundaries of site.	If the infrastructure is established within the boundaries of the approved processing area no impact could be identified.	N/A	Construction / Site Establishment phase	Control through management and monitoring	Compliance to standards stipulated in the: • MPRDA, 2008 • OHSA, 1993 • The infrastructure needs to be within the boundaries of the approved area. • The ablution facilities need to be kept clean and in working order. The supplier need to service the ablution facilities weekly.

STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	**Land use zoning:** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015 • The property is zoned for agriculture as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 1)	The loss of natural vegetation may affect the biodiversity of the surrounding environment.	Operational phase	Control: Management of buffer areas and demarcation of work areas	**Negative impact on biodiversity of the area (Site Alternative 1):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 2)	The loss of natural vegetation may affect the biodiversity of the surrounding environment.	Operational phase	Modify: Consider use of a less sensitive area	**Negative impact on biodiversity of the area (Site Alternative 2):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping	The noise impact should be contained within	Operational phase	Control: Noise control measures	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1)

	and stockpiling the topsoil.	the boundaries of the property and will represent the current noise levels of the site.			• All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Control & Remedy: Implementation of weed control and the weed/invader plant management plan	**Management of weed- or invader plants:** • CARA, 1983 • All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Control: Storm water management	**Loss of topsoil due to incorrect storm water management:** • CARA, 1983 • NEMA, 1998 • NWA, 1998 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.

BLASTING	Health and safety risk posed by blasting activities	The impact on health and safety posed by blasting will be contained within the site	Operational phase	Control: Implementation of safety control measures	**Blasting standards implemented** • MHSA, 1996 • OHSA, 1993
BLASTING	Potential impact on the graves due to blasting	The impact on the graves by blasting will be contained within the 60m buffer zone,	Operational phase	Control: Implementation of HIA & SAHRA mitigation measures	**Impact on archaeological and heritage artefacts:** • NHRA, 1999
BLASTING	Dust nuisance caused by blasting activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)
BLASTING	Noise nuisance caused by blasting activities	The noise impact caused by blasting is instantaneous and has a short duration	Operational phase	Control: Noise control measures	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	**Land use zoning:** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015

					The property is zoned for agriculture as primary use.
EXCAVATION	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	<u>Control:</u> Dust suppression	**<u>Dust Handling:</u>** NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise control measures	**<u>Noise Handling:</u>** • NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	<u>Control:</u> Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993

EXCAVATION	Negative impact on the fauna and flora of the area	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Protection of Fauna on site: • NEM:BA, 2004
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 Every precaution must be taken to prevent contamination. The precautionary principal must apply.
EXCAVATION	Weed and invader plant infestation of the area	iodiversity	Operational phase	Control & Remedy: Implementation of weed control	**Management of weed- or invader plants:** • CARA, 1983 All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Visual impact associated with the crushing and screening activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	**Land use zoning:** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015 • The property is zoned for agriculture as primary use..

CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Dust nuisance due to crushing activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)
CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Noise nuisance generated by crushing activities	The noise impact should be contained within the boundaries of the property, and will relate to the existing equipment operating on-site.	Operational phase	Control: Noise management	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE	Weeds and invader plant infestation of the area	Biodiversity	Operational phase	Control & Remedy: Implementation of weed control	**Management of weed- or invader plants:** • CARA, 1983 • All species regarded as Category 1 weeds according to

					CARA need to be eradicated from site.
LOADING AND TRANSPORTING	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	<u>Control:</u> Dust suppression	**<u>Dust Handling:</u>** • NEM:AQA, 2004 Regulation 6(1)
LOADING AND TRANSPORTING	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	<u>Control:</u> Noise control measures	**<u>Noise Handling:</u>** • NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
LOADING AND TRANSPORTING	Impact on the access roads	All road users will be affected	Operational phase	<u>Control & Remedy:</u> Road management	**<u>Degradation of the gravel access road:</u>** • NRTA, 1996 • The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.

LOADING AND TRANSPORTING	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	<u>Control:</u> Waste management	**<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	<u>Control:</u> Soil management	**<u>Erosion of returned topsoil after rehabilitation:</u>** • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	<u>Control:</u> Dust suppression	**<u>Dust Handling:</u>** • NEM:AQA, 2004 Regulation 6(1)

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Control: Noise management	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	Control: Waste management	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Control: Storm water management	**Erosion of returned topsoil after rehabilitation:** • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Control & Remedy: Implementation of weed control	**Management of weed- or invader plants:** • CARA, 1983 • All species regarded as Category 1 weeds according to CARA need to be eradicated from site.

f) Impact Management Actions

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

ACTIVITY 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 processing area.	Control through management and monitoring	Beacons need to be in place throughout the life of the mine.	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993
Establishment of mobile crusher and ablution infrastructure within boundaries of site.	If the infrastructure is established within the boundaries of the approved processing area no impact could be identified.	Control through management and monitoring	Site establishment and operational phase	Compliance to standards stipulated in the: • MPRDA, 2008 • OHSA, 1993
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	Control: Implementation of proper housekeeping	Throughout operational phase	**Land use zoning:** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015

				• The property is zoned for agriculture as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 1)	Control: Management of buffer areas and demarcation of work areas	Throughout operational phase	**Negative impact on biodiversity of the area (Site Alternative 1):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 2)	Modify: Consider use of a less sensitive area	Throughout operational phase	**Negative impact on biodiversity of the area (Site Alternative 2):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	Throughout operational phase	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil	Control: Noise control measures	Throughout operational phase	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Control & Remedy: Implementation of weed control and weed/invader plant management plan	Throughout operational phase	**Management of weed- or invader plants:** • CARA, 1983 • All species regarded as Category 1 weeds according to CARA need to be eradicated from site.

STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	Control: Storm water management	Throughout operational phase	**Loss of topsoil due to incorrect storm water management:** • CARA, 1983 • NEMA, 1998 • NWA, 1998 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	Control: Waste management	Throughout operational phase	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
STRIPPING AND STOCKPILING OF TOPSOIL	Impact on archaeological and heritage artefacts	Control: HIA mitigation measures	Throughout operational phase	**Impact on archaeological and heritage artefacts:** • NHRA, 1999 • Every precaution must be taken to prevent disturbance to graves.
BLASTING	Health and safety risk posed by blasting activities	Control: Implementation of safety control measures	Throughout Operational phase	**Blasting standards implemented** • MHSA, 1996 • OHSA, 1993
BLASTING	Dust nuisance caused by blasting activities	Control: Dust suppression	Throughout Operational phase	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)

BLASTING	Noise nuisance caused by blasting activities	Control: Noise control measures	Throughout Operational phase	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Visual intrusion associated with the excavation activities	Control: Implementation of proper housekeeping	Throughout Operational phase	**Land use zoning:** • Mpumalanga LUPA, 2014 • Lekwa Municipality: Land Use Planning Bylaws, 2015 The property is zoned for agriculture as primary use.
EXCAVATION	Dust nuisance due to excavation activities	Control: Dust suppression	Throughout Operational phase	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Noise nuisance generated by excavation equipment	Control: Noise control measures Operational phase	Throughout Operational phase	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Unsafe working conditions for employees	Control: Implementation of safety control measures	Throughout Operational phase	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993
EXCAVATION	Negative impact on the fauna and flora of the area		Throughout Operational phase	Protection of Fauna on site: • NEM:BA, 2004

		Control: Implementation of fauna protection measures		
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Throughout Operational phase	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 Every precaution must be taken to prevent contamination. The precautionary principal must apply.
EXCAVATION	Weed and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Throughout Operational phase	**Management of weed- or invader plants:** • CARA, 1983 All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Dust nuisance caused during landscaping activities	Control: Dust suppression	Throughout decommissioning phase	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Noise nuisance caused by machinery	Control: Noise management	Throughout decommissioning phase	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Contamination of area with hazardous waste materials	Control: Waste management	Throughout decommissioning phase	**Contamination of surface or groundwater due to hazardous spills not cleaned:** • NWA, 1998 • NEM:WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Control: Storm water management	Throughout decommissioning phase	**Erosion of returned topsoil after rehabilitation:** • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. • Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Weeds and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Throughout decommissioning phase	**Management of weed- or invader plants:** • CARA, 1983 • All species regarded as Category 1 weeds according to CARA need to be eradicated from site.

(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 Regulation 22 (2) (d) as described in 2.4 herein.

The closure objectives entail the sloping, landscaping and replacement of the topsoil over the processing area in order to rehabilitate the disturbance. The stockpiled topsoil will be spread over the disturbed area to a depth of at least 100 - 200 mm.

Final rehabilitation will entail the removal of all infrastructure and equipment from the site. Final sloping, landscaping, levelling and top dressing will be done on all areas. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management will implement an alien invasive plant management plan during the 12 months aftercare period to address germination of problem plants in the area. The applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

This report, the Draft EIA Report, includes all the environmental objectives in relation to closure and will be made available for perusal of the landowner, I&AP's and stakeholders. Any additional comments received on the draft report will be incorporated into the Final EIA report.

(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 rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix D will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area:

- Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature.
- This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form slopes on the benches below, thereby reducing the overall face angle.
- Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the quarry should be capped with suitable soil material and re-vegetated.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.
- The area shall be fertilized 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.
- 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 plant, office and service areas:

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles will 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.
    - Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
    - 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 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.
- Prior to replacing the topsoil the material that was removed from these areas will be replaced in the same order as it originally occurred.
- 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 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 and maintenance, and weed / alien clearing.

- All infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.

- Waste material of any description, including receptacles, scrap, rubble and tyres, will 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.

- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site on final closure.

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

- Seeding of the area:

    - Once the pit slopes have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

(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	Dolerite Rock for aggregate production
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	**YES**	
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		**NO**
14	2 to 3 years of maintenance and aftercare	**YES**	

Unit rates for closure components

According to Table B.6, master rates and multiplication factors for applicable closure components**.**

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of **processing plant and related structures** (including overland conveyors and power lines)		
2(A)	Demolition of **steel buildings and structures**		
2(B)	Demolition of **reinforced concrete buildings and structures**		
3	Rehabilitation of **access roads**		
4(A)	Demolition and rehabilitation of **electrified railway lines**		
4(B)	Demolition and rehabilitation of **non-electrified railway lines**		
5	Demolition of **housing and facilities**		
6	**Opencast rehabilitation** including final voids and ramps	R319431	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	R168695	1
11	**River diversions**		
12	**Fencing**	R192	1
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**	R22450	1

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

CALCULATION OF THE QUANTUM							
Mine:	**portion of Portion 7 of the farm Roodekrans 457, Administrative district IS, Mpumalanga Province**			**Location:**	**Morgenzon**		
Evaluators:	**Zoë Norval**			**Date:**	**28 February 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)	m^3	0	23.32	1	1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	323.3	1	1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	475.94	1	1	R 0.00
3	Rehabilitation of access roads	m^2	0	58.3	1	1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	560.74	1	1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	306.34	1	1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	645.54	1	1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	338,596.86	0.04	1	R 54,175.50
7	Sealing of shaft, audits and inclines	m^3	0	173.84	1	1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	225731.24	1	1	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	281143.8	1	1	R 0.00

8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	816575.24	0.51	1	R 0.00
9	Rehabilitation of subsided areas	ha	0	189016.02	1	1	R 0.00
10	General surface rehabilitation	ha	0.9	178816.7	1	1	R 160,935.03
11	River diversions	ha	0	178816.7	1	1	R 0.00
12	Fencing	m	900	203.52	1	1	R 183,168.00
13	Water Management	ha	0	67991.58	0.17	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.9	23797	1	1	R 116,605.30
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 514,883.83
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R25,744.19		**Sub Total 1**	R 540,628.02

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 32,437.68
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 54,062.80
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 627,128.50
		Vat (15%)	R 94,069.28
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 721,197.78**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R 721,197.78

(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 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) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation of site with visible beacons	Maintenance of beacons	• Visible beacons need to be established at the corners of the processing area. • A 60m buffer area from the designated graves needs to be demarcated • A 20m buffer area (if applicable) from any natural areas need to be demarcated. •	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer.	Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			Role: • Ensure beacons are in place throughout the life of the activity.	• Annual compliance monitoring of site by an Independent Environmental Control Officer.
Establishment of mobile crusher and ablution infrastructure within boundaries of site.	• All infrastructure to be established inside the boundaries of the processing area. • Waste monitoring programme to be implemented	• Crushing infrastructure and chemical toilet to be placed inside the boundaries of the approved area. • Waste disposal spreadsheets to be completed throughout operational phase and proof of safe disposal filed for auditing purposes.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities to the approved boundaries of the area. • Ensure proper waste management at the site.	Throughout Construction Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **BLASTING** **&** **EXCAVATION**	Monitoring of visual impacts	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment.	Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Dust Monitoring: • The dust generated by the processing activities must be	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management.

& **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	continuously monitored, and addressed by the implementation of dust suppression methods.	applicant already has this equipment available.	• Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Add water sprayers to the crushing infrastructure to control dust emissions from conveyor belts. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&**	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • No crushing or screening allowed over Sundays. • Ensure that employees and staff conduct themselves in an acceptable manner while on site.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA & BLASTING & EXCAVATION			• No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	
STRIPPING AND STOCKPILING OF TOPSOIL & CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE & SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed.	Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL & SLOPING, LANDSCAPING AND REPLACEMENT OF	Topsoil management	Topsoil Handling: • Excavating equipment to remove the first 100 – 200 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role:	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

TOPSOIL OVER DISTURBED AREA			• Strip and stockpile the upper 100 – 200 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation	Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

STRIPPING AND STOCKPILING OF TOPSOIL & CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE & LOADING AND TRANSPORTING & BLASTING & EXCAVATION	Protection of fauna	Protection of fauna: • Site management has to protect fauna that enters the processing area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL & CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE & LOADING AND TRANSPORTING &	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately, and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient cleanup of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs is needed on site ensure drip trays is present. Ensure all waste products are disposed of in a 200 liter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA & BLASTING & EXCAVATION			from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of 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. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Morgenzon. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above.	
LOADING AND TRANSPORTING	Management of Access Roads • The condition of the access road must be continuously monitored.	Management of Access Roads: • Dust suppression equipment such as a water car and dispenser. • Grader to restore the road surface when needed.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Divert storm water around the access roads to prevent erosion.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

			• Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities.	
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Soil erosion: • Loss of reinstated topsoil after rehabilitation.	Erosion monitoring: • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. • Only do topsoil spreading 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 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. • Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. • Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not be considered	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

			complete until the first cover crop is well established. • Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.	
STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Health and safety risk	Health and safety Management: • Stocked first aid box. • Level 1 certified first aider • All appointments in terms of the Mine Health and Safety Act.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

STRIPPING AND STOCKPILING OF TOPSOIL **&** **CRUSHING AND SCREENING OF STOCKPILED ROCK/STONE** **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Protection of Cultural and Heritage Artefacts	Protection of Graves: • A 60 m buffer area from the designated graves needs to be demarcated. • Implementation of a chance find procedure for the project.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

l) Indicate the frequency of the submission of the performance assessment report.

The Mineral and Petroleum Resources Development Regulations stipulates that performance assessment reporting should be done annually. The applicant commits to submitting the performance assessment reports of the proposed processing activity annually to DMRE for perusal.

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 processing activity starts, a copy of the Environmental Management Programme will be handed to the site manager during the site establishment meeting. Issues such as topsoil handling, site clearance, 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 with regard to the environment.

(ii) Manner in which risks 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 activity takes place. An Environmental Control Officer needs to check compliance of the processing activities 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.

- **<u>Site Management:</u>**
  - Stay within boundaries of site – do not enter adjacent properties
  - 60m buffer area around graves
  - Keep tools and material properly stored
  - Smoke only in designated areas
  - Use toilets provided – report full or leaking toilets

- **Water Management and Erosion:**
  - Check that rainwater flows around work areas and are not contaminated
  - Report any erosion
  - Check that dirty water is kept from clean water

- **Waste Management:**
  - Take care of your own waste
  - Keep waste separate into labelled containers – report full bins
  - Place waste in containers and always close lid
  - Don't burn waste
  - Pick-up any litter laying around

- **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**
  - Never mix general waste with hazardous waste
  - Use only sealed, non-leaking containers
  - Keep all containers closed and store only in approved areas
  - Always put drip trays under vehicles and machinery
  - Empty drip trays after rain
  - Stop leaks and spills, if safe
    - Keep spilled liquids moving away
    - Immediately report the spill to the site manager/supervision
    - Locate spill kit/supplies and use to clean-up, if safe
    - Place spill clean-up wastes in proper containers
    - Label containers and move to approved storage area

- **Discoveries:**
  - Stop work immediately
  - Notify site manager/supervisor
  - Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures

- **Air Quality:**
  - Wear protection when working in very dusty areas
  - Implement dust control measures:
    - Water all roads and work areas
    - Minimize handling of material
    - Obey speed limit and cover trucks

- **Driving and Noise:**
  - Use only approved access roads
  - Respect speed limits
  - Only use turn-around areas – no crisscrossing through undisturbed 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 fire wood
  - 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
  - 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 DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the project at that time.

2. UNDERTAKING

The EAP herewith confirms

I, Zoë Norval (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

X

c) the inclusion of inputs and recommendations from the specialist reports where relevant, and
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are co X tly reflected herein

_____

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

16 MARCH 2025

Date:

I, Sonette Smit (Reviewer), herewith confirms

e) the correctness of the information provided in the reports X
f) the inclusion of comments and inputs from stakeholders and I&AP's X

X

g) the inclusion of inputs and recommendations from the specialist reports where relevant, and
h) 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 co X tly reflected herein

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

16 MARCH 2025

Date:

-END-