PROPOSED MINING ON A PORTION OF THE REMAINING EXTENT OF THE FARM ELANDS SPRUIT NO 5523, ALFRED DUMA MUNICIPAL AREA, KWAZULU-NATAL PROVINCE

DRAFT BASIC ASSESSMENT REPORT

MAY 2024

REFERENCE NUMBER: *KZN 30/5/1/3/2/10979MP*

PREPARED FOR:

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EXECUTIVE SUMMARY

The Applicant, Raubex Construction (Pty) Ltd, is applying for environmental authorisation (EA) and a mining permit (MP) over 4.91 ha of a portion of the Remaining Extent of the farm Elands Spruit No 5523, uThukela Magisterial District, KwaZulu-Natal Province.

The earmarked mining area directly borders an existing quarry, the Applicant therefore wishes to secure the resource and proposes to mine the quarry through the open-cast mining method.

The mining method will make use of blasting to loosen the hard rock; the material will then be loaded and hauled out of the excavation to the mobile crushing plant where it will be screened to various sized stockpiles. The stone aggregate, gravel will be stockpiled until it is transported from site using tipper trucks. The permit holder will be responsible for the rehabilitation of the entire area upon closure. The infrastructure will be of temporary nature as a mining permit can only be valid for a maximum of 5 years. Some farm tracks may need to be improved to allow movement of the project related vehicles. No water will be abstracted from the site, and the plant will be powered with generators. Chemical toilets will be used, and the project will appoint ±11 local employees (including management) that will be sourced from the surrounding area and daily be transported to site.

On January 19, 2023, the Department of Economic Development, Tourism, and Environmental Affairs (DEDTEA) approved an application for stockpile and crushing area to 10.5 hectares on the same farm under reference number DC23/0005/2022. Should additional stockpiling be required, the applicant will make use of the approved area.

The proposed project requires an EA & MP from the Department of Mineral Resources and Energy (DMRE). This report, the Draft Basic Assessment Report, forms part of the departmental requirements.

Preferred Site Alternative

Site Alternative 1 is the most practical alternative as the area borders an existing quarry, topsoil and/or overburden layer of the footprint is relatively shallow, the resource is of good grade, access and rehabilitation is simplified, and the environmental related impacts are acceptable.

Public Participation Process

English and isiZulu notices were placed at conspicuous points. The project will be advertised in the Ladysmith Gazette, and isiZulu pamphlets explaining the project will be distributed in Matiwane. Stakeholders and I&AP's will be informed of the project with notification letters. The DBAR will be available at the Ladysmith Library for 30 days. The commenting period for perusal of the documentation and submission of comments ends 21 June 2024. The comments received on the DBAR will be incorporated into the final BAR to be submitted to DMRE.

Basic Assessment Report

The key findings of the basic assessment report are:

Topography:

- Due to the impracticality of importing large volumes of fill material to restore the quarry to its original topography, the rehabilitation option (upon closure) is to render the mine safe and leave it as a minor landscape feature, while the areas surrounding the excavation will return to grazing.

Visual Characteristics:

- The viewshed analyses shows that the visual impact will be of medium concern as the mining area will mainly be visible from the south.
- Should the mining permit area (be authorised) be established on site, the visual impact on the receiving environment is deemed to be of medium-high significance.

Air and Noise Quality:

- Should the Applicant implement the proposed mitigation measures the impact on the air quality of the surrounding environment is of low-medium significance.
- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place in a pristine environment, and the impact is therefore deemed compatible with the current operations and of low-medium significance.
- Should the mining permit area be (authorised) be established on site, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance, while the cumulative noise nuisance (after mitigation) will be of medium significance.

Hydrology:

- Two wetland units a channelled valley bottom and a seep was identified within 500 m (±155 m away) of the proposed development footprint.
- No wetlands or watercourse were identified within the application footprint.
- A buffer of 40 m was proposed as no-go area around the identified wetland units. The proposed mining area does not extend into or near to (>100 m away) the proposed buffer area.
- The 2024 wetland study concluded that impacts can be potentially reduced to acceptably 'low' impact significance levels.
- The specialist notes (2024) that the proposed development can be considered acceptable from an ecological perspective based on the provision that the various mitigation measures are strictly adhered to during the various phases of the quarry.
- In January 2023 a previously proposed mining area within 500 m of a wetland was authorised under general authorisation in terms of section 39 of the NWA, 1998 by the DWS.

Terrestrial Biodiversity (including Fauna and Flora):

- It appears the site and surrounding areas have been impacted by clearing of vegetation for subsistence agriculture and the development of roads since 1944.
- One distinct terrestrial vegetation community (Degraded Northern KwaZulu-Natal Moist Grassland) was observed that is in a relatively 'poor' condition.
- The provincially protected plant, *Aloe marlothii* (Mountain Aloe) and *Cussonia spicata* is present on site within large colonies (to be relocated). No other SCC's were identified on site.
- The proposed mining area covers ±4.91 ha of Medium SEI Vegetation.
- Definitive answers regarding the presence or absence of a particular SCC are not always possible. In such situations, the precautionary principle is applied so that preventative action is taken in the face of uncertainty. For species that are difficult to
- Additionally, mining and stockpiling activities are active on site – it is expected that this disturbance would likely have flushed out fauna to surrounding habitats.
- Given that impacts to grassland is unlikely to negate meeting conservation targets set for this type at this stage, biodiversity offsets are not considered relevant to this project.
- Eco-Pulse rates the overall post-mitigation impact of the proposed activity on the current vegetation- and faunal structure of the application area to be of moderately low - low significance during construction, and moderate – low significance during operation.
- Under a best practical mitigation scenario, the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to.
- EDTEA approved the development of the additional stockpile area on the same farm in January 2023.

Fauna:

- Ground truthing revealed that the high animal sensitivity (DFFE screening tool) was inaccurate due to the extent of habitat disturbance and fragmentation by Collings Pass Road that acts as a barrier for migration by faunal species.
- Faunal features like dens, spoor and skat were recorded where possible but were not sought out.
- Eco-Pulse further noted that visual observations during the site inspection identified no faunal SCC, and no evidence was found indicating their probable occurrence within the project area. It is therefore unlikely, given the present habitat conditions and degree of disturbance that faunal species of conservation concern occur within the proposed project area. Impacts to fauna of conservation concern are therefore unlikely and inconsequential overall.
- There is no evident fatal flaw regarding fauna that would prevent this development from being authorised if the mitigation and monitoring measures proposed by the specialist are implemented by the Applicant.
- EDTEA approved the development of the additional stockpile area on the same farm in January 2023.

Cultural and Heritage Environment:

- No sites of archaeological, palaeontological, or cultural importance exist in the study area.

Existing Infrastructure:

- Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm/neighbouring properties will not be impaired.

Since the application area is already earmarked for mining (previously used for mining), and the outcome of the basic assessment showed that the proposed project can be allowed provided that the mitigation measures and monitoring programmes are implemented, no fatal flaws could be identified that prevents the activity continuing. The financial provision amount that will be necessary for the rehabilitation of the operation is R485 112.84.

LIST OF ABBREVIATIONS

ADLM	Alfred Duma Local Municipality
ADT	Articulated Dump Truck
AMAFA	Heritage Kwazulu-Natal
ASTM	American Standard Test Method
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CM	Contracts Manager
CPG	Contract Participation Goals
DBAR	Draft Basic Assessment Report
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral and Resources and Energy
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)
EIS	Ecological Importance and Sensitivity
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
eWULAAS	Electronic Water Use Licence Application and Authorisation System
EZEMVELO	KZN Wildlife
FBAR	Final Basic Assessment Report
GDP	Gross Domestic Product
GNR	Government Notice
GPS	Global Positioning System
HDSA	Historically Disadvantaged South Africans
HGM	Hydrogeopmorphic
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
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:PAA	National Environmental Management: Protected Areas Amendment Act, 2014 (Act No. 21 of 2014)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFA	National Forest Act, 1998 (Act No. 84 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NPAES	Nationals Protected Area Expansion Strategy
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
OHSAS	Occupational Health and Safety Management Systems
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PES	Present Ecological State
POC	Species of Conservation Concern Potential Occurrence
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RBX-KZN	Raubex-KZN (Pty) Ltd
REC	Recommended Ecological Category
ROMs	Recommended Management Objectives
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
SANRAL	South African National Roads Agency SOC Ltd
SANS	South African National Standards
SCA	Systematic Conservation Assessments
SCC	Species of Conservation Concern
SDS	Safety Data Sheet
SWSA	Strategic Water Source Area

TBIA	Terrestrial Biodiversity Impact Assessment
TSCP	Terrestrial Systematic Conservation Plan
USBM	US Bureau of Mines
WAR	Wetland Assessment Report
WMA	Water Management Area
WUL	Water Use Licence
WULA	Water Use Licence Application

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ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	Raubex Construction (Pty) Ltd
TEL NO:	031 700 6411
FAX NO:	086 236 5670
POSTAL ADDRESS:	P.O. Box 66192, Highveld, 0169
PHYSICAL ADDRESS:	06 Highgrove Office Park, 50 Tegel Avenue, Centurion
FILE REFERENCE NUMBER SAMRAD:	KZN 30/5/1/3/2/10979MP

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

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

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

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

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

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

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

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental

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

i) Details of the EAP

Name of the Practitioner:	Mrs Murchellin Saal (Senior Environmental Consultant)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	Murchellin.s@greenmined.co.za
EAP Registration No:	2021/4203

ii) Expertise of the EAP.

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

Mrs. M Saal has thirteen 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. Full curriculum vitae with evidence is attached as Appendix P.

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

Mrs. Murchellin Saal has 13 years' experience in doing Water use Licence Applications, Environmental Impact Assessments and Mining applications in South Africa. Mrs. M Saal is a registered Environmental Assessment Practitioner (registration no: 2021/4203) with EAPASA (Environmental Assessment 19

Practitioners Association of South Africa) since 2021. See a list of past projects attached as Appendix P.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	A Portion of Remaining Extent of the farm Elands Spruit No 5523
Application area (Ha)	4.91 ha
Magisterial district:	Alfred Duma Local Municipality uThukela District Municipality
Distance and direction from the nearest town	±26 km north-east of Ladysmith between Collings Pass and the N11 national road. Using the N11 leaving Ladysmith drive towards Newcastle for ±23 km. Take the Collings Pass turnoff to the left, following the road for ±1.4 km to the farm gate on the right-hand side.
21 digit Surveyor General Code for each farm portion	N0GS00000000552300000

c) Locality map

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

The requested map is attached as Appendix B.

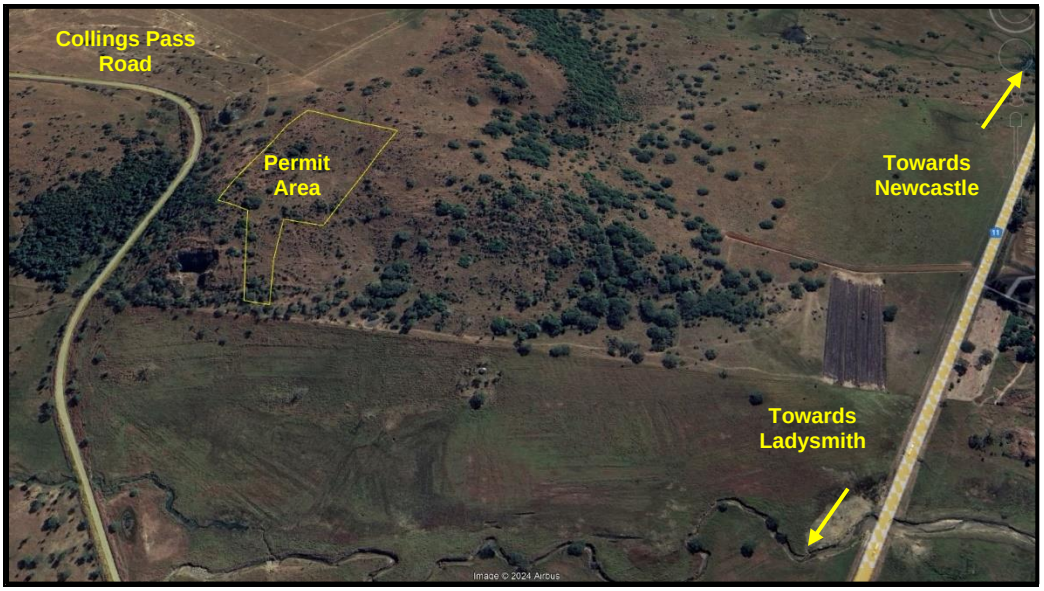

Figure 1: Satellite view of the proposed mining permit area (yellow square) submitted by Raubex Construction (Pty) Ltd (image obtained from Google Earth).

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

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

The Applicant, Raubex Construction (Pty) Ltd, is applying for environmental authorisation (EA) and a mining permit (MP) over 4.91 ha of a portion of the Remaining Extent of the farm Elands Spruit No 5523, uThukela Magisterial District, KwaZulu-Natal Province.

The earmarked mining area directly borders an existing quarry, the Applicant therefore wishes to secure the resource and proposes to mine the quarry through the open-cast mining method.

The mining method will make use of blasting to loosen the hard rock; the material will then be loaded and hauled out of the excavation to the mobile crushing plant where it will be screened to various sized stockpiles. The stone aggregate, gravel will be stockpiled until it is transported from site using tipper trucks.

The proposed MP project will therefore entail the:

- site establishment and infrastructure development;
- stripping and stockpiling of topsoil from the proposed mining footprint area;
- blasting and excavation of the mining area;
- crushing and screening of the loosened material at the processing plant; and
- stockpiling the product until needed and transported from site.

The Applicant proposes to upgrade some farm roads to allow comfortable movement of mining related equipment and vehicles. Haul roads into the excavation will be extended as mining progresses. The surface of the road will be improved, re-gravelled where needed, and the width increased to ±10 m.

The proposed mine will appoint ±11 employees (including management), and due to the small scale of the operation no permanent infrastructure will be built at the mining area. The Applicant plans to establish the following mobile/temporary infrastructure within the mining footprint:

- Chemical ablution facilities to be serviced by a registered contractor;
- Crushing and screening plant (mobile); and
- Weighbridge with associated control room.

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

i) Listed and specified activities

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

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	4.91 ha	N/A	Not listed
Site establishment and infrastructure development.	±1 ha	X	GNR 983 Listing Notice 1 Activity 21:
Stripping and stockpiling of topsoil and/or overburden.	±3.91 ha	X	
Drilling and blasting.	±3.91 ha	X	
Excavation, loading and hauling to processing area.	±3.91 ha	X	
Processing, stockpiling, and transporting of material.	±1 ha	X	
Sloping and landscaping upon closure of the mining area.	4.91 ha	X	
Replacing the topsoil and vegetating the disturbed area.	4.91 ha	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 be undertaken

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

Background Information:

Raubex Construction (Pty) Ltd (hereafter referred to as the “Applicant”) identified the need for a new mining permit on the above mentioned 4.91 ha area. The aim of the application is to secure the resource for the SANRAL contract to upgrade the N11 that borders the farm to the east.

Table 3: GPS Coordinates of the proposed mining footprint

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°21'53,347"S	29°56'29,9137"E	28,3648186°S	29,9416427°E
B	28°21'55,3702"S	29°56'35,7695"E	28,3653806°S	29,9432693°E
C	28°22'1,951"S	29°56'32,1479"E	28,3672086°S	29,9422633°E
D	28°22'1,5992"S	29°56'29,8846"E	28,3671109°S	29,9416346°E
E	28°22'4,0264"S	29°56'29,7132"E	28,3677851°S	29,941587°E
F	28°22'6,5651"S	29°56'29,9209"E	28,3684903°S	29,9416447°E
G	28°22'6,3199"S	29°56'28,5176"E	28,3684222°S	29,9412549°E
H	28°22'1,137"S	29°56'27,7969"E	28,3669825°S	29,9410547°E
J	28°22'0,6352"S	29°56'26,0243"E	28,3668431°S	29,9405623°E
K	28°21'58,7858"S	29°56'26,7828"E	28,3663294°S	29,940773°E
L	28°21'53,347"S	29°56'29,9137"E	28,3651611°S	29,9413332°E

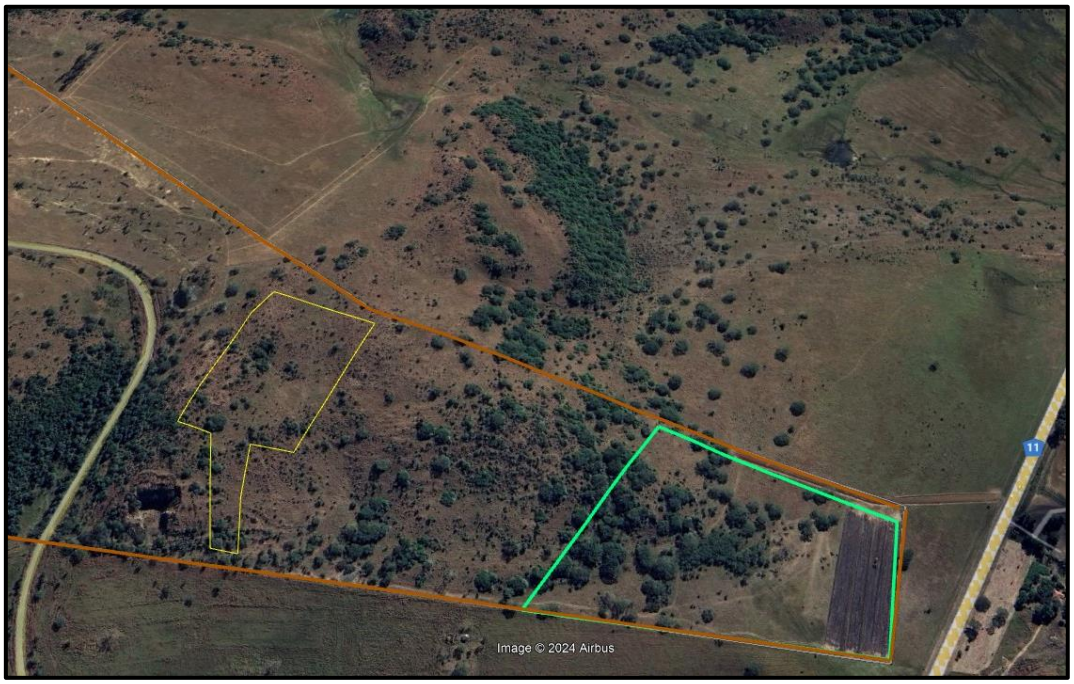

Figure 2: Satellite view showing the location of the MP application area (yellow polygon) in relation to the surrounding area where the brown lines indicate the farm boundaries and green line shows approved stockpile area (image obtained from Google Earth).

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

(1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the relocation of the Mountain Aloes and *Cussonia spicata* (discussed in more detail later in the report), 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 stone 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; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles before it is transported from site.

(3) *Decommissioning phase* which entails the rehabilitation of 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 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).

PHASES OF THE PROJECT

1. *Site Establishment Phase:*

Site establishment entails the demarcation of the mining boundaries, relocation of the Mountain Aloes and *Cussonia spicata*, clearance of vegetation, and stripping and stockpiling of topsoil to access the mineral as detailed below:

- **Demarcation of Mining Boundaries:**

Pursuant to receipt of the 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 proposed mining area will be reached via the existing road turning from the N11 and passing through the previously mentioned stockpile area. This road is presently used by the N11 road construction contractor and will also be used by the mining contractor. The Applicant proposes to upgrade some farm roads to allow comfortable movement of mining related equipment and vehicles and to comply with the requirements of the Mine Health and Safety Act, 1996 (Act No 29 of 1996). Haul roads into the excavation will be extended as mining progresses.

The surface of the road will be improved, re-gravelled where needed, and the width increased to ±10 m. Upon closure of the site, the upgraded road will be returned to the landowner for future use.

Figure 3: Satellite view showing the path of the existing access road (red line) to the proposed mining area (yellow polygon).

❖ **Clearing of Vegetation:**

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

The proposed activity will require the removal of indigenous vegetation during the site establishment- and operational phases. The vegetation type of the earmarked footprint is classified as Northern KwaZulu-Natal Moist Grassland (Gs 4), and mainly consists of rocky vegetation comprising of low to tall trees

with grassland on open areas. In terms of species of special concern, the provincially protected *Aloe marlothii* (Mountain Aloe) and (*Cussonia spicata)* is present on site. The Applicant will strive to conserve as much vegetation within the mining footprint area as possible and will apply for relocation permits for the Mountain Aloes and *Cussonia spicata* from Ezemvelo/KZN-Wildlife. Bush clearance will only commence upon receipt of the applicable plant permit and relocation of the aloes. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of said permits.

- **Topsoil Stripping:**

It is proposed that topsoil removal will be restricted to the exact footprint of areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area (>200 m from the power lines) within the mining boundary to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 1.5 m in height to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

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

As mentioned earlier, the Applicant plans to establish mobile/temporary infrastructure within the mining footprint. It is proposed that the processing area (including mobile crusher, ablutions, and weighbridge with control room) will occupy ±1 ha of the proposed 4.91 ha area. As no fixed/permanent infrastructure will be established, the production rate will dictate the layout of the proposed footprint area, however, no stockpiles will be nearer than 200 m to the adjacent power lines. The use of diesel and petrol on site will be below the threshold of the NEMA, 1998 EIA Regulations, 2014 (as amended).

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

- ADT trucks;
- Chemical ablution facilities;
- Crushing and screening plant (mobile);

- Drilling equipment;
- Earthmoving- and excavating equipment;
- Weighbridge with control room;
- Generators; and a
- Water truck.

2. *Operational Phase:*

The Applicant submitted this application for environmental authorisation and a mining permit to secure the resource for the SANRAL contract to upgrade the N11 that borders the farm to the east.

The product to be generated at the proposed quarry will be used, by the Applicant, as fill material for the N11 road works project.

The proposed mining footprint will extend across 4.91 ha of the above-mentioned property. The earmarked mining area directly borders an existing quarry, the Applicant therefore wishes to secure the resource and proposes to mine the quarry through the open-cast mining method.

The hard rock of the quarry will be loosened by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The rock will then be delivered to the crushing and screening plant where it will be reduced to various sized gravels. The screened material will be delivered to various size category stockpiles (>200 m from the power lines).

Figure 4: All stockpiles within the proposed mining area will be >200 m from the adjacent power lines (red lines) (image obtained from Google Earth).

Transportation of the final product will be from the stockpile area to the end point by means of trucks. The proposed quarry will appoint ±11 employees (including management) that will be sourced from the surrounding area and daily be transported to site. The work hours of the quarry will be from 07:00 to 18:00 Monday – Saturday (no work on Sundays).

- **Water Use:**

  Any water required for the implementation of the project will be bought from a legal source and transported to the mining area (in a truck) where it will be stored in tanks until used. Presently, no washing of material is proposed, and the Applicant will therefore mainly use water for dust suppression purposes on denuded areas, the processing plant, and access road (when needed).

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

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal farm road to minimize dust generation;
- Site management will attempt to lessen denuded areas (dust source) to the absolute minimum;
- Strips of used conveyor belts can be attached to the drop end of the crusher plant where crushed material falls onto the stockpiles. This lessens the blowing of fines from the minerals;
- Compacted dust will weekly be cleaned of the crusher plant to eliminate it as a dust source.

Under very windy/dusty conditions the permit holder might have to substitute the above-mentioned dust suppression methods with the spraying of water, in which case a water truck will moisten the problem areas, and sprayers at the processing plant will moisten the material to alleviate dust generation at the conveyor belts. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage. It is proposed that approximately 20 000 litres of water will be needed per day during the dry months (amount to decrease during the rainy season). At present no water is proposed to be drawn from dams or other surface water sources/courses.

❖ **Electricity Use:**

The proposed project will make use of diesel generators to power the mining infrastructure. All generators will have secondary containment in the form of a bund wall/drip tray that can contain 110% of the generator's maximum capacity. The petrol needed to power the generators will not be stored on site, but brough to site when needed. As mentioned earlier, the use of dangerous goods (such as diesel and petrol) on site will not trigger the NEMA, 1998 EIA Regulations, 2014 (as amended). Drip trays will be used when refuelling is required.

- **Servicing and Maintenance:**

  No workshop will be established in the proposed mining area and therefore servicing and/or routine maintenance of the equipment will take place off site. If emergency repairs are needed on equipment not able to move off site, drip trays will be used under the machinery and all waste will be contained and removed from the emergency service area to an off-site workshop to ensure proper disposal.

  There will be no bulk storage of fuel and very little (if any) chemicals will be needed on site. Any chemicals/hazardous substances needed will be kept in the control room of the weighbridge, alternatively the products will be contained in the vehicles and removed from the site at the end of each day.

- **Waste Handling:**

  Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the office area until the waste is transported to a registered general waste landfill site. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

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

- **Additional Stockpiling of Material (authorised by EDTEA):**

  On January 19, 2023, the Department of Economic Development, Tourism, and Environmental Affairs (DEDTEA) approved an application for stockpile and crushing area to 10.5 hectares on the same farm under reference number DC23/0005/2022. Should additional stockpiling be required, the applicant will make use of the approved area.

The use of the proposed additional stockpile area will be of temporary nature corresponding with the duration of the construction works needed on the N11 (±6 years).

The Applicant will transport the material from the quarry into the stockpile area. The rock will then be delivered to the crushing and screening plant (if needed) where it will be reduced to various sized gravels. Transportation of the final product will be from the stockpile area to the end point by means of trucks.

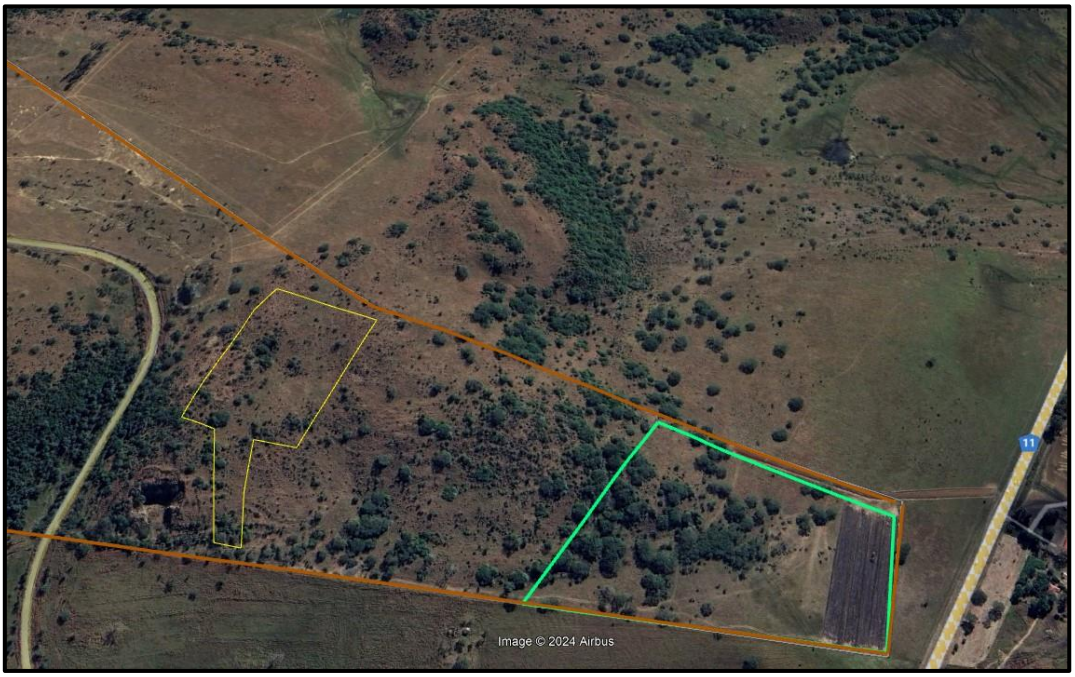

Figure 5: Image showing the position of the authorized additional stockpiling area (green polygon) in relation to the proposed mining area (yellow polygon), where the brown lines indicate the farm boundaries (image obtained from Google Earth).

Decommissioning Phase:

The decommissioning phase will entail the reinstatement the mining permit and 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 indigenous 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.

Upon rehabilitation, the area around the excavation will once again be available for grazing purposes, and the planting of the indigenous grass layer (to protect the topsoil) will tie in with the proposed land use.

The Applicant will comply with the minimum closure objectives as prescribed by the 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 have been added to the excavation and it was profiled with acceptable contours and erosion control

measures, the topsoil previously stored must be returned to its original depth over the area.

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

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

❖ Rehabilitation of processing area:

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

Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the 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 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

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

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

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Electricity Act, 1987 (Act No 41 of 1987) as amended.	Part A(1)(h)(iii) Summary of issues raised by I&AP's	The mining activities will be conducted in accordance with the said act.
Integrated Environmental Management Guideline: Guideline on Need and Desirability (2017).	Part A(1)(f) Need and desirability of the proposed activity.	The need and desirability of the proposed project was assessed in terms of this guideline.
KwaZulu-Natal AMAFA and Research Institute Act, 2018 (Act No 05 of 2018)	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects*.	An application in terms of Section 41 of the said act will be submitted by Beyond Heritage to AMAFA in May 2024 to inform them of the proposed project and obtain their comments.
KwaZulu-Natal Nature Conservation Ordinance No 15 of 1974	Part A(1)(h)(iv)(1)(a) Type of environment affected by the	The Applicant will apply for relocation permits from Ezemvelo for the Mountain Aloes and

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal & Management of invader plant species*.	Cussonia spicata on site prior to bush clearance.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ❖ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-KZN. Ref No: KZN30/5/1/3/2/10979MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ❖ GNR 984 Listing Notice 1 Activity 21 as amended:	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-KZN. Ref No: KZN30/5/1/3/2/10979MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Fugitive Dust Emission Mitigation Measures.*	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal & Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Waste Management*.	The mitigation measures proposed for the site consider the NEM:WA.
National Forest Act, 1998 (Act No 84 of 1998)	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Vegetation Removal.*	The mitigation measures proposed for the site includes specifications of the NFA, 1998.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Archaeological, Heritage and Palaeontological Aspects*.	The mitigation measures proposed for the site includes specifications of the NHRA, 1999. A Needs and Desirability Application Form was submitted by Beyond Heritage to AMAFA on 8 May 2024 to inform them of the proposed project and obtain their comments
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	The mitigation measures proposed for the site includes specifications of the NWA, 1998.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	be applied on the level of risk – *Mitigating the potential impact on the wetland system*. Part B(1)(d)(iii) Has a water use licence been applied for?	No wetland or aquatic units were identified as potential impacts at the desktop level.
Electrical Machinery Regulations, 2011 of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)	Part A(1)(h)(iii) Summary of issues raised by I&AP's	The mining activities will be conducted in accordance with the said regulations.
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.
Alfred Duma Local Municipality Final Integrated Development Plan 2022/2023 (IDP).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Socio-economic Environment.*	The description of the study area's socio-economic status is in accordance with that of the IDP.

f) Need and desirability of the proposed activities.

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

The Remaining Extent of the farm Elands Spruit 5523 GS harbours an abandoned quarry that was historically (since 1970's) mined for aggregate used in the road building industry.

Raubex Construction (Pty) Ltd specialise in earthworks, surfacing and re-surfacing of roads with a client component that range from public bodies such as the Department of Transport, SANRAL and municipalities to private clients such as mines, malls and other small contractors requiring earthworks or surfacing services. The aim of the application is to secure the resource for the SANRAL contract to upgrade the N11 that borders the farm to the east.

The proposed mining area is ideally located to supply the anticipated road works project with fill material. The proposed mining activity will further guarantee the rehabilitation of the quarry on the Remaining Extent of the farm Elands Spruit 5523 GS, as it will be included in the closure conditions of the mining permit.

The proposed labour complement of the activity will be eleven employees (including management). The operation will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. Although the employees will not be resident on the site, they will be selected from the surrounding community.

The mining of the resource from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 5: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations taken into account? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	As discussed under Part A(1)(g)(iv)(1)(a) *Type of environment affected by the proposed activity*, the Mining and Biodiversity Map shows that the proposed footprint extends over an area of highest biodiversity importance, and a portion of the application area extends into a CBA: Optimal. The DFFE screening tool shows the animal theme as highly sensitive, the plant theme as medium, and the terrestrial biodiversity theme as very high. According to the KwaZulu-Natal Terrestrial Systematic Conservation Plan (TSCP) (EKZNW, 2016) areas of CBA: Optimal overlap with a corner of the project footprint as shown in Figure 6. It is evident from the TSCP (EKZNW, 2011) spatial coverage that the 'CBA: Optimal' status assigned to these areas is vegetation driven due to the current and potential presence of the Northern KwaZulu-Natal Moist Grassland. Other species driving the classification include the mollusc**:** *Cochlitoma simplex.* According to the KZN Biodiversity Sector Plan (2014), no ecological corridor falls within the study area, nor within close proximity to the study area. No areas in the immediate vicinity of the property have been flagged for future conservation as part of the KwaZulu-Natal Protected Areas Expansion 20-year Strategy (EKZNW, 2010) spatial coverage, and likewise no provincial protected areas or forests occur within the study area. Fauna of conservation concern highlighted as possibly being present within the more intact habitats are unlikely to be breeding within the degraded habitats, and where foraging at the site, these should be easily flushed-out of their habitats and move to adjacent intact areas during construction, with the arrival of noisy construction machinery and labourers. Impacts to fauna of conservation concern are therefore likely to be unlikely and inconsequential overall. Flora of conservation concern include the provincially protected plant Aloe marlothii and Cussonia spicata, which although not currently threatened at a national level are increasingly threatened at a provincial level due to habitat loss, over-harvesting and	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**
	human population expansion. The project development threatens to destroy or damage a substantial population of this protected plant species if not avoided. Given the population size of Aloe marlothii, that stands to be impacted, the impact significance where not mitigated is therefore expected to be relatively 'High'. The translocation of protected plants species can help mitigate this impact. The findings of the specialist wetland assessment conducted by Eco-Pulse Consulting in April 2024, revealed that no freshwater wetlands or rivers at risk of potential impact from the proposed mining permit area, both within the study area and downstream. This assessment builds upon a prior evaluation (Eco-Pulse, 2023; EP671-01), which determined that the proposed site is approximately 155 meters away from the nearest wetland edge. Given this distance, the classification of 'low impact mining,' and the inclusion of a 40-meter buffer zone, the probability of impact was deemed 'unlikely.' As a result, the proposed mining activities do not fall under listed activities according to NEMA because they are not located within or within 32 meters of natural freshwater ecosystems, such as wetlands, rivers, or streams. Additionally, these activities do not fall under Section 21(c) and 21(i) water uses since there are no wetlands or rivers within the regulated area defined by the Department of Water and Sanitation (DWS), which includes a 500-meter buffer, at risk of potential impact. In January 2023 a previously proposed mining within 500 m of a wetland was authorised under general authorisation in terms of section 39 of the NWA, 1998 by the DWS. 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;	

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**
	❖ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora), ❖ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.	
How will this development pollute and/or degrade the biophysical environment?	Due of the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the stone aggregate, gravel resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the TBIA (2024) concluded that the project may be allowed if the Mountain Aloes and *Cussonia spicata* are relocated prior to bush clearance. Therefore, should the permit holder adhere to the conditions of the 2024 TBIA (incorporated into this report) it is believed that the impact on the biophysical environment is of acceptable significance.	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 daily operations of the employees. All general waste will be contained in sealable refuse bins that will be placed at the weighbridge office until it is transported to a registered general waste landfill site. A registered 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
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	a Heritage Impact Assessment (HIA) was done by Beyond Heritage. The HIA did not find any archaeological sites or artefacts of significance. During the survey, a possible packed stone wall (LS001) refer to the HIA and stone cairn of unknown purpose (LS002) were identified. The possible remains of a stone packed wall at LS001 are too degraded to hold any heritage value	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 as the site is of low significance, impact to the feature will be low. LS0002 as referred to in the HIA falls outside of the permit boundary. An application was submitted by Beyond Heritage to AMAFA on 8 May 2024. Concerning this, the proposed development will not impact any landscapes and/or sites that constitute the nation's cultural heritage.	
How will this development use and/or impact on non-renewable natural resources?	If approved the Applicant will mine the resource identified on the Remaining Extent of the farm Elands Spruit No 5523. Presently, it is believed that the mineable area (4.91 ha) may have an inferred stone aggregate, gravel reserve of >2 000 000 m^3. Based on the proposed production rate, the stone aggregate, gravel resource shows a potential life of mine of >6 years. Considering this, the permit holder will responsibly consume the resource on the property.	Highly Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that approximately 20 000 litres of water will be needed per day during the dry months (amount to decrease during the rainy season) 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 will be bought from a legal source and transported to site. 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 weighbridge.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	The Applicant will apply for a relocation permit of the aloes from KZN-Wildlife (Ezemvelo) prior to bush clearance. Bush clearance will only commence upon receipt of the applicable plant permit and relocation of the aloes. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of the said permit. The permit holder is also committed to adhere to the conditions of the GA (issued by the DWS).	Highly Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	The mine will be managed in accordance with the specifications of the lease agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of medium significance. If the monitoring programs, proposed in this document, is implemented it	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**
	is believed that no environmental rights of the surrounding residents/public will be affected by ecological impacts associated with the proposed activity.	
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If approved, the quarry will create at least eight new work opportunities to residents and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the quarry will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. The mining of the resource from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.	Highly 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	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 4.91 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA area. Also refer to: ❖ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation; ❖ Part A(1)(h)(i) Details of the development footprint alternatives considered; ❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity; ❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas; ❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ❖ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora).	Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Please refer to Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	If approved, the quarry will create at least eight new work opportunities to residents and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the quarry will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. The mining of the resource from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?		
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed mine will be operated in a socially and economically sustainable manner during both the short- and long term. Raubex Construction (Pty) Ltd is focused on Historically Disadvantaged South Africans, especially women, empowerment. The procurement progression plan of the Applicant entails the support of local enterprises, of which preference will be given to HDSA & women owned local suppliers. Raubex Construction's employment equity is also in line with the provisions of the Employment Equity Act, 1998 (as amended).	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	Mining the resource on the property will contribute to the area in that the landowner will receive compensation, the project will create employment opportunities, and the use of the material will directly and indirectly promote the economy of the area as mentioned earlier. The quarry on the property will also be rehabilitated upon closure of this project. As mentioned earlier, the material to be mined at the quarry will be used at the SANRAL N11 roadworks project. Although the proposed mine will only appoint a small workforce (±8 locals), the proposed operation forms part of the larger N11 upgrade	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
	that presents significant opportunities to SMME's and the unemployed as the contract stipulates that at least 6% of the project value must be spend on local labour. Further to this the CPG target of the project is 30% of the project value.	
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures included in this report.	Highly Desirable
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Part A(1)(t)(i)(1) *Impact on the socio-economic conditions of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment and may affect air quality and the noise ambiance of the study area. However, the mine will be managed in accordance with the specifications of the lease agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of medium significance. If the monitoring programs, proposed in this document, is implemented it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	If approved, the quarry will create at least eight new work opportunities to residents and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the quarry will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. The mining of the resource from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 4.91 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA area. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What measures were taken to 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?	through the employment of at least eight residents, support of the local economy, and development brought to the region as part of the N11 road upgrade. Also refer to: ❖ Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	
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? 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?	The mine will operate in accordance with, amongst others, the following: ❖ CARA, 1983 – to ensure agriculture related compliance; ❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; ❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; ❖ MPRDA, 2002 (as amended) – to ensure mining related compliance; ❖ NEM:AQA, 2004 – to ensure air quality related compliance; ❖ NEM:BA, 2004 – to ensure biodiversity related compliance; ❖ NEM:WA, 2008 – to ensure waste related compliance; ❖ NEMA, 1998 (as amended) – to ensure environmental related compliance; As mentioned earlier, the Applicant is focussed on Historically Disadvantaged South Africans, especially women, empowerment. The procurement progression plan of the Applicant entails the support of local enterprises, of which preference will be given to HDSA & women owned local suppliers. Raubex Construction's employment equity is also in line with the provisions of the Employment Equity Act, 1998 (as amended).	Highly Desirable
Considering the interests, needs and values of all the interested and affected parties, describe how	Presently, it is proposed that the mine will create a minimum of eight employment opportunities to residents. In a municipal area with an unemployment rate of 38%, new job opportunities are of high significance. Further to this, and as mentioned	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	earlier, the procurement progression plan of Raubex Construction supports local enterprises, of which preferences are given to HDSA & women owned local suppliers (where possible). As mentioned earlier, the proposed operation forms part of the larger N11 upgrade that presents significant opportunities to SMME's and the unemployed as the contract stipulates that at least 6% of the project value must be spend on local labour. Further to this the CPG target of the project is 30% of the project value.	
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mine will operate in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management will arrange regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the toolbox sessions and site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, the proposed quarry will appoint ±11 employees (including management), of which at least eight will be from the surrounding area.	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.	The proposed mine will operate under a valid environmental authorisation and mining permit to be issued by the DMRE-KZN. Compliance of the site with the approved EMPR, EA- and a GA that was allowed under the prior bordering permit criteria shall be reported on according to 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

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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 effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	If the mitigation measures proposed in this document are adhered to, the project entails the mining of the 4.91 ha area without influencing the status of the ecosystem type, red data species or the conservation targets set out for a CBA area. Also refer to: ❖ Part A(1)(h)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to	The surrounding landscape is mainly used for agricultural purposes. East of the application area there are old coal mine heaps and as mentioned earlier the Collings Pass Road and N11 pass through the area. The Matiwane Community is ±2 km west of the site. The proposed project will be developed in co-operation with the landowner and create ±8 employment opportunities to residents of the area. The project will be of temporary nature (5 years maximum) and although it will add	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
its location and other planned developments in the area.	visual-, air- and noise impacts to the surroundings it is believed that these impacts can be mitigated to an acceptable level. The socio-economic benefit of mining the existing quarry as a material source for the upgrade of the N11 is however of substantial importance. Upon closure the quarry will be rehabilitated, and the area left in an acceptable manner for the landowner to continue the use of the camp.	

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

The project borders an existing quarry within the proposed GPS coordinates (Table 6). As no permanent infrastructure will be established, the production rate will dictate the layout of the proposed footprint area provided that all stockpiles are >200 m from the power lines.

The proposed site was identified as the preferred site and only viable site alternative based on the following:

- Approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated.
- Should the Applicant be allowed to mine the area, the existing quarry will be rehabilitated as part of the closure requirements of this mining permit.
- The quarry corresponds to the existing land use for mining and stockpiling.
- The existing farm road can be used to access the proposed mining area with minor upgrading needed.
- Moving the proposed mining area further to the east, will not only exclude the existing quarry pit from the mining area, but also move the mine too close to the adjacent power lines that pass the site ±240 m to the east.
- Moving the mining area to the west is not possible as the Collings Pass Road borders the site.
- The mining area cannot be moved to the south as the resource which the Applicant intents to mine is concentrated on the hill and not found further to the south.
- The 2024 TBIA notes that the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to. The ecologist determined that the overall post-mitigation impact of the proposed activity on the current vegetation- and faunal structure of the application area will be of moderately low - low significance during construction, and moderate – low significance during operation.

- ❖ The 2024 Wetland Assessment confirmed that there are no wetlands/watercourses within the proposed footprint, and that the proposed site will not impact the adjacent wetland provided that the proposed mitigation measures are implemented.

During the environmental impact assessment process, the feasibility of the proposed site alternative was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing or warrant a site- or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. Considering the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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

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

i) Details of the development footprint alternatives considered.

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

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

Site Alternative 1 (S1) (Preferred Site Alternative): Site Alternative 1 entails the expansion of the existing quarry within the GPS coordinates as listed in the table below and depicted in Figure 2 above.

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

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°21'53,347"S	29°56'29,9137"E	28,3648186°S	29,9416427°E
B	28°21'55,3702"S	29°56'35,7695"E	28,3653806°S	29,9432693°E
C	28°22'1,951"S	29°56'32,1479"E	28,3672086°S	29,9422633°E
D	28°22'1,5992"S	29°56'29,8846"E	28,3671109°S	29,9416346°E
E	28°22'4,0264"S	29°56'29,7132"E	28,3677851°S	29,941587°E
F	28°22'6,5651"S	29°56'29,9209"E	28,3684903°S	29,9416447°E
G	28°22'6,3199"S	29°56'28,5176"E	28,3684222°S	29,9412549°E
H	28°22'1,137"S	29°56'27,7969"E	28,3669825°S	29,9410547°E
J	28°22'0,6352"S	29°56'26,0243"E	28,3668431°S	29,9405623°E
K	28°21'58,7858"S	29°56'26,7828"E	28,3663294°S	29,940773°E
L	28°21'53,347"S	29°56'29,9137"E	28,3651611°S	29,9413332°E

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 viable site alternative** due to the following:

- Approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated. of the extent already being disturbed/transformed and borders an existing quarry pit on the property which remains unrehabilitated.
- Should the Applicant be allowed to mine the area, the existing quarry will be rehabilitated as part of the closure requirements of this mining permit.
- The quarry corresponds to the existing land use for mining and stockpiling.
- The existing farm road can be used to access the proposed mining, some farm tracks may need to be improved to allow movement of the project related vehicles.
- Moving the proposed mining area further to the east, will not only exclude the existing quarry pit from the mining area, but also move the mine too close to the adjacent power lines that passes the site ±240 m to the east.
- Moving the mining area to the west is not possible as the Collings Pass Road borders the site.
- The mining area cannot be moved to the south as the resource which the Applicant intents to mine is concentrated on the hill and not found further to the south.

- The 2024 TBIA notes that the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to. The ecologist determined that the overall post-mitigation impact of the proposed activity on the current vegetation- and faunal structure of the application area will be of moderately low - low significance during construction, and moderate – low significance during operation.

- The 2024 Wetland Assessment confirmed that there are no wetlands/watercourses within the proposed footprint, and that the proposed site will not impact the adjacent wetland provided that the proposed mitigation measures are implemented.

Considering the above mentioned, S1 is believed to be the most practical alternative as the area was previously approved for mining, there is an existing quarry, topsoil and/or overburden layer of the footprint is relatively shallow, the resource is of good grade, access and rehabilitation is simplified, and the environmental related impacts are acceptable.

No-go Alternative: The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered. The resource to be mined will be used for road rehabilitation/maintenance and associated construction industry; if however, the no-go alternative is implemented the Applicant will not be able to exploit the mineral resource on the property.

The no-go alternative was not deemed to be the preferred alternative as:

- the Applicant will not be able to utilize the resource deposit available within the proposed mining area, and will need to acquire fill material for the N11 national road upgrade from other commercial sources, which will increase the building cost;
- the existing quarry pit on the property will not be rehabilitated as a requirement of this project;
- the landowner will not receive compensation from the Applicant, and in so doing diversity the income generated from the property;
- the proposed job opportunities, associated with the development of the quarry, will be lost to the surrounding community.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including ‘s meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not

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

English and isiZulu site notices that invited comments on the project and the DBAR were placed at the site entrance, Matiwane Community, turnoff from the N11 onto the Collings Pass Road, as well as the Ladysmith Library on 21 May 2024. IsiZulu pamphlets explaining the project were distributed in Matiwane.

English and isiZulu notices were placed at conspicuous points. The project will be advertised in the Ladysmith Gazette. Stakeholders and I&AP's will be informed of the project with notification letters. The DBAR with an IsiZulu executive summary will be available at the Ladysmith Library for 30 days. The commenting period for perusal of the documentation and submission of comments ends 21 June 2024. The comments received on the DBAR will be incorporated into the final BAR to be submitted to DMRE.

The following I&AP's and stakeholders were thus far consulted with regarding the project:

Table 7: List of the I&AP's and stakeholders that were consulted with during the application.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner: ❖ Mr FP Oosthuizen Remaining Extent of the farm Elands Spruit No 5523; Portion 4 of the farm Elands Laagte No 1239; Portion 20 of the farm Elands Laagte No 1239. **Surrounding landowners & lawful occupiers:** ❖ Mr WS Mitchell-Innes (care of Mr IF Mitchell-Innes); Portion 6 of the farm Roode Poort No 1045. ❖ Matiwane Trust (care of the ward councillor); Portion 2 of the farm Elands Spruit No 5523. ❖ Me Z Khumalo (lawful occupier); ❖ Me H Mitchell-Innes (care of Mr IF Mitchell-Innes) Elands Spruit No 16154; ❖ Rotimode (Pty) Ltd (prospecting right holder); ❖ Sam & Sina Trading	❖ Alfred Duma Local Municipality; ❖ Alfred Duma Municipal Ward Councillor (Ward 23); ❖ Alfred Duma Municipal Ward Councillor (Ward 24); ❖ AMAFA / Heritage KZN; ❖ Department of Agriculture and Rural Development; ❖ Department of Agriculture, Land Reform and Rural Development (National); ❖ Department of Economic Development, Tourism and Environmental Affairs; ❖ Department of Human Settlements, Water and Sanitation; ❖ Department of Labour; ❖ Department of Transport; ❖ Eskom Ltd (Distribution and Transmission); ❖ Ezemvelo / KZN Wildlife; ❖ SANRAL; ❖ South African Heritage Resources Agency; and ❖ uThukela District Municipality.

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

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

Table 8: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**	-	-	-	-
Landowner/s		-	-	-	-
Mr FP Oosthuizen ❖ Remaining Extent of the farm Elands Spruit No 5523; ❖ Portion 4 of the farm Elands Laagte No 1239; ❖ Portion 20 of the farm Elands Laagte No 1239.	X	Mr Oosthuizen supports the application and signed a landowner agreement with the Applicant. Mr Oosthuizen was also invited to comment on the DBAR.			
Lawful occupier/s of the land	-	-			
Me Khumalo Lawful occupier south of the application area.	X	13 May 2024	Me. Khumalo commented, that his house was damaged with a previous blast and requested a meeting prior the next blasting.	Greenmined acknowledged the complaint lodged on the previous permit which was held by RBX KZN. RBX KZN confirmed that a meeting was held with Me. Khumalo in April 2024 and an agreement was made that RBX KZN will repair the damages. Mr. Vincent, the Public Liaison Officer, acknowledged that he will liaise with Me. Khumalo about the way forward.	See Appendix F for proof of communication.

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.
				A meeting will be scheduled before any subsequent blasting occurs.	
Rotimode (Pty) Ltd ❖ Holder of a prospecting right over the property.	X	The proposed mining permit application was communicated to Rotimode as part of the Dmre application acceptance letter criteria. Proof of correspondence was sent to Dmre on May 15th. Any comments received on the draft BAR will be incorporated into the final BAR.			
Sam & Sina Trading ❖ Holder of a prospecting right over the property.	X	The proposed mining permit application was communicated to Sam & Sina Trading as part of the Dmre application acceptance letter criteria. Proof of correspondence was sent to Dmre on May 15th. Any comments received on the draft BAR will be incorporated into the final BAR.			
Landowners or lawful occupiers on adjacent properties	**X**	-			
Mr WS Mitchell-Innes (care of Mr IF Mitchell-Innes) ❖ Portion 6 of the farm Roode Poort No 1045	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Mr SB Mgaga ❖ Portion 1 of the farm Roode Poort No 1045	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Matiwans Kop Trading Co ❖ Portion 2 of the farm Elands Spruit No 5523	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Me F Mitchell-Innes (care of Mr IF Mitchell-Innes)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
❖ Elands Spruit No 16154					
❖ Matiwane Community (care of the ward councillor)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Municipal councillor		-	-	-	-
Cllr. Thobani Dlamini (Ward 23)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Cllr. Thembinkosi Ngcobo (Ward 24)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Municipality		-	-	-	-
Alfred Duma Local Municipality	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	-	-	-	-	-
Department of Transport	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Eskom Ltd	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
SANRAL- Eastern Region	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Communities Matiwane Trust (c/o Ward Councillor)	Any comments received on the draft BAR will be incorporated into the final BAR.				
Dept. Land Affairs	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Traditional Leaders	N/A	-	-	-	-
Dept. Environmental Affairs					
Department of Economic Development, Tourism and Environmental Affairs (DEDTEA)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Other Competent Authorities affected	-	-	-	-	-
AMAFA / Heritage KZN	X	Application was submitted by Beyond Heritage to AMAFA on 8 May 2024.			
Department of Agriculture and Rural Development	X	Any comments received on the draft BAR will be incorporated into the final BAR.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Department of Agriculture, Land Reform and Rural Development (National)	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Human Settlements, Water and Sanitation	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Department of Labour	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
Ezemvelo / KZN Wildlife	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
uThukela District Municipality	X	Any comments received on the draft BAR will be incorporated into the final BAR.			
South African Heritage Resources Agency	X	Application was submitted by Beyond Heritage to AMAFA on 8 May 2024.			
OTHER AFFECTED PARTIES		-	-	-	-
N/A		-	-	-	-
INTERESTED PARTIES		-	-	-	-

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

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

PHYSICAL ENVIRONMENT

CLIMATE

The following chart shows the maximum, minimum and average temperatures (21°C daytime, 15°C night-time) of the Ladysmith region. Ladysmith experiences its highest temperatures during the summer months from November – March with peaks of up to 32°C; thereafter the mercury drops to lows of 7°C during June/July.

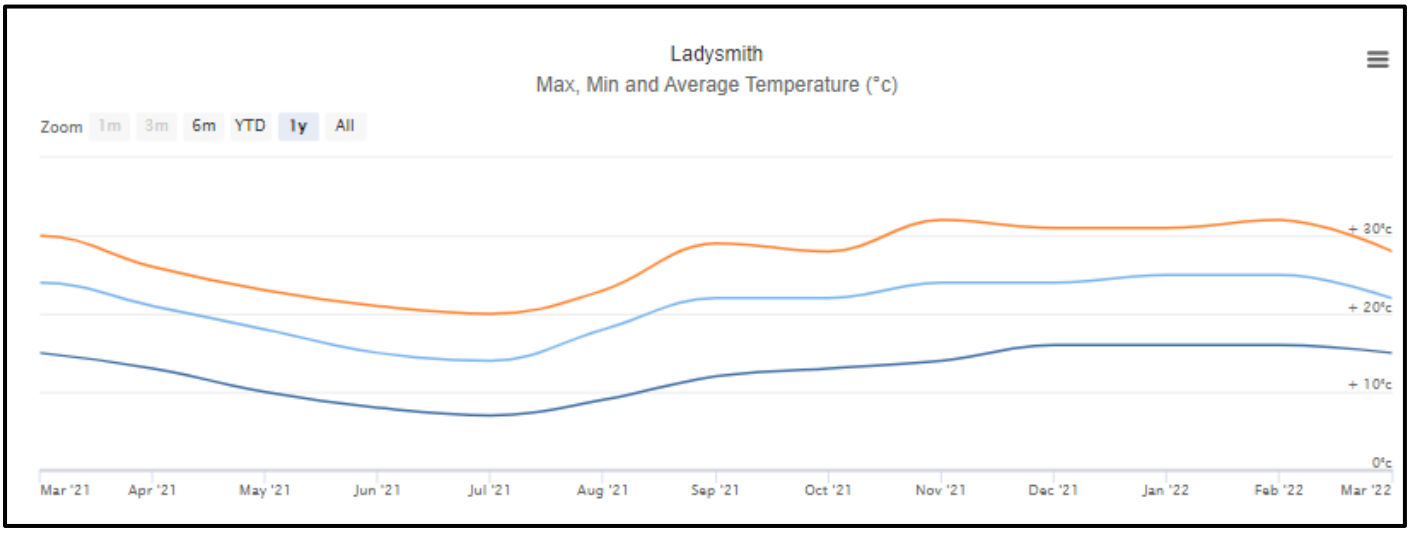

Figure 6: Maximum, minimum, and average temperature of the Ladysmith region where the orange line indicates the maximum temperature, the light blue line shows the averages, and the dark blue line shows the minimum temperatures (chart obtained from http://www.worldweatheronline.com)

The following chart obtained from World Weather Online shows that the measured rainfall average for 2021 was ±824 mm, while the area received the lowest rainfall during the winter months (May – August) and the highest in the summer (January - March).

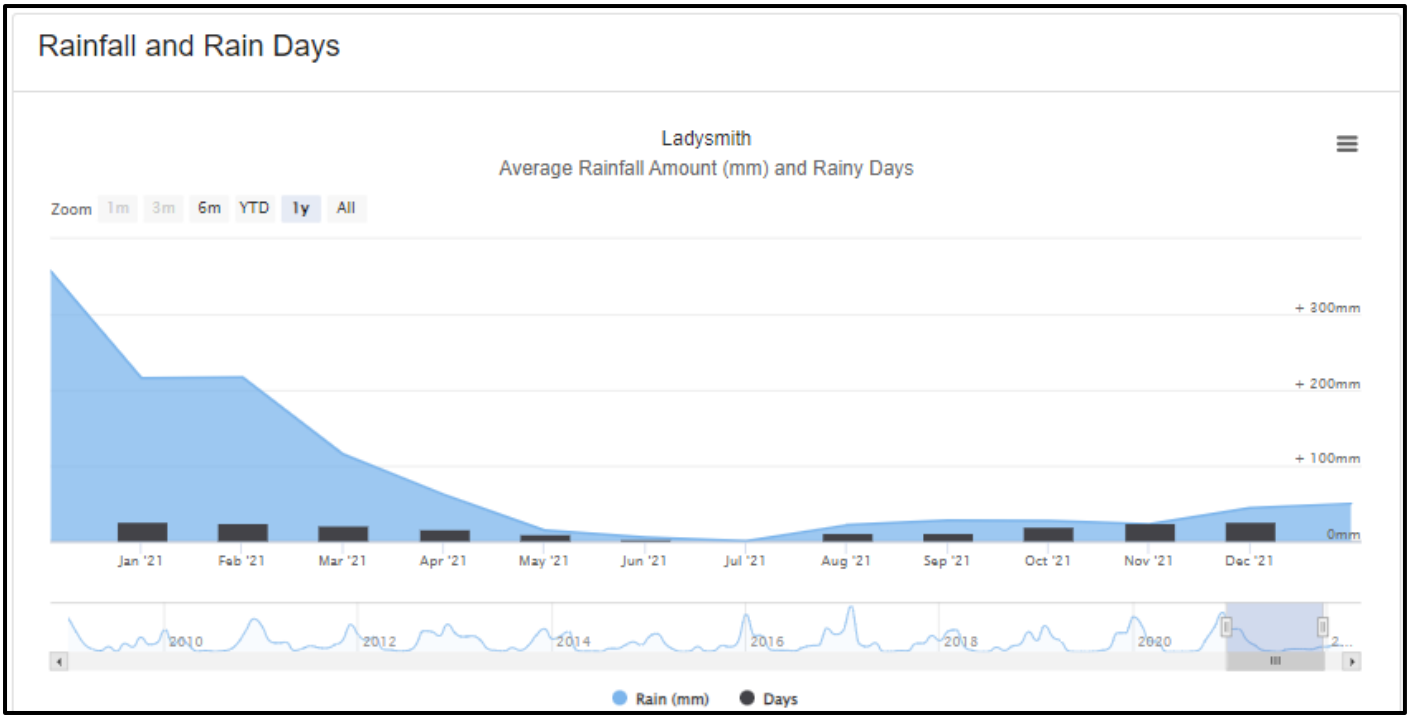

Figure 7: Average rainfall amount and rainy days count for the Ladysmith region (chart obtained from http://www.worldweatheronline.com)

The dominant wind direction of the Ladysmith region is fairly constant in a north-western direction (south-eastern wind), with the average wind speed being ±4 knots (±7.83 km/h) as shown in the figure below (measured at the Ladysmith Airport).

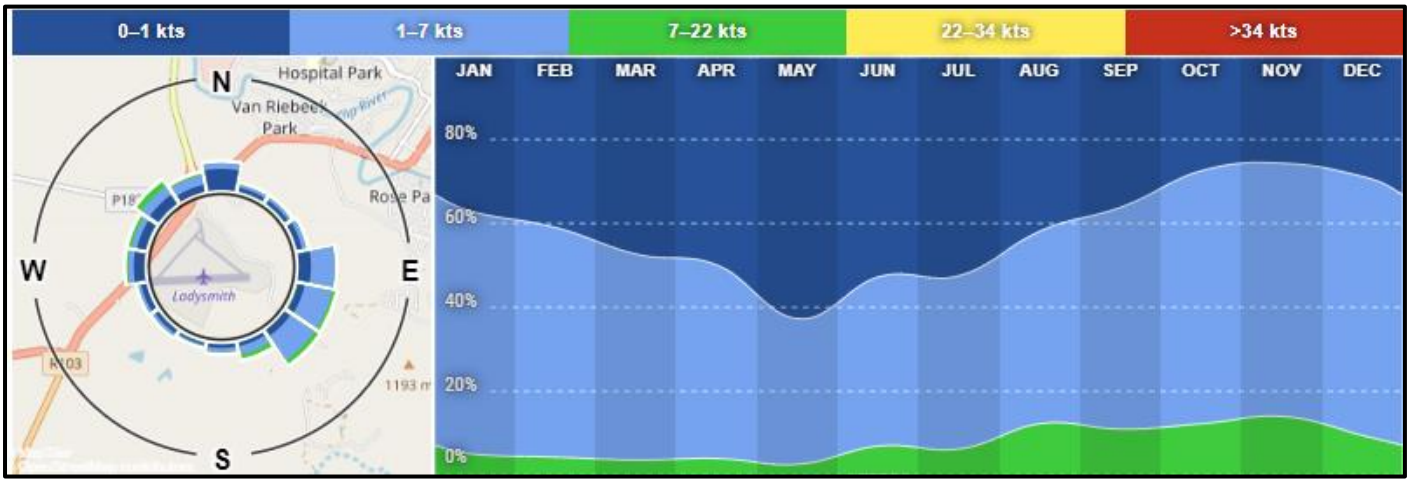

Figure 8: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Ladysmith area (image obtained from http://www.windfinder.com/windstatistics/ladysmith).

TOPOGRAPHY

The topography of the greater study area can be described as an undulating terrain with broad valleys supporting tall tussock grassland usually dominated by *Hyparrhenia hirta*, with occasional savannoid woodlands with scattered *Acacia sieberiana* var. *woodii*. (Mucina and Rutherford, 2012). The area has elevations generally ranging between 1 634 – 922 mamsl.

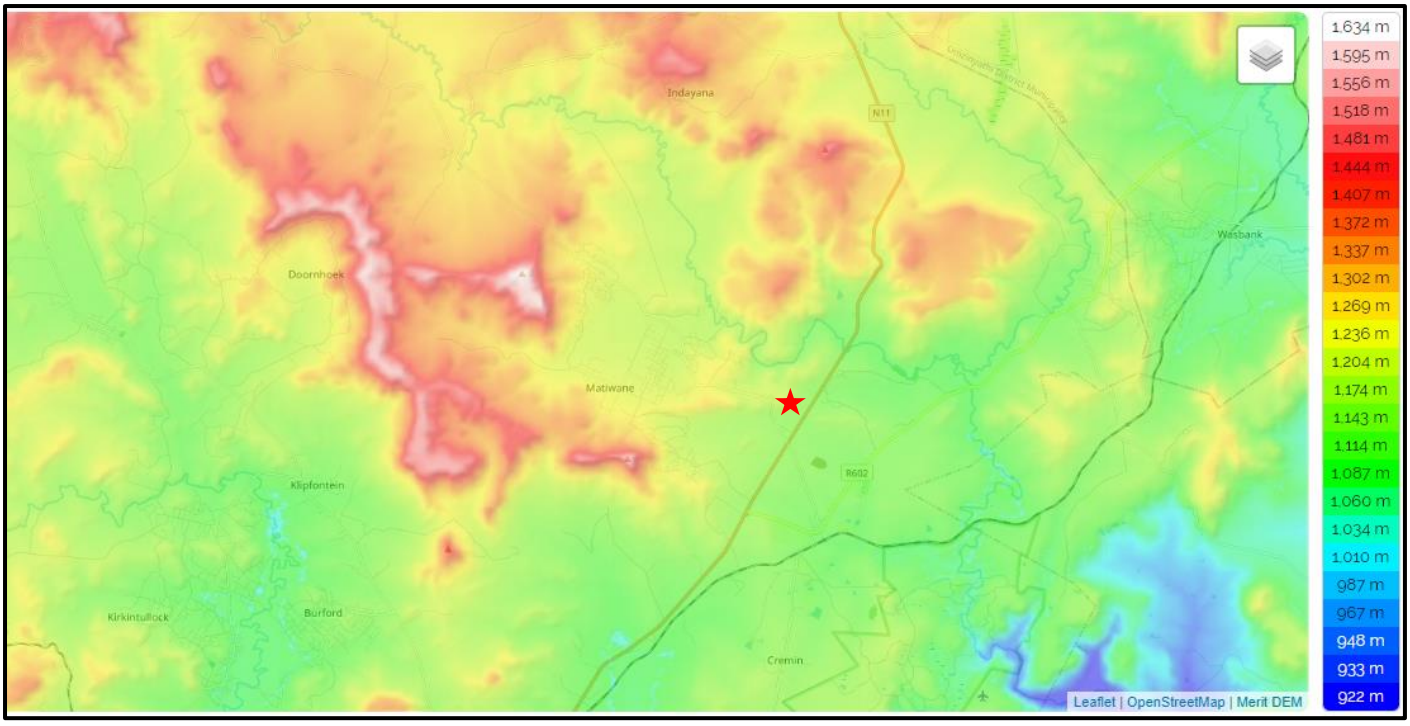

Figure 9: Map showing the topography of the greater Ladysmith area where the red star indicates the application area (image obtained from http://www.en-za.topographic-map.com/maps/gwpq/South-Af).

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

VISUAL CHARACTERISTICS

(Determined through site assessment by EAP)

The visual character of the surrounding areas mainly comprises of an agricultural setting, intersected by road- and electricity infrastructure, and transformed by the existing quarry (on the farm) and old coal mine dumps east of the farm.

The land use of the immediate surrounding properties is mainly used for agricultural purposes with the bulk of the land being natural to semi-natural rangelands grazed by cattle. Due to the topography of the area, the Remaining Extent of the farm Elands Spruit No 5523 is mainly visible from the higher lying north-eastern part of the farm.

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

AIR AND NOISE QUALITY

(Determined through site assessment by EAP)

The background air quality of the surrounding area is relatively good due to low industrial activity in the region. The semi-rural Matiwane residential area, bordering the property to the north-west, has an impact on the natural air quality through emissions from cooking/heating fires. Other factors contributing to air pollution stem

from coal mining and vehicle emissions along the N11. Given the surrounding extent of mostly covered areas, no extreme dust generation, under windy conditions, is experienced. The noise ambiance of the surrounding area is highly impacted by traffic travelling along the N11 and Collings Pass roads bordering the property.

GEOLOGY AND SOIL

The interior parts of KwaZulu-Natal are characterised by a variety of Karoo Supergroup rocks, including Dwyka, Ecca and Beaufort Groups (Mucina & Rutherford, 2012). The Karoo Supergroup preserves a wide spectrum of depositional paleoenvironments ranging from glacial to deep marine, deltaic, fluvial and aeolian. Within the Ladysmith region, including the receiving environment of the proposed quarry the dominant geological formation is the Vryheid Formation of the Ecca Group. The Vryheid Formation is a fluviodeltaic deposit comprising fine- to coarse-grained sandstone, shales, siltstones, and subordinate coal beds (Whitmore et al., 1999 & Cairncross et al., 1998). Fractures and planes of weaknesses within these rocks acted as conduits to lava flow and the crystallisation of the magma within these fractures gave rise to Jurassic stone aggregate,gravel intrusion (stone aggregate,gravel sills and dykes). It is from such an intrusion where the resource will be mined.

Detailed soil information is not available for broad areas of the country. A surrogate land type data was used to provide a general description of soil in the study area (land types are areas with largely uniform soils, typography, and climate). The study area is primarily divided into two sections according to their land type units namely the Bb70 land type to the south (lower lying footslopes and valley bottom regions) and Fa802 to the north (mainly the midslope, crest and plateau areas). The Bb70 land type, as mentioned, covers the bulk of the study area (Land Type Survey Staff, 1987). Only a small section of the study area's northern boundary falls within Fa802.

The Bb group of land types are mainly characterised by Yellow apedal (structureless) soils which may be moderately (mesotrophic) to highly (dystrophic) leached and is characterised by a wide textural range, mostly sandy loam to sandy clay loam. Soils contain a greyish subsoil layer (plinthic) where iron and manganese accumulate in the form of mottles, due to a seasonally fluctuating water table. With time these mottles may harden (or even cement) to form concretions. These plinthic layers will case restricted water infiltration and root penetration. In drier areas, however, they may help to hold water in the soil that plants can use (Land Type Survey Staff, 1987).

The Fa group of land types are generally characterised by Plinthic Catenas (upland duplex and margalitic soils) containing shallow soils consisting of a topsoil directly underlain by weathered rock (Glenrosa form) or hard rock (Mispah form), sometimes

with surface rock and steep slopes. These land types are usually associated with moister areas or areas with acidic parent materials, where little lime exists.

A summary of the dominant soil forms found within the different terrain types are as follows:

- Midslope: Avalon, Westleigh, Glenrosa and Mispah
- Footslope: Avalon, Valsrivier, Glencoe, Glenrosa, Dundee, Bainsvlei
- Valley Bottom**:** Valsrivier, Dundee

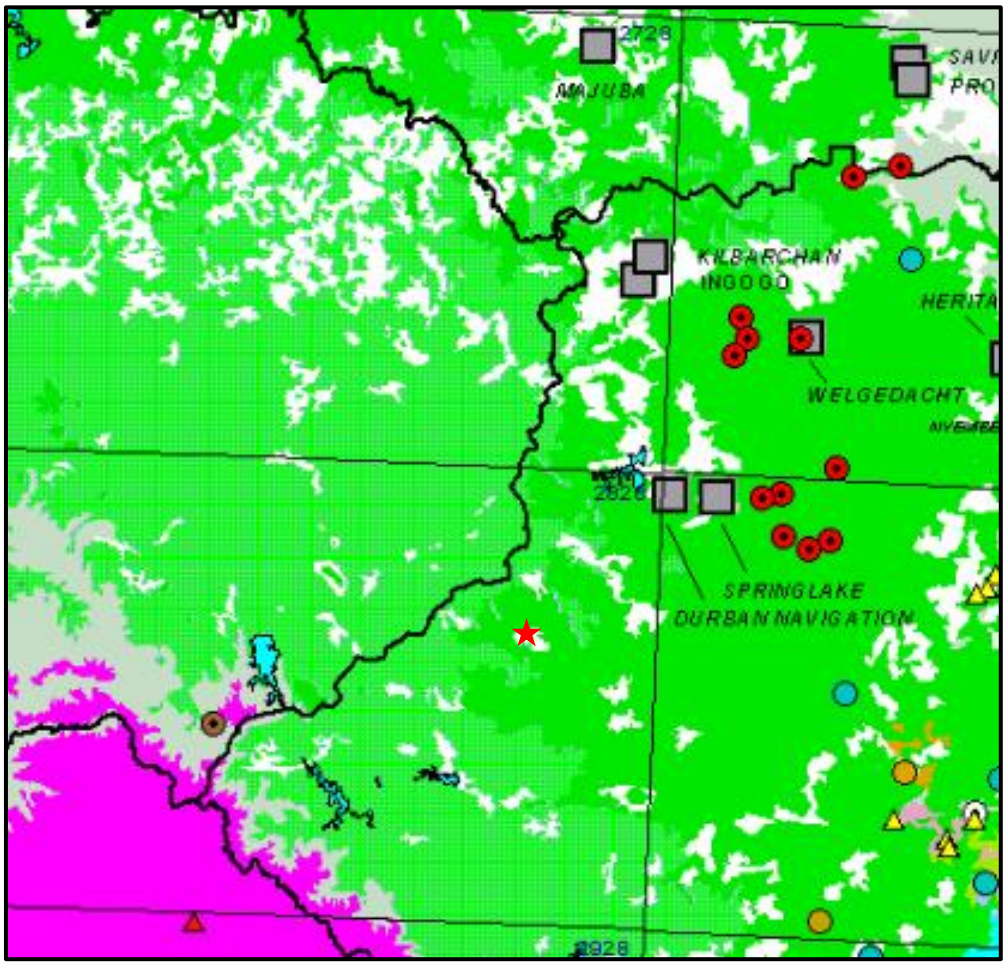

Figure 10: Indication of the simplified geology of the study area, where green represents the Dwyka and Ecca Groups (part of the Karoo Supergroup), white the stone aggregate,gravel intrusions, crossed green the Beaufort Group, grey the Molteno, Elliot and Clarens formations, and pink represents the Namaqua and Natal Metamorphic Provinces. The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience)

HYDROLOGY

(Information extracted from the 2024 Wetland Assessment attached as Appendix G)

The study area is located within DWA Quaternary Catchment V60C. This quaternary catchment is primarily drained by the perennial Sundays River (Figure 4). The site is located on a near the catchment divide with the site draining southwards. The local drainage network in the vicinity of the study area consists of two wetland systems located approximately 155m downslope of the mining permit area. The valley bottom

wetland drains in a south easterly which forms part of a left bank tributary of the middle Sudays River system.

Table 9: Key ecological and conservation context details for the study area (table obtained from the 2024 Wetland Assessment).

NATIONAL LEVEL CONSERVATION PLANNING CONTEXT			
Conservation Planning Dataset		**Relevant Conservation Feature**	**Conservation Planning Status**
National Freshwater Ecosystem Priority Areas (NFEPA) (WRC, 2011)	Rivers	Catchment Planning Unit 3031	Upstream Management Area[3]
	Wetlands	Onsite NFEPA wetlands	No FEPA wetlands present
		Presence of wetland FEPAs within 500m of the study area	
		NFEPA Wetland Vegetation Groups	Channelled valley bottom wetland 'Least Threatened'
		Sub-Escarpment Grassland Group 4	Seep 'Endangered'
2018 National Biodiversity Assessment – Inland Aquatic / Freshwater Realm (GIS Coverage)	Wetlands	**Wetland Ecosystem Bioregions**	Channelled valley bottom wetland 'Critically Endangered'
		Sub-Escarpment Grassland Bioregion	Seep 'Critically Endangered'
PROVINCIAL AND REGIONAL LEVEL CONSERVATION PLANNING CONTEXT			
Conservation Planning Dataset		**Relevant Conservation Feature**	**Conservation Planning Status**
KZN Aquatic Systematic Conservation Plan (EKZNW, 2007)		Sub-quaternary catchment & nearby Wetland	Freshwater Planning Unit No. 2353 & 2360 'Available' (no status)

The watercourses within a 500-meter radius of the mining permit area, including the already delineated wetlands (Eco-Pulse, 2023; EP671-01), and any remaining watercourses, were initially mapped at a desktop level. The Department of Water and Sanitation (DWS) designates this 500-meter buffer zone for regulatory purposes when licensing new activities and developments.

After the desktop mapping and identification process, preliminary 'likelihood of impact' ratings was assigned to these watercourses. These ratings were based on the potential for activities associated with the current development to cause measurable direct or indirect changes to the mapped watercourse units. Subsequently, the 'impact potential' ratings were further refined during fieldwork. Each identified watercourse unit was then given a qualitative 'impact potential' rating, aligning with the ratings and descriptions provided in below table.

Table 10: Description and Qualitative 'likelihood of impact' ratings and descriptions (table obtained from the 2024 (WAR).

Likelihood of Impact Rating	Description of Rating Guidelines
High	These resources are likely to require impact assessment and a Water Use License in terms of Section 21 I & (i) of the National Water Act for the following reasons: ➢ resources located **within the footprint** of the proposed development activity and will definitely be impacted by the project; and/or ➢ resources located **within 15m upstream and/or upslope** of the proposed development activity and trigger requirements for Environmental Authorisation according to the NEMA: EIA regulations; and/or ➢ resources located **within 15m or downslope** of the development and trigger requirements for Environmental Authorisation according to the NEMA: EIA regulations; and/or ➢ resources located downstream within the following parameters: o **within 15m downstream** of a low-risk development. o **within 50m downstream** of a moderate risk development; and/or o **within 100m downstream** of a high-risk development e.g. mining large industrial land uses.
Moderate	These resources may require impact assessment and a Water Use License in terms of Section 21 I & (i) of the National Water Act for the following reasons: ➢ resources located **within 32m but greater than 15m upstream, upslope or downslope** of the proposed development; and/or ➢ resources located within a range at which they are likely to incur indirect impacts associated with the development (such as water pollution, sedimentation, and erosion) based on development land use intensity and development area. This is generally resources located downstream within the following parameters: o **within 32m downstream** of a low-risk development. o **within 100m downstream** of a moderate risk development; and/or o **within 500m downstream** of a high-risk development (note that the extent of the affected area downstream could be greater than 500m for high-risk developments or developments that have extensive water quality and flow impacts e.g. dams / abstraction and treatment plants);
Low	These resources are unlikely to require impact assessment or Water Use License in terms of Section 21 I & (i) of the National Water Act for the following reasons: ➢ resources located a distance upstream, upslope or downslope (>32m) of the proposed development and which are unlikely to be impacted by the development project; and/or ➢ resources located downstream but well beyond the range at which they are likely to incur impacts associated with the development (such as water pollution, sedimentation, and erosion). This is generally resources located downstream within the following parameters: o **greater than 32m downstream** of a low-risk development. o **greater than 100m downstream** of a moderate risk development; and/or o **greater than 500m downstream** of a high-risk development (note that the extent of the affected area downstream could be greater than 500m for high-risk developments or developments that have extensive water quality and flow impacts e.g. dams / abstraction and treatment plants);
Very Low / None	These resources will not require impact assessment or a Water Use License in terms of Section 21 I & (i) of the National Water Act for the following reasons: ➢ resources located within another adjacent sub-catchment, and which will not be impacted by the development in any way, shape or form.

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 potential mining footprint is layered over the Mining and Biodiversity Map (following figure), it falls in an area of 60% highest biodiversity importance (dark brown) and 40% low risk (white) with a corresponding rating of highest risk for mining.

The Mining and Biodiversity Guideline's definition for areas of highest biodiversity importance stipulates that: "*these areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being"*. The guidelines note that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

Figure 11: The Mining Guidelines map shows the proposed mining area (blue polygon) within an area of highest biodiversity importance with a highest risk for mining (dark brown) and low risk (white) (image obtained from the BGIS Map Viewer – Mining Guidelines).

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

BIODIVERSITY CONSERVATION AREAS

(Information extracted from the Terrestrial Biodiversity Impact Assessment attached as Appendix H)

The Systematic Conservation Assessments (SCAs) is a strategic conservation plan developed in 2016 by the Provincial Conservation Authority, Ezemvelo KZN Wildlife (EKZNW) to ensure that representative samples of biodiversity are conserved. It is used as a land use decision support tool in KwaZulu-Natal and replaced the 2010 Terrestrial Systematic Conservation Plan (MINSET). The SCAs are derived from merging the Provincial Terrestrial Systematic Conservation Plan (TSCP) with other conservation datasets. In terms of terrestrial conservation, three conservation categories were developed including (i) CBA: Irreplaceable, (ii) CBA: Optimal, and (iii) Ecological Support Area. These conservation categories are described in the following table.

Table 11: Description and derivation of conservation categories (table obtained from the 2024 TBIA).

Conservation Category	Description	Development Process
Critical Biodiversity Area: Irreplaceable	Areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems.	The coverage was created by merging the following datasets: • 2010 MINSET – Irreplaceable and highly irreplaceable categories. • National Threatened Ecosystems – Critically endangered category • KZN Threatened Ecosystem – Critically Endangered and Endangered category. • Landscape Corridor critical linkages - Corridor type
Critical Biodiversity Area: Optimal	Areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding high-cost areas as much as possible.	The coverage was created by merging the following datasets: • 2010 MINSET – Optimal categories. • Local Knowledge – aquatic and terrestrial optimal categories.
Ecological Support Area	ESA are functional but not necessarily entirely natural terrestrial or aquatic areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the CBAs.	The coverage was created by merging the following datasets: • Local Knowledge – aquatic and terrestrial ESA categories. • Local corridor • Landscape corridor

According to the KwaZulu-Natal Terrestrial Systematic Conservation Plan (TSCP) (EKZNW, 2016) areas of CBA: Optimal are present within the project footprint as shown in the following figure. It is evident from the TSCP (EKZNW, 2011) spatial coverage that the 'CBA: Optimal' status assigned to these areas is vegetation driven due to the current and potential presence of the Northern KwaZulu-Natal Moist Grassland. Other species driving the classification (based on the distribution of the vegetation type) include the mollusc: *Cochlitoma simplex.*

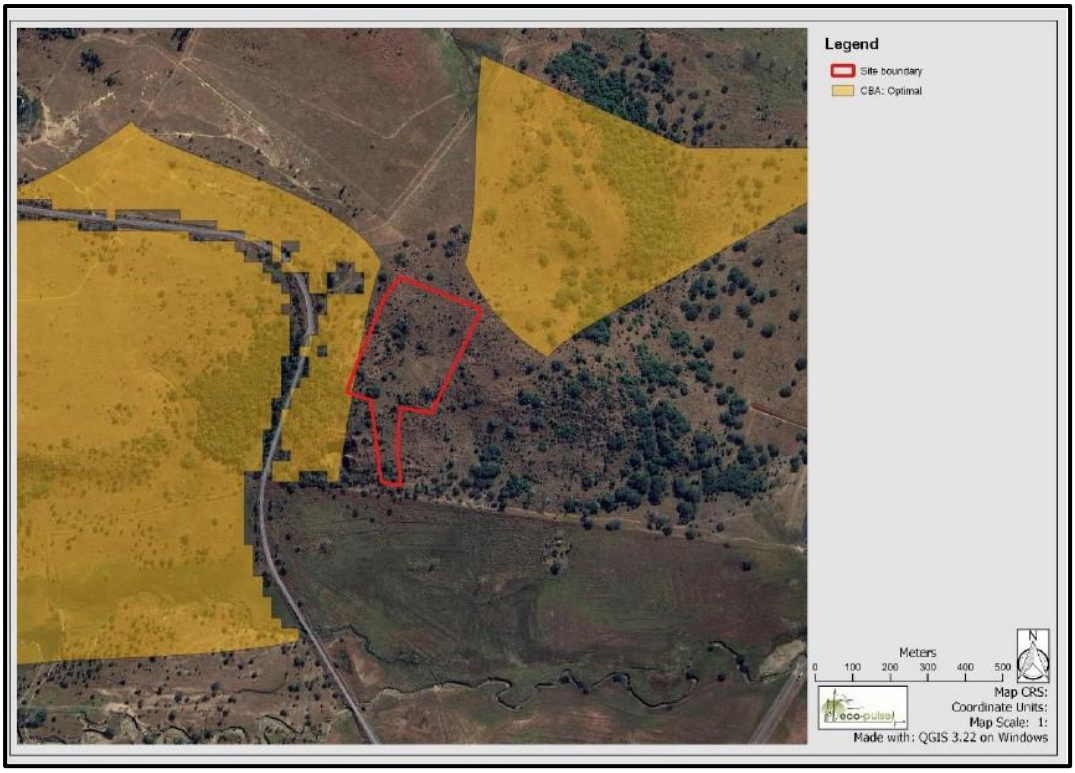

Figure 12: Map showing the location and extent of areas identified as "CBA: Optimal" (shaded in blue) according to the terrestrial CPLAN (EKZNW, 2016), in relation to the study site (image obtained from the 2024 TBIA).

According to the KZN Biodiversity Sector Plan (2014), no ecological corridor falls within the study area, nor within close proximity to the study area. No areas in the immediate vicinity of the property have been flagged for future conservation as part of the KwaZulu-Natal Protected Areas Expansion 20-year Strategy (EKZNW, 2010) spatial coverage, and likewise no provincial protected areas or forests occur within the study area.

The DFFE screening tool shows the animal theme as being of high sensitivity, whereas the plant theme yielded medium sensitivity. However, according to the screening tool the overall site is highly sensitivity in terms of terrestrial biodiversity.

Figure 13: DFFE screening tool output for animal species (image obtained from DFFE screening tool report).

Figure 14: DFFE screening tool output for plant species (image obtained from DFFE screening tool report).

Figure 15: DFFE screening tool output for terrestrial biodiversity (image obtained from DFFE screening tool report).

The project site is more than 5 km from any NEM:PAA listed private game or nature reserve, or other conservation areas. According to the KZN Biodiversity Sector Plan (2014), no ecological corridor falls within the study area, nor within proximity to the study area. No areas in the immediate vicinity of the property have been flagged for future conservation as part of the KwaZulu-Natal Protected Areas Expansion 20-year Strategy (EKZNW, 2010) spatial coverage, and likewise no provincial protected areas or forests occur within the study area.

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

GROUNDCOVER

(Information extracted from the 2024 Terrestrial Biodiversity Impact Assessment, attached as Appendix H)

The geographic region of the proposed development falls in the Grassland Biome. The Grassland Biome is found chiefly on the high central plateau of South Africa, and the inland areas of KwaZulu-Natal and the Eastern Cape. According to Mucina and Rutherford (2006) the natural vegetation type of the study area is classified as Northern KwaZulu-Natal Moist Grassland (Gs 4).

Figure 16 17: Mapped vegetation communities and habitat types identified and described within 32m of the study area. (image obtained from the 2024 TBIA)

According to the National Environmental Management: Biodiversity Act or NEMBA: revised national list of threatened terrestrial ecosystems (18 November 2022) this vegetation type is considered 'Vulnerable'. The provincial vegetation map identified the same vegetation types along the development footprint with the provincial status of 'Least Concern' for Northern KwaZulu-Natal Moist Grassland. According to the NPAES (National Protected Area Expansion Strategy) (SANBI, 2010) spatial outputs, there are no national protected areas found within the study area. Additionally, the study area has not been flagged for future formal protection.

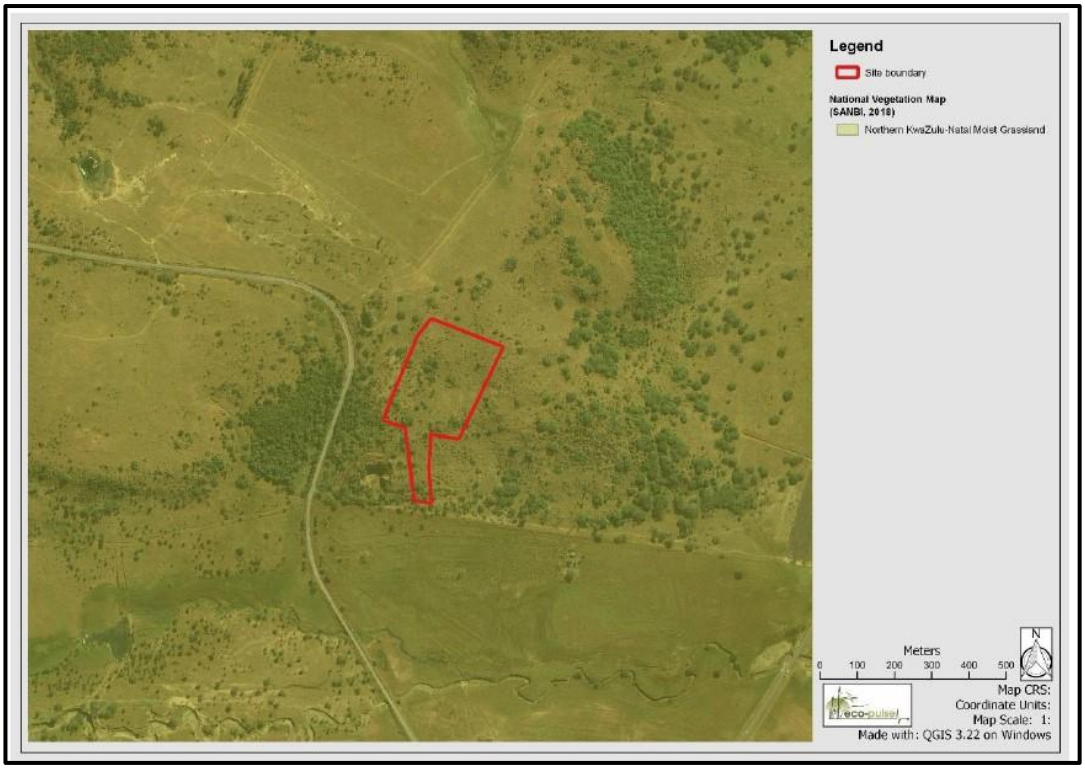

Figure18 19: National vegetation map (SANBI, 2018). (image obtained from the 2024 TBIA)

The probable reference vegetation type assigned above are characterised by the following important/diagnostic, biogeographically significant and endemic taxa:

Table 12: Important taxa of the Northern KwaZulu-Natal Moist Grassland (Mucina & Rutherford, 2011) (table obtained from the 2024 TBIA).

Important taxa
Graminoids: *Alloteropsis semialata subsp eckloniana, Aristida congesta, Cynodon dactylon, Digitaria tricholaenoides, Elionurus muticus, Eragrostis patentissima, E. racemosa, Harpochloa falx, Hyparrhenia hirta, Themeda triandra, Tristachya leucothrix, Abildgaardia ovata, Andropogon appendiculatus, A. eucomus, A. schirensis, Aristida junciformis subsp galpinii, Brachiaria serrata, Cymbopogon caesius, C. pospischilii, Cynodon incompletes, Digitaria monodactyla, D. sanguinalis, Diheteropogon amplectens, D. filifolius, Eragrostis chloromelas, E. plana, E. planiculmis, Eragrostis sclerantha, Festuca scabra, Heteropogon contortus, Hyparrhenia dregeana, Melinis nerviglumis, Microchloa caffra, Panicum natalense, Paspalum scrobiculatum, Setaria nigrirostris, Sporobolus africanus.* Herbs: *Acanthospermum austral, Argyrolobium speciosum, Eriosema kraussianum, Geranium wakkerstroomianum, Pelargonium luridum, Acalypha penduncularis, Chamaecrista mimosoides, Dicoma anomala, Euryops transvaalensis subsp setilobus, Helichrysum caespititium, H. rugulosum, Hermannia depressa, Ipomoea crassipes, Pearsonia grandiflora, Pentanisia prunelloides subsp latifolia, Sebaea grandis, Senecio inornatus, Thunbergia atriplicifolia, Zaluzianskya microsiphon.* Geophytic Herbs: *Chlorophytum haygarthii, Gladiolus aurantiacus, Asclepias aurea, Cyrtanthus tuckii var transvaalensis, Gladiolus crassifolius, Hypoxis colchicifolia, H. multiceps, Morea brevistyla, Zantedeschia rehmannii.* Succulent Herbs: *Aloe ecklonis, Lopholaena segmentate.* Low shrubs: *Anthospermum rigidum subsp pumilum, Erica oatesii, Hermannia geniculate.* Succulent shrubs: *Euphorbia pulvinate* Biogeographically important taxa: *Aloe modesta and Bowkeria citrina.*

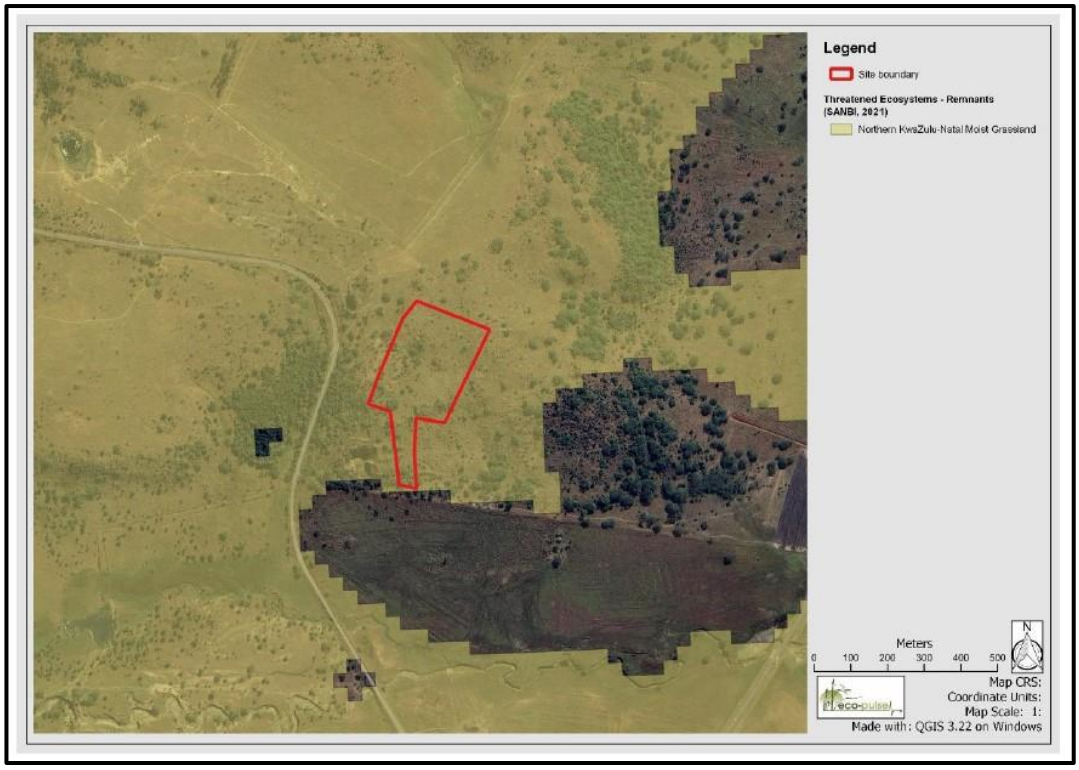

Figure 20: National vegetation map (SANBI, 2018). (image obtained from the 2024 TBIA)

Table 13: Conservation targets, ecosystem status and level of protection based on 2011 accumulated transformation statistics of the KwaZulu-Natal vegetation types that occur on-site (extracted from Jewitt, 2018), and the extent in hectares of the vegetation types that occur within the two sites (table obtained from the 2024 TBIA).

KZN vegetation type	Conservation target (%)	Ecosystem status	Level of protection	Original extent (ha)	Remaining natural (ha)	Extent on site (ha)
Northern KwaZulu-Natal Moist Grassland	24	Vulnerable	Poorly Protected	696 920	391 958	4.91

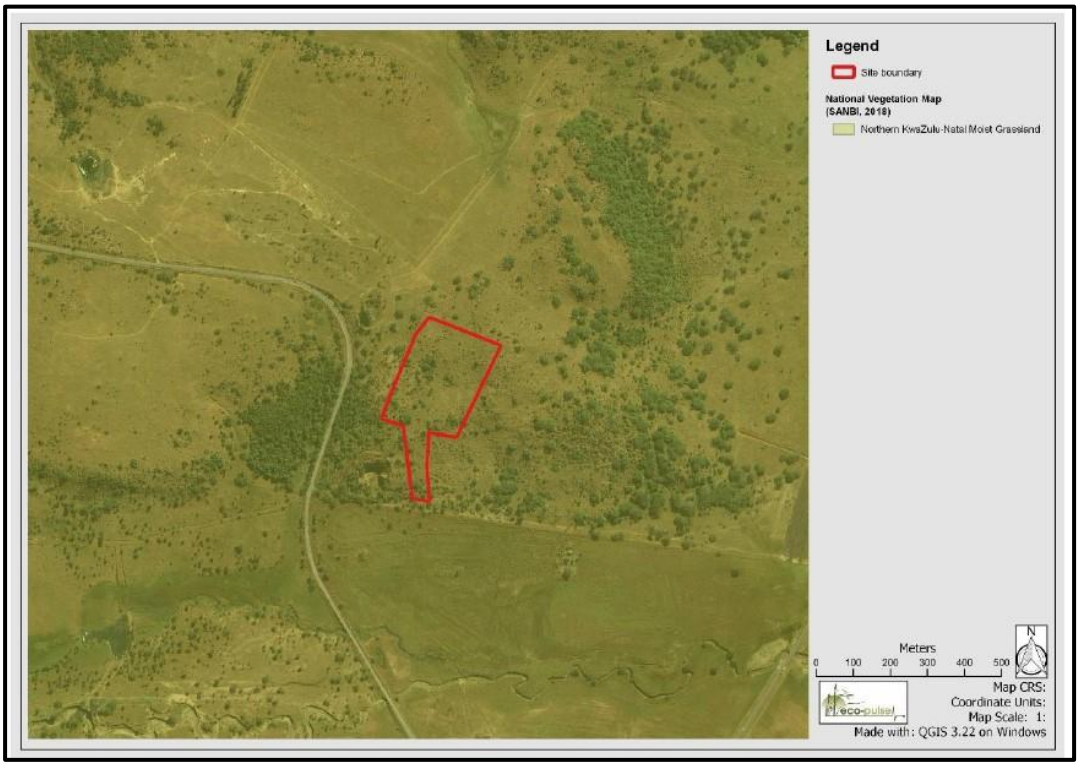

Figure 21: Provincial vegetation map (EKZNW, 2011) (image obtained from the 2024 TBIA).

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

FAUNA

(Information extracted from the 2024 Terrestrial Biodiversity Impact Assessment, attached as Appendix H).

As mentioned earlier, the DFFE screening tool notes the animal theme as being of high sensitivity. Faunal features like dens, spoor[8] and skat[9] were recorded where possible but were not sought out. The 2024 TBIA describes the SCC likelihood of occurrence assessment.

Definitive answers regarding the presence or absence of a particular SCC are not always possible. In such situations, the precautionary principle is applied so that preventative action is taken in the face of uncertainty. For species that are difficult to detect, it is not always possible to provide compelling evidence that a species does not occur. Therefore, if the habitat conditions appear suitable and there is data to suggest that the species did or could occur (e.g., confirmed records on adjacent properties), then the precautionary approach is to assume that the species does indeed occur there, and mitigation and management decisions need to be made accordingly.

The largest part of the Remaining Extent of the farm Elands Spruit No 5523 is used for livestock grazing. Apart from the domestic animals, faunal action is mainly contained to the natural vegetated areas of the farm that provides shelter to the animals.

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

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the proposed mining area is placed on the PSM, it shows the study area to extend over an area of insignificant/zero (grey) concern as presented in the figure below. Considering this, no palaeontological study is required.

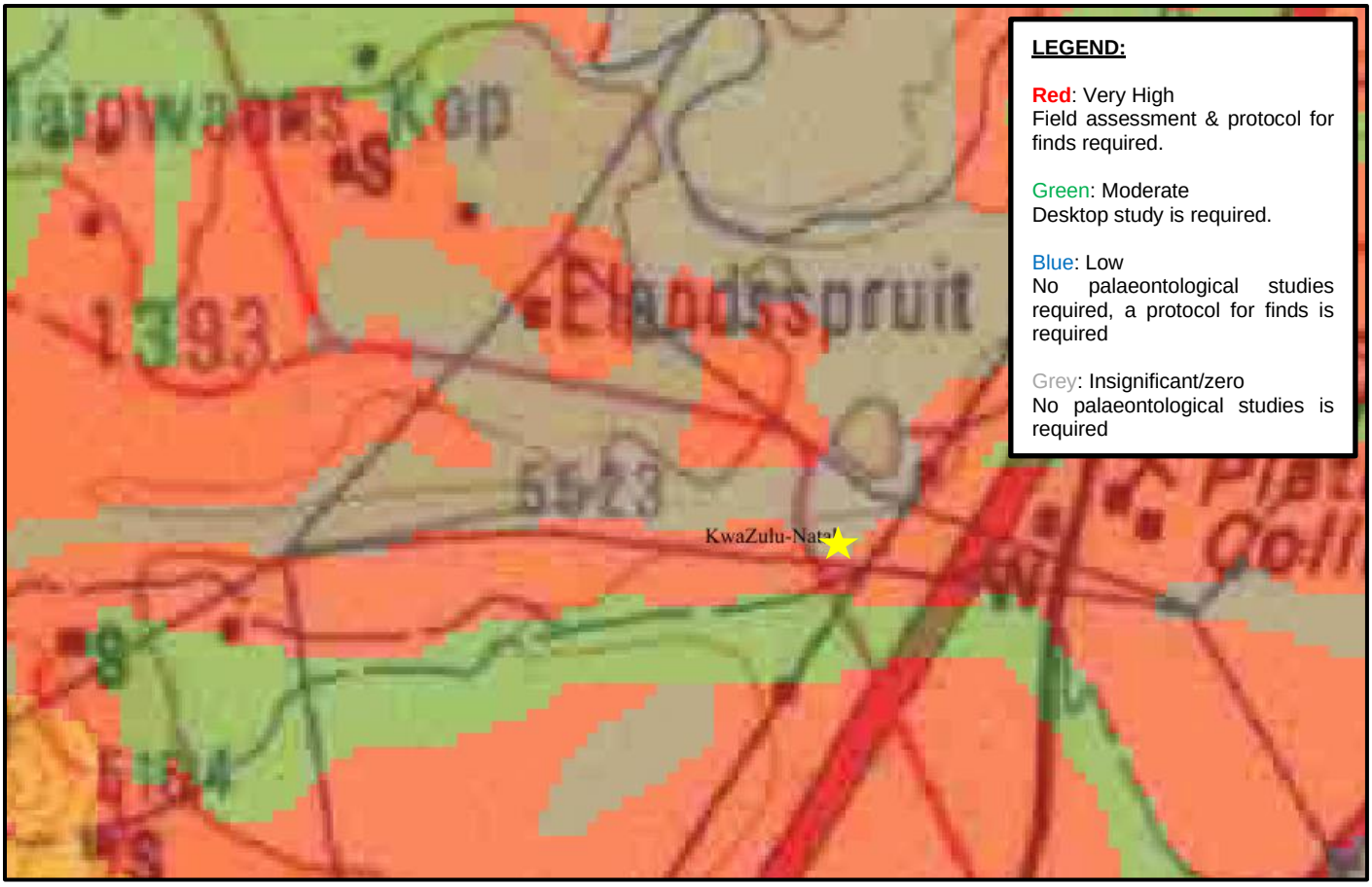

Figure 22: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (yellow star) falls in an area of Insignificant/Zero (grey) concern.

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

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Alfred Duma Local Municipality Integrated Development Plan 2020/2021)

The proposed mining area is in Ward 24 of the Alfred Duma Local Municipality (ADLM). Alfred Duma Municipality spans over an area of 3 957.63 km² of which is dominated by 70% of rural settlements with limited basic services and infrastructure. ADLM comprises of 37 wards with 29 of those being rural wards and some of them administered by the Traditional Authorities name Inkosi Khumalo in Driefontein Block, Inkosi Shabalala in Matiwane, Inkosi Sithole Mhlumayo, Inkosi Mabaso. The Municipality is strategically located along the N3 corridor which links Durban and Gauteng as well as the N11 which links it with Mpumalanga and Free State Provinces. and as such its long-term vision is to be the first metro municipality in the northern region. It has the highest population numbers compared to other municipalities and it is the most developed and serves as the regional economic hub in the district as most government regional offices and Industrial areas are located within the municipality jurisdiction.

The Alfred Duma Local Municipality is strategically located at the intersection of two major national development corridors and trade routes that is: The N11 which runs in a north south direction linking KwaZulu-Natal with Mpumalanga Province and the N3 which runs in an east west direction linking Durban and Johannesburg Metropolitan areas. Thus, the ADLM is highly accessible at both regional and national levels. This is recognised in the recently introduced Provincial Growth and Development Strategy for KwaZulu-Natal which classifies Ladysmith as a tertiary node with regional significance. Ladysmith is thus centrally located with respect to the important development corridors and transport routes within the district. This reflect that the municipality is earmarked for the location of infrastructure that serves the whole of Uthukela District and beyond and connects the region with major urban centres such as Durban and Johannesburg. The ADLM is also well located in relation to at least two of the major tourism destinations in KwaZulu-Natal. Certainly, it serves as a base for the exploration of the Battlefields to the north and Ukhahlamba-Drakensburg Park to the south. In addition, ADLM is a World Heritage Site and a world acclaimed tourist destination.

The population of Alfred Duma has experienced steady growth over the years more than any other municipality in the district. Census indicates that the population for the former eMnambithi/ Ladysmith municipality has risen from a total of 225 459 people in 2001 to 237 437 in (2011) with an average growth of 0.52% which is much less than in 2001 where the growth rate was 4.67%, while with former Indaka Municipality Census (2011) decreased from 113,644 people in 2001 to 103,116 people. Thus, such indicates a population decline of 10.2% over 10 years. Since census is an official survey which takes place every 10 years, between those intervals another enumeration of the population is conducted; Community Survey. The last Community Survey (CS) was conducted in 2016. The population of Alfred Duma Municipality was recorded at 356 276 people in 2016 compared to a total of 340 553 in 2011. This is evidence of an increase of 15 721 people between the period of 2011 and 2016, this means that the municipality has experienced annual growth percent of 0.92.

Gender Profile

The age structure of ADLM on the population pyramid reveals a children population profile with 37% of the population under the age of 14 years of age and 46% being of working age, and with only a 7% of the elderly population. ADLM population consists of more females than males, the females account for 53% of the population and male population only account for about 47%. This is assumed to be related to males who migrate to seek employment opportunities outside the municipal boundaries, which, in assumption based on 2011 StatsSA data, has translated to 56.1% of the households

being female-headed. This female domination in the municipality is contributed by amongst others male migrating to the big cities in search of greener pastures or good living conditions thereby living their spouses as household heads. 46.3% of the population are under the age of 19 years old, which indicates that a large portion of the population is under the working age and that there is high level of dependency in the Municipality he increasing number of the age dependency population places a lot of pressure on the basic services of the municipality as this increases the dependency rate as this age group makes little positive contribution to the economy of the town. As such, it is critically important for the SDF to enable the Municipality to anticipate population growth in the age group from 0-19 years and channel development to areas where there is pressure in this regard. As most of this population are scholars, it is important that support is given through the provision of excellent educational services as well as access to basic health and child support grant amongst other factors. An analysis of the population structure indicates a large drop in the population from those aged 20-24 years old and above. This could be due to out-migration of the youth in search of employment in other areas.

The population of Alfred Duma over the next five years is estimated to reach an approximated number 450000; taking into cognisance, the average growth rate of 2% in the municipality. A growth in population will mean that there will be an increase in density and population structure more especially amongst the population that forms part and parcel of the dependent population. This will require that municipality make available more job and employment opportunities to help in alleviating the problem of rapid population growth. The unemployed youth population is expected to increase up to 40% over the next four years. The higher rates of unemployed young person's increase the dependency ratio, the widespread of diseases as well as increasing crime rates in the Alfred Duma Local Municipality area of jurisdiction.

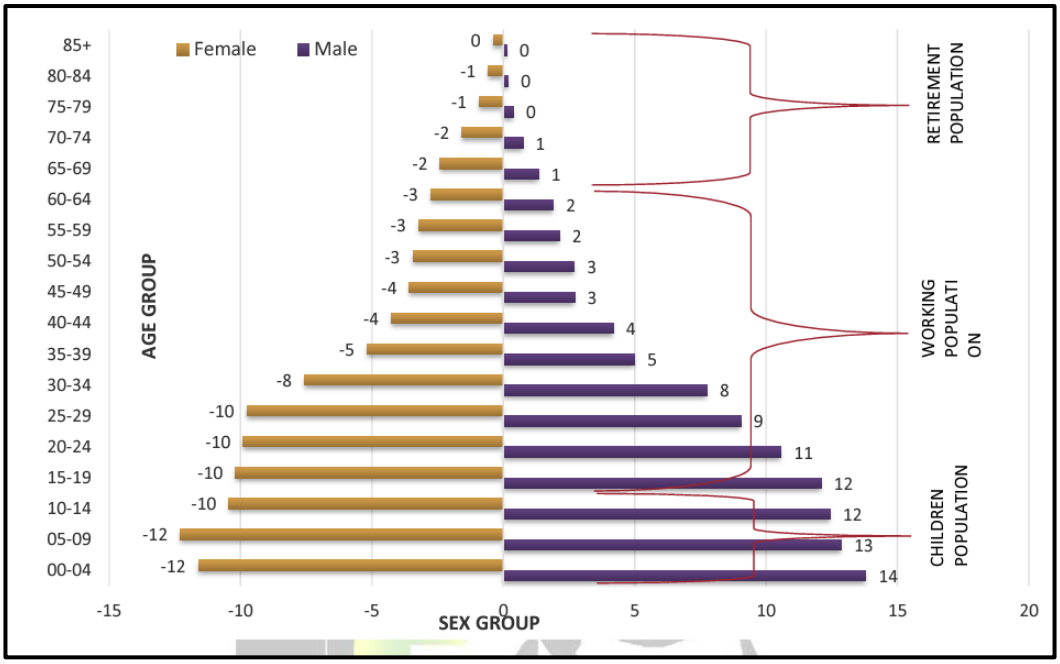

Figure 23: Population pyramid of sex among age groups (image obtained from the ADLM IDP 2022/2023).

Population Profile

Alfred Duma is the most populated local municipality within uThukela District, contributing approximately 50% of the district population. The predominant population group is Black African with 95%, followed by Indian/Asian, then Whites and lastly the Coloureds. Majority of the black community are located in the townships and tribal areas, such as the study area, whereas Indians/Asians and coloureds are located in areas around Ladysmith. Whites are largely found in the farmlands and partly in Ladysmith area. Historically the black community has been subjected to apartheid policies of discrimination where the poor were pushed into townships and the dislocated rural area. As such, majority of the black community have experienced poverty, lack of employment opportunities, lack of infrastructure and basic services. The number of black people on the municipality is seen to be increasing at a rapid rate, over the next five years this growth is set to be seen increasing by almost half and the number of White, Asian and Coloured Communities is predicted to decrease rapidly. This will in turn have an impact on the employment equity of some areas as well as the use of affirmative action as there needs to be a balance in the racial groups in all the sectors of employment.

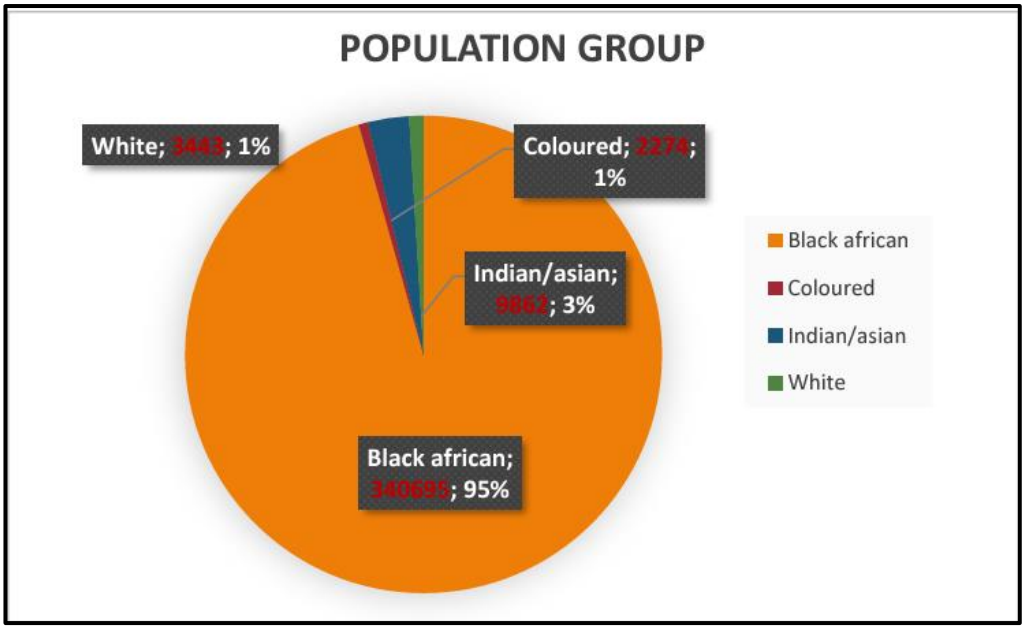

Figure 24: Racial distribution of the ADLM (image obtained from the ADLM IDP 2022/2023).

Economic Profile

The employment status of the Alfred Duma Local Municipality depicts that a majority of the population are not economically active. This can be due to various social and economic factors which includes but are not limited to age, social dependency, physical impediments, lack of education, poor access to services and health and other social reasons. The number of employed people indicates that people are employed in the primary, secondary and tertiary sectors of the town. Most people are however employed in the tertiary sector which shows an increase in the number of service and telecommunication centres in the municipality.

The high number of unemployed individuals in the municipality can mainly be attributed to lack of education, poor healthcare and also the unavailability of employment opportunities in both the private and public sectors of the municipality. The discouraged work seekers comprise of individuals who have attempted to find employment through numerous means and have not found employment opportunities to date. These individuals are not just uneducated people but also highly educated individuals who have attempted to find employment but to no avail.

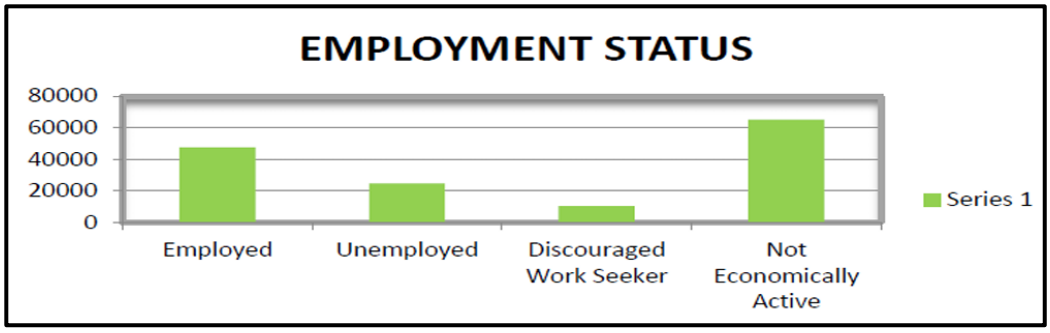

Figure 25: Employment status of the ADLM (image obtained from the ADLM IDP 2022/2023)

Education Levels

Education is one of the most fundamental factors to development. Education raises people productivity and promotes entrepreneurship and technological advances. In addition, it is very crucial in securing social and economic progress and improving income distribution. Alfred Duma has a population with low literacy and education levels with about 75% of the population not having access to matric certificates. Low education levels can impede the economic growth of a municipality and the population in genera especially in the technologically advanced era by which we live in.

(b) Description of the current land uses.

The Remaining Extent of the farm Elands Spruit No 5523 is situated in a rural setting intersected by road-, and electricity infrastructure, and transformed by the existing quarry (on the farm) and old coal mine dumps east of the farm. The earmarked property is zoned as Agricultural.

Land use within the greater landscape is predominantly for agricultural purposes with the bulk of the land (almost 70%) being natural to semi-natural rangelands (grasslands) grazed mostly by cattle. The higher lying areas to the north-west (around the headwaters of the non-perennial watercourse and smaller tributaries) falls mostly within tribal/communal land (12%) and is severely transformed and degraded through several disturbances including the low to medium density village (Matiwane), associated small patches of cultivated lands (subsistence purposes), areas devoid of vegetation or covered by a low basal vegetative covering, and severely grazed and trampled areas. Cultivation for commercial purposes comprises only small portions of land use within this landscape (<4%) whilst cultivation for subsistence purposes (outside of the Matiwane boundaries) encompass a slightly larger percentage (~6%).

One coal mine is located within the area covering less than 1% of the total land cover. As mentioned earlier a few small farm dams are present (<1%) within the area and is mostly associated with small tributaries and drainage lines associated with the non-perennial watercourse. Outside of the boundaries of the tribal lands located to the north-west, which is characterized by large bare areas, bare patches are mostly associated with eroded areas around the non-perennial watercourse (6%). Plantations and woodlots are sparse with small patches found around some homesteads (<1%).

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the mining area:

Table 14: Land uses and/or prominent features that occur within 500 m radius of the proposed area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural purposes.
Low density residential	-	**NO**	-
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	-
Light industrial	-	**NO**	-
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-
High voltage power line	**YES**	-	The proposed mining footprint will extend across 4.91 ha of the above-mentioned property. Two high voltage Eskom power lines (275kV) as well as a 11kV power line run past the proposed mining area with the nearest pylon being ±240 m from the eastern boundary of the site.
Office/consulting room	-	**NO**	-
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	-	**NO**	-
Quarry, sand or borrow pit	**YES**	**-**	The proposed mining footprint will extend across 4.91 ha of the above-mentioned property.
Dam or reservoir	**YES**	-	A small earth dam, used by the landowner to water his stock, is ±95 m north-west of the proposed mining area, with another earth dam ±370 m south of the mining area. The proposed mining activities will have no impact on the dams surrounding it as all activities will be contained to the approved boundaries.
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**	The N11 that borders the site to the east does not have 4 lanes or more.
Airport	-	**NO**	-
Harbour	-	**NO**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Landfill or waste treatment site	-	**NO**	-
Plantation	-	**NO**	-
Agriculture	**YES**	-	As mentioned earlier the proposed mining area is situated within an area used for grazing/conditioning of livestock. Various fallow lands surround the study area.
River, stream, or wetland	**YES**	-	A wetland system is within 500 m (±155 m away) of the proposed development footprint.
Nature conservation area	-	**NO**	-
Mountain, hill or ridge	**YES**	-	The proposed mining area is situated within the midslope region identified on the property. The surrounding area is also undulating/hilly.
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 site-specific topography has a gradual to moderate sloping landscape, slanting mainly in a southerly direction, in which three terrain types can be distinguished namely, a Midslope region of a low hill along the northern boundary, transgressing into a relative narrow footslope region which finally terminates into a relative extensive valley bottom landscape containing lower lying watercourse channels (Botha, 2017).

The proposed quarry will be situated mostly within the midslope region of the low hill, slightly encroaching into the upper parts of the footslope. To the west of the focus area the hill forms a slight notch or saddle within which the Collings Road passes over the hill. The average elevation of the study area is 1187 meters with the highest point recorded close to the top portion of the proposed quarry area (1 205 m) and the lowest point recorded within the wetland body (outside the proposed mining area) located within the valley bottom portion. The average loss of elevation from the highest to the lowest point is ~1156m with an average slope (southerly) of 11.8% (Max. Slope: 34.0%).

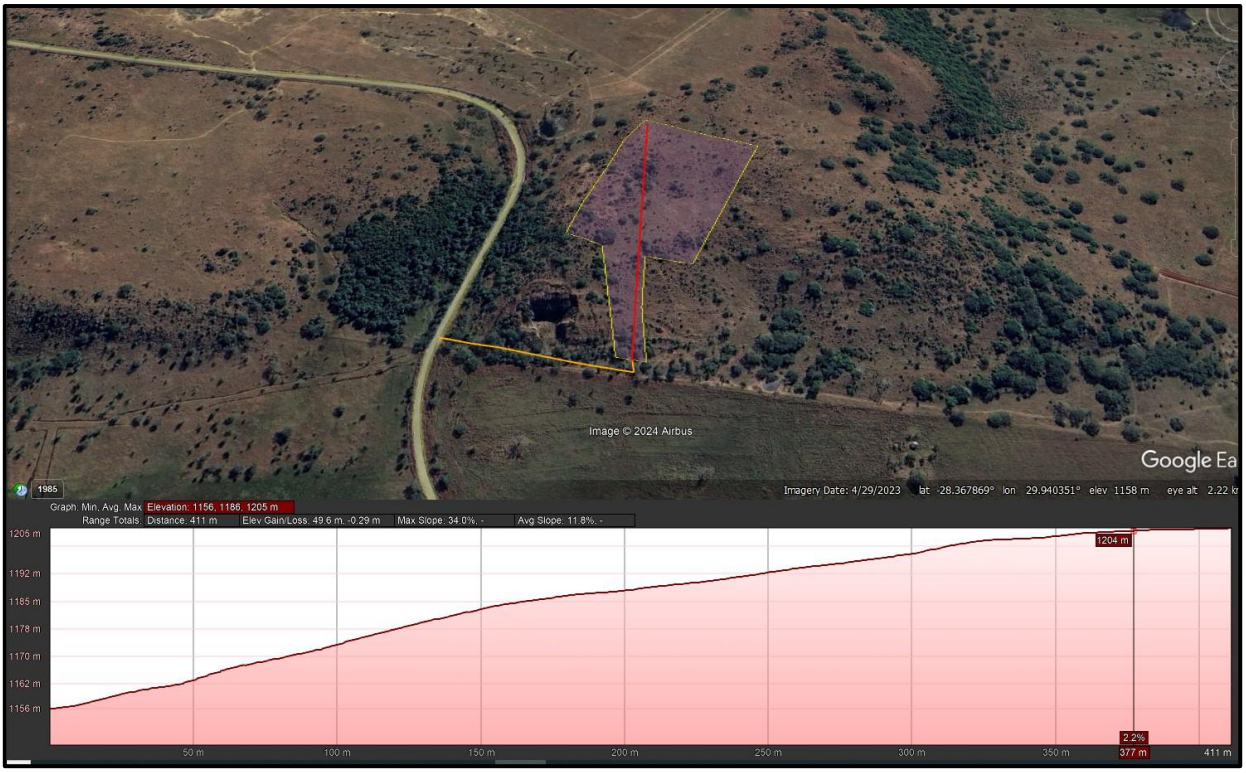

Figure 26: Elevation profile of Site Alternative 1 (Image obtained from Google Earth).

Due to the impracticality of importing large volumes of fill material to restore the quarry area to its original topography, the rehabilitation option (upon closure) is to render the quarry safe and leave it as a minor landscape feature. If the proposed closure actions, as prescribed in the EMPR, are implemented the impact on the topography of the specific area is deemed to be of low significance.

SITE SPECIFIC VISUAL CHARACTERISTICS

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

The following figure shows the viewshed analysis (according to Google Earth) for the footprint of the study area within a ±10 km radius around the study area. The green shaded areas indicate the positions from where the mine will be visible. The analysis shows that the proposed visual impact will be of medium-high concern as the mining area will mainly be visible from the south due to the position of the earmarked area against the side of the hill. Although the proposed mining area will be visible within the above mentioned ±10 km radius south of the farm, it is proposed that as the distance between the development and the observer increases the visual impact will decrease.

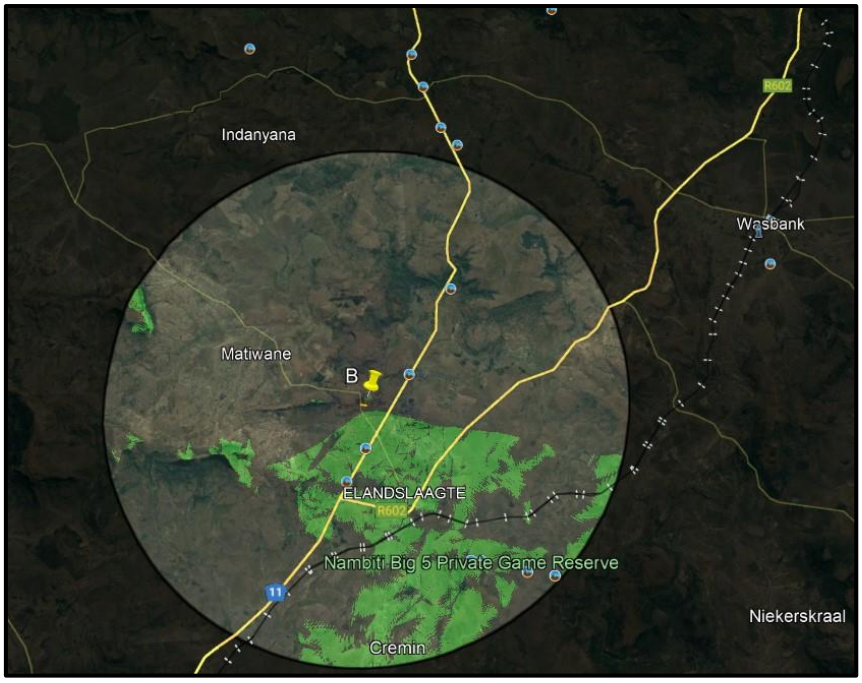

Figure 27: Viewshed analysis of the highest corner (B) of the earmarked area where the green shaded areas indicate the positions from where the earmarked area will be visible. (Image obtained from Google Earth).

Should both the mining permit area (separately authorised) be established on site, the cumulative visual impact on the receiving environment is deemed to be of medium-high significance.

SITE SPECIFIC AIR AND NOISE QUALITY

The nearest residential dwellings to the earmarked area are those of the surrounding neighbour (Me. Khumalo) at ±520 m southeast. The Collings Pass Road boarders the mining area ±90 m to the west, with the N11 passing the property more than 902 m to the east. As mentioned earlier, the prevalent wind direction of the study area is in a north-western direction for most of the year. Currently the air quality of the study area is mainly impacted on by traffic along the N11 and Collings Pass Road, agricultural practices such as the burning of sugar cane, and cooking/heating fires at the Matiwane residential area.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil, crushing and screening of hard rock, and the transport of material on gravel roads. As the prevalent wind direction is in a north-western direction dust generated at the proposed quarry will be blown away from the residence of Me Khumalo. Should the Applicant implement the mitigation

measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low-medium significance.

As with air quality, the current activities on the property and surrounding environment already impact the noise ambiance of the study area. Traffic along the N11 and Collings Pass Road increase the natural noise levels of the receiving environment. The noise to be generated at the proposed quarry will contribute to these daily noise levels. The proposed activity will contribute noise generated because of blasting, as well as the crushing and screening and transporting of material. As mentioned earlier, the work hours of the mine will be restricted to Monday – Saturday from 07:00 to 18:00. No work will take place on Sundays. The nuisance value of noise generated by heavy earthmoving equipment, to residence in the near vicinity is deemed to be of low-medium significance. The noise caused by blasting will be instantaneous and of short duration.

Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place in a pristine environment, and the impact is therefore deemed compatible with the current operations and of low-medium significance.

Should the mining permit area be established on site, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance, while the cumulative noise nuisance (after mitigation) will be of medium significance.

SITE SPECIFIC GEOLOGY AND SOIL

The site-specific geology resembles the geology as described under *Part A(h)(iv)(1)(a) Type of Environment Affected by the Proposed Activity – Geology and Soil*. The geology of the study area is intersected by a dolerite intrusion. This application is for the mining of stone aggregate, gravel that will be crushed to various sized gravels before it is used as fill material during the upgrade of the N11.

SITE SPECIFIC HYDROLOGY

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

According to the Screening Report (March 2024) the following terrestrial and aquatic biodiversity sensitivities were identified for the project area:

The site visits of hydrologists (2024) confirmed that no sensitive aquatic features are present within the project site (4.9 ha) and the site is therefore deemed of low aquatic sensitivity. No wetland or aquatic units were identified as potential impacts at the desktop level. The site visit then focused on verifying the potential impact ratings to ensure that no wetland or aquatic habitats would be impacted.

Current Watercourse Impact Potential:

Watercourses within a 500m radius of the mining permit area, falling under the Department of Water and Sanitation's (DWS) regulated zone for Section 21 (c) and/or (i) wetland water use, underwent mapping [utilizing existing delineations (see figure 28) and were classified according to their Hydrogeomorphic (HGM) type, following the national wetland/river classification by Ollis et al. (2013). This process involved GIS (Geographical Information Systems) software analysis of available aerial imagery (Google EarthTM and aerial photography), elevation contours, and existing wetland and river coverages specific to the region.

An initial desktop screening for 'impact potential' was conducted on identified watercourse units within the 500m radius of the mining permit area, with subsequent verification in the field. The primary risks associated with mining activities include alterations to catchment surface water processes, potential erosion and sedimentation impacts, as well as surface runoff contamination leading to local watercourse water quality deterioration.

Considering these risks, it's important to note that all watercourse units within the 500m radius of the mining permit site were either located in separate sub-catchments from the mining site or were sufficiently distant (>155m) from the site, making direct or indirect impacts unlikely. Therefore, a formal impact assessment for these watercourses is deemed unnecessary.

Table 15: Summary of the wetland HGM unit type encountered and the general characteristics (table obtained from the 2024 Wetland Assessment).

Units	Classification (HGM unit)	Distance from Mining Permit Site	Description
Wetland W01	**Channelled Valley Bottom**	±230m	Wetland W01 was identified as a channelled valley bottom wetland (being ~33.82 ha in extent) and located south of the mining permit. The wetland drains in an easterly direction. The vegetation within the wetland itself was found to comprise mix of hydric and dryland grass species and sedges.
Wetland W02	**Seep**	±155m	Wetland W02 was identified as a hillslope seep wetland (being ~5.77 ha in extent) and located south of the mining permit area. The wetland drains in a south easterly direction feeding into to broader valley bottom wetland. The vegetation within the wetland itself was found to comprise mix of short hydric and dryland grass species. Notably, the drier marginal area had been slightly impacted by grazing activities and historic agriculture activities.

The location and extent of Wetland W01 (±230m) and Wetland W02 (±155m) is shown in the following image.

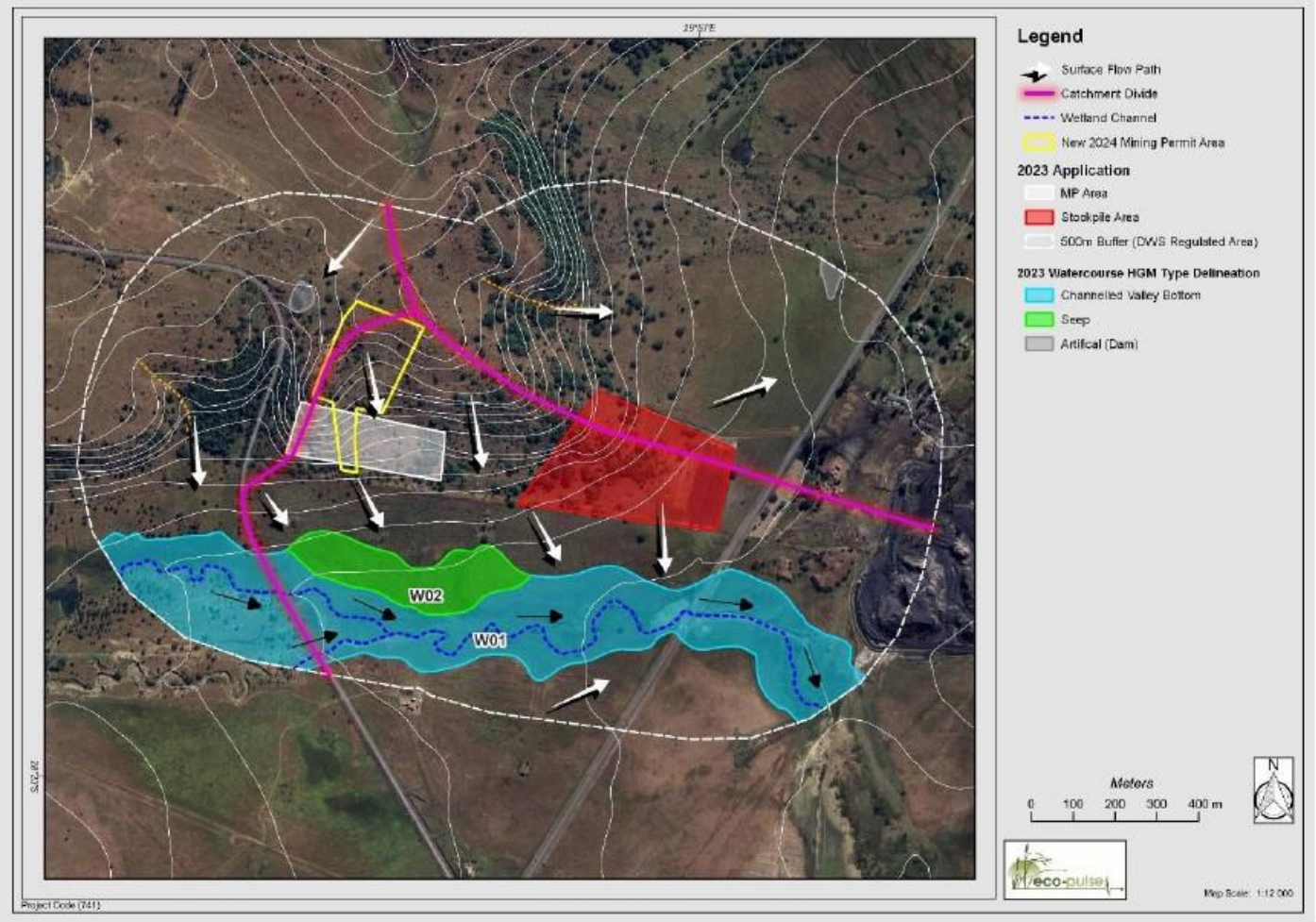

Figure 28: Wetland delineation map by Eco-Pulse (EP671-01) in relation to the new 2024 MP Area

The findings of the specialist wetland assessment conducted by Eco-Pulse Consulting in April 2024, revealed that no freshwater wetlands or rivers at risk of potential impact from the proposed mining permit area, both within the study area and downstream.

This assessment builds upon a prior evaluation (Eco-Pulse, 2023; EP671-01), which determined that the proposed site is approximately 155 meters away from the nearest wetland edge. Given this distance, the classification of 'low impact mining,' and the inclusion of a 40-meter buffer zone, the probability of impact was deemed 'unlikely.'

As a result, the proposed mining activities do not fall under listed activities according to NEMA because they are not located within or within 32 meters of natural freshwater ecosystems, such as wetlands, rivers, or streams. Additionally, these activities do not fall under Section 21(c) and 21(i) water uses since there are no wetlands or rivers within the regulated area defined by the Department of Water and Sanitation (DWS), which includes a 500-meter buffer, at risk of potential impact.

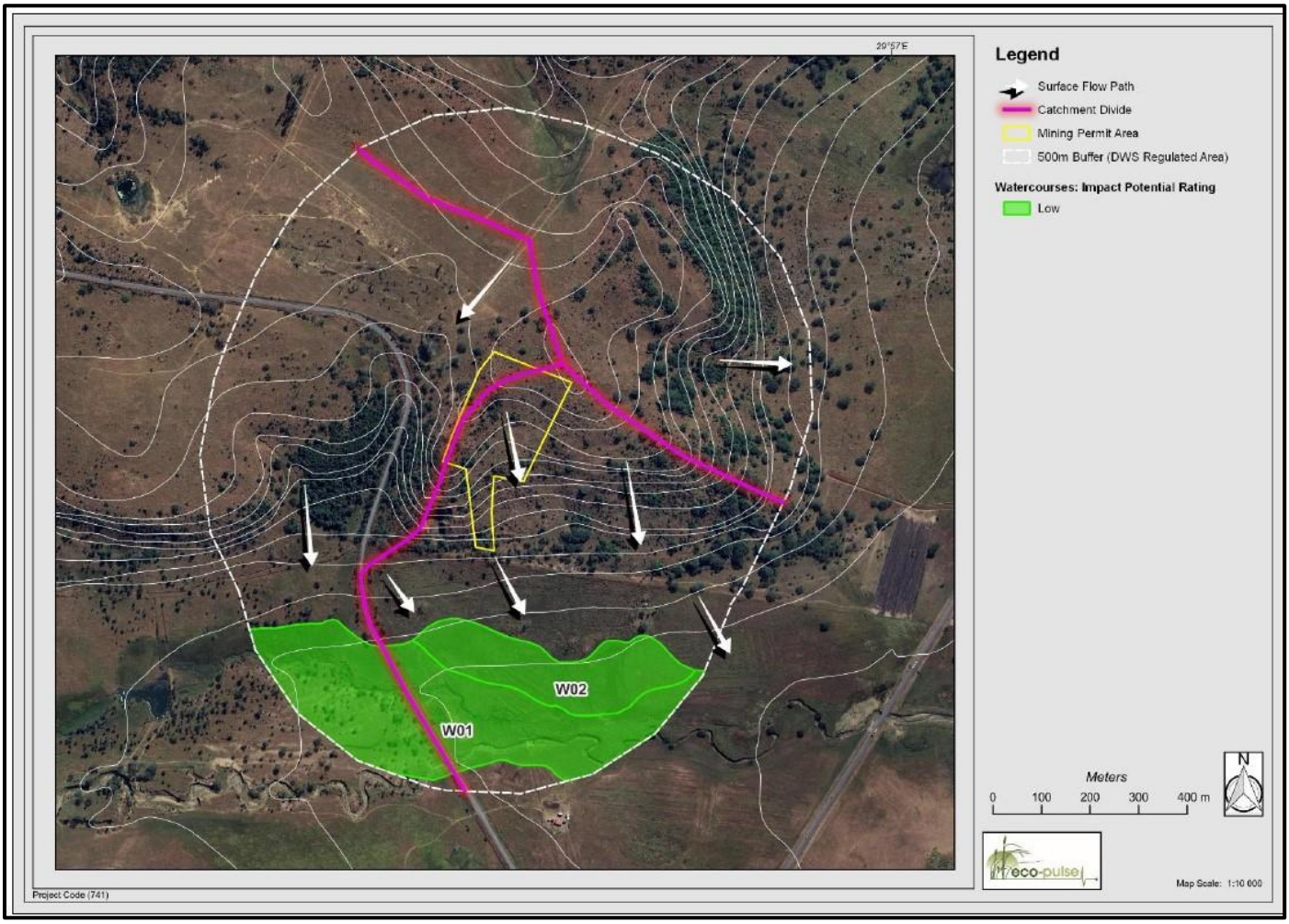

Figure 29: Outputs of the initial watercourse 'impact potential' assessment undertaken for the mining permit area. The map shows the positioning of the area footprint ("Yellow" boundary line – mining permit area), with watercourses assessed with a 500m radius [i.e., the DWS regulated area for (c) & (i) water use – "white" dashed circle outline). (image obtained from the Wetland Assessment, 2024)

Present Ecological State (PES) Assessment:

Based on the combined desktop assessment, including the 2024 wetland assessment, and field verification exercise, no wetlands or rivers were identified within the area of

study and downstream as being at risk of potential impact by the new mining permit area. The only wetlands identified remain a sufficient distant from the site, outside of the sub-catchment and/or the 500m regulated area where the site is located. Therefore, from a freshwater perspective no detailed assessments (i.e. PES and EIS) and/or DWS risk assessment are required for the proposed mining permit area.

Freshwater Ecosystem Context

The study area is located within DWA Quaternary Catchment V60C. This quaternary catchment is primarily drained by the perennial Sundays River (Figure 4). The site is located on a near the catchment divide with the site draining southwards. The local drainage network in the vicinity of the study area consists of two wetland systems located approximately 155m downslope of the mining permit area. The valley bottom wetland drains in a south easterly which forms part of a left bank tributary of the middle Sudays River system.

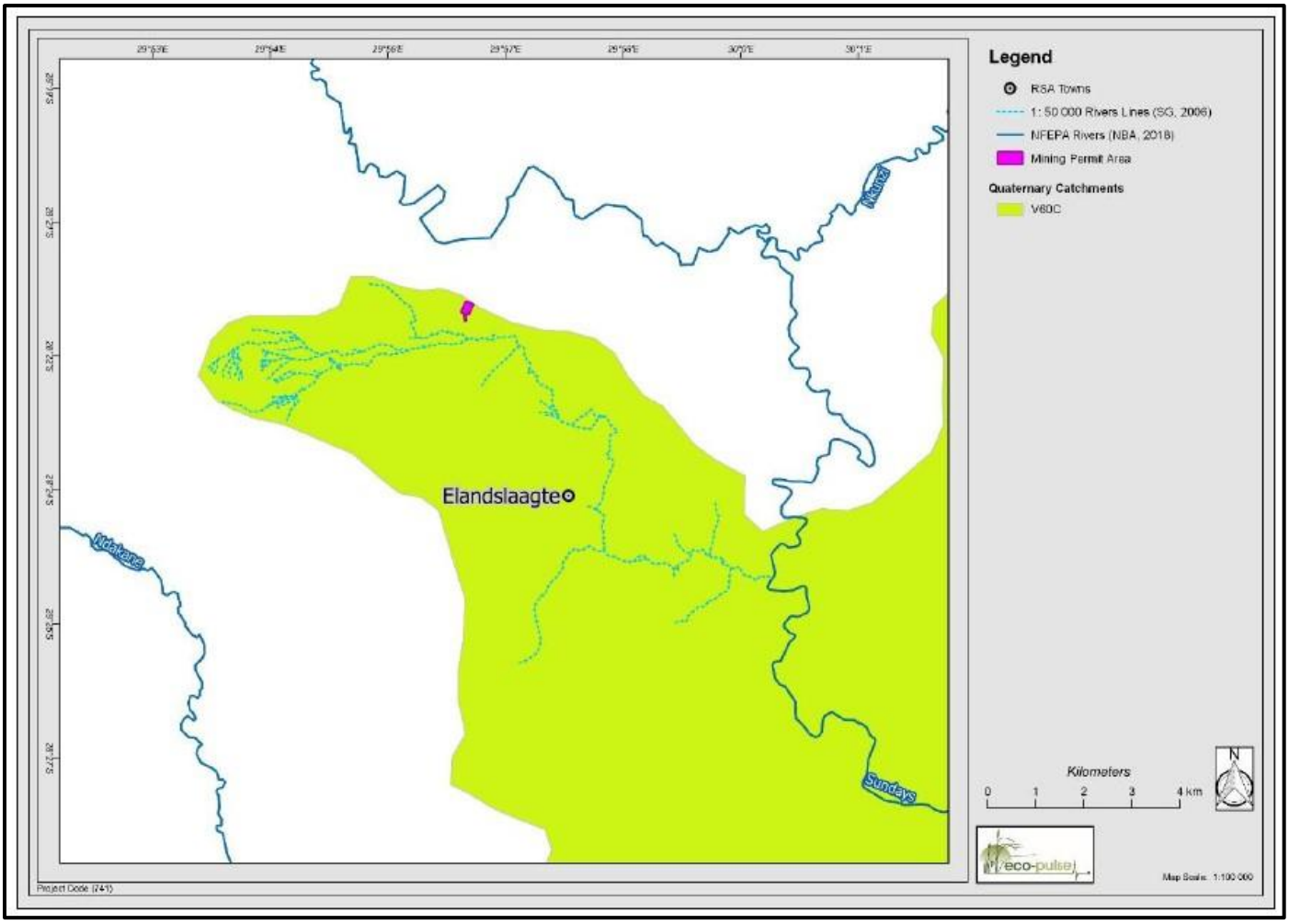

Figure 30: Map showing local drainage setting and catchment in relation to the mining and stockpiling sites. *(image obtained from the Wetland Assessment, 2024)*

Planning and Design Recommendations:

Road Guidelines:

- All roads (including those for temporary access) will need to be located outside of wetlands and buffer zones.
- It is recommended that a semi-pervious material be used to construct roads that allows for some infiltration rather than using impermeable tarred/asphalted road surfaces wherever practically possible and financially feasible.
- Roads should follow natural contours where possible in order to maintain gentle gradients so as to minimise the risk of surface water runoff, high flow velocities and soil erosion.
- Roads should have shallow berms/cut-off drains at regular intervals along steep slopes that direct surface run-off from the road into adjacent grassland or wooded areas to avoid rill erosion and gully formation.
- If internal roads are to be developed to services the expansion area, stormwater generated by the road should be formally managed using open grassed swales and discharged into the environment at regular intervals in a controlled manner that does not cause erosion.

Stormwater Management Guidelines:

- The stormwater management plan (SWMP) must be sustainable over the life cycle of the quarry & stockpiling area and over different hydrological cycles and must incorporate principles of risk management.
- Dirty water must be collected and contained in a system separate from the clean water system and the risk of spillage or seepage into clean water systems must be minimized.
- Clean water must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system while preventing or minimizing the risk of spillage of clean water into dirty water systems. Ideally clean water must not be contained but returned to natural watercourses under controlled conditions.
- Adequate drainage systems should be provided to minimise surfaces water runoff into the quarry workings. This can be achieved through use of a cut-off drain at the top of the quarry face.
- All stormwater runoff from site must be managed through use of swales, berms or trenches, sediment barriers, and a series of stormwater settling/detention ponds. Runoff must be collected and diverted into a series of detention/settling ponds where sediment-laden water can be detained for a period of time appropriate for sediment to settle prior to water being released back into the environment.

- Stormwater released back to the environment must be attenuated to pre-development flow conditions, with adequate erosion protection and velocity dissipation prior to water entering downstream watercourses.
- Multiple smaller stormwater outlets to the environment are preferable to fewer, larger ones.
- No stormwater must be attenuated outside the fenced-off development site.
- There must be a sufficient buffer between the quarry operational area and the site boundary to allow for establishment of stormwater infrastructure such as detention ponds, stormwater channels etc. which should not be located within wetlands. This should be clearly reflected in the layout plan and stormwater management plan.
- Any non-polluted water abstracted from the quarry must be discharged into the stormwater system for treatment (mainly in the form of detention for removal of sediment) or a system for recycling and re-use of this water on-site should be devised and implemented.
- Quarry design can also promote the conservation and efficient utilisation of water, implement rainwater harvesting measures, the recycling / re-use through grey water systems, etc.

  The mitigation measures proposed by the specialist were incorporated into this document under *Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk*.

Water Use Licence Requirements:

The findings of the 2024 Wetland Assessment indicate that the proposed activity does not need to be licenced according to Chapter 4 and Section 21 of the NWA, 1998.

These activities do not fall under Section 21(c) and 21(i) water uses since there are no wetlands or rivers within the regulated area defined by the Department of Water and Sanitation (DWS), which includes a 500-meter buffer, at risk of potential impact.

Conclusion:

The findings of the specialist wetland assessment conducted by Eco-Pulse Consulting in April 2024, revealed that no freshwater wetlands or rivers at risk of potential impact from the proposed mining permit area, both within the study area and downstream. This assessment builds upon a prior evaluation (Eco-Pulse, 2023; EP671-01), which determined that the proposed site is approximately 155 meters away from the nearest wetland edge. Given this distance, the classification of 'low impact mining,' and the inclusion of a 40-meter buffer zone, the probability of impact was deemed 'unlikely.'

As a result, the proposed mining activities do not fall under listed activities according to NEMA because they are not located within or within 32 meters of natural freshwater ecosystems, such as wetlands, rivers, or streams. Additionally, these activities do not fall under Section 21(c) and 21(i) water uses since there are no wetlands or rivers within the regulated area defined by the Department of Water and Sanitation (DWS), which includes a 500-meter buffer, at risk of potential impact.

SITE SPECIFIC TERRESTRIAL BIODIVERSITY (INCLUDING FAUNA AND FLORA)

(Information extracted from the 2024 Terrestrial Biodiversity Impact Assessment, attached as Appendix H)

Table 16: Likelihood of occurrence rating derived from rationale base on distribution and habitat preferences of species at a desktop level, and field-based observations at a site level. (table obtained from the 2024 TBIA).

Likelihood of Occurrence Rating	Rationale
Confirmed	Species was observed on-site
High: probable	Highly Probable
Medium: possible	Possible
Medium: unlikely	Unlikely
Low	Highly unlikely or Improbable

The findings of the desktop faunal likelihood of occurrence (LOC) assessment have been summarised in the 2024 TBIA report. Potential amphibians, avifauna (birds), mammals, reptiles and invertebrates of conservation concern (i.e., Red-Dated Listed Species: CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened) are documented. Note that species of Least Concern (LC), endemic species and species with restricted ranges have been excluded from the assessment, with the focus being on Red-Data species.

Historic Land Use & Disturbance Regime:

Eco-Pulse (2024 TBIA) notes. An understanding of historic land use and disturbance at the site was gained by reviewing historical imagery and orthophotos. It appears the site and surrounding areas have been impacted by clearing of vegetation for subsistence agriculture and the development of roads since 1944. Additionally, the quarry is evident in historic imagery which suggests land transformation occurred prior to 1944.). Furthermore, the project area appears to have been impacted by grazing, local encroachment and alien plant infestations see images below of the 2024 TBIA

Further to this, upon review of the uThukela District Municipality Draft IDP 2022/2023-2026/2027 Report it was concluded that the project area has not been highlighted for planned developments or as prioritised area for local conservation targets.

Description of the Vegetation Community:

Eco-Pulse surveyed (2024) the Vegetation and habitat of the study site within 32m of the property boundaries. One distinct terrestrial vegetation community was identified and classified according to topographic location, plant species composition, vegetation structure and level of degradation. This vegetation community is described in detail below.

Table 17: Summary of the terrestrial vegetation community and land use type identified and classified for the site (table obtained from the 2024 TBIA).

Vegetation Community Type	Threat Status[5]	Condition	Protected Plants Present?
Degraded Northern KwaZulu-Natal Moist Grassland	VU	Fair: moderately modified	Yes
Transformed*	N/A	Lost: irreversibly modified	No

This grassland community was observed occurring within untransformed areas of the study area and was found to be in a relatively 'fair' condition and was classified as a degraded Northern KwaZulu-Natal Moist Grassland community that has resulted from an unnatural burning regime, disturbance linked to historic quarry activities, cattle grazing and human movement and encroachment, and road infrastructure construction. The community was dominated by Aristida junciformis, Aristida congesta, Eragrostis plana, Themeda triandra and Hyparrhenia hirta, and Vachellia sieberiana.

The degraded grassland community had a particularly low diversity of indigenous forbs. The provincially protected plant, Aloe marlothii (Mountain Aloe) can also be found densely within the grassland community and occurring within large colonies. Similarly, Cussonia spicata were found within the project footprint. Both A. marlothii and C. spicata are protected by the KwaZulu-Natal Nature Conservation Management Ordinance.

A significant number of Invasive Alien Plant (IAP) species were recorded within the grassland community, dominated by Lantana camara, Melia azedarach and Solanum mauritianum. Given the extent of distributed Invasive Alien Plants scattered amongst the grassland it was not considered as a distinct vegetation type, but rather was noted as a key factor for the overall degree of disturbance and degradation of the vegetation community.

Signs of bushland/woody plant encroachment were apparent, with species such as observed such as many pioneer Vachellia sieberiana, scattered within the grassland amongst Invasive Alien Plants.

Figure 31: View of the degraded grassland community with scattered alien plant species and aloes (image obtained from the 2024 TBIA).

Transformed:

It is important to note that approximately a third of the site has already been transformed, classified as unauthorized land use where stock piling has taken place.

Figure 32: View of the transformed area of the site. (image obtained from the 2024 TBIA).

Protected Plant Species:

The only provincially protected plant that was identified in the study area is *Aloe marlothii* (Mountain Aloe) and (*Cussonia spicata)*. The following map shows the distribution intensity of the aloes on the site.

Figure 33: Map showing the distribution of Cussonia spicata confirmed to be on-site with approx. 600 Aloe marlothii occurring within the degraded grassland (shown in 'green'). (image obtained from the 2024 TBIA).

Ecological Importance Assessment:

The results of the site ecological importance assessment are shown in the following table and shown graphically on the subsequent map.

Table 18: Summary of terrestrial habitat ecological importance ratings (table obtained from the 2024 TBIA).

	1. Degraded Northern KZN Moist Grassland
CONSERVATION IMPORTANCE	Medium
FUNCTIONAL INTEGRITY	Medium
BIODIVERSITY IMPORTANCE	Medium
RECEPTOR RESILIENCE	Medium
SITE ECOLOGICAL IMPORTANCE RATING	**Medium**

Figure 34: Map showing site ecological importance ratings for terrestrial vegetation community and habitat (image obtained from the 2024 TBIA).

The results of the site ecological importance assessment are shown in Table below and shown graphically on the map in Figure below. The ecological importance and sensitivity (EIS) of the only vegetation community and habitat type assessed generally relates back to the ability of the ecosystem to meet conservation targets, maintain important biodiversity features, the ecosystems sensitivity to ecological change and how significant such change would be. The proposed mine area covers 4.91ha of Medium SEI Vegetation.

Natural ecosystems are inherently vulnerable to human activities and these activities can often lead to irreversible damage or longer term, gradual/cumulative changes to ecosystems.

Definition of Medium rating for Site Ecological Importance (Table 20 of 2024 TBIA):

Minimization & restoration mitigation - Development activities of medium impact is acceptable followed by appropriate restoration activities.

Ecological Impact Assessment:

The general framework followed by Eco-Pulse for the risk and impact assessment is presented in the following table that presents the expected risks, stressors, and impacts for the construction and operational phase of the project.

Table 19: Terrestrial biodiversity impact assessment framework (table obtained from the 2024 TBIA).

TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT FRAMEWORK	
DEVELOPMENT TYPE & ACTIVITIES: *Mining and Stock Piling*	
Construction Phase Activities: Construction activities required to establish the mining and stockpile areas and associated infrastructure (cumulative).	Operational Phase Activities: Operation activities of the mining and stockpile areas and associated infrastructure (cumulative).
ENVIRONMENTAL STRESSORS/RISKS	
Construction Phase Stressors/Risks:	**Operational Phase Stressors/Risks:**
• Direct loss of vegetation & habitat (overall biodiversity) • Reduced ground cover, exposed soils • Soil erosion & resultant sedimentation • Noise / light disturbance • Accidental pollution (spills)	• Altered runoff patterns and processes • Colonisation by alien plants / weeds • Reduced vegetation cover, exposed soils • Accidental vegetation removal • Increased erosion • Windborne dust from exposed stockpile
TERRESTRIAL BIODIVERSITY IMPACTS	
1	Impact on vegetation structure and plant species composition
2	Impact on potential populations of species of special concern
3	Impact on targets for threatened ecosystems or vegetation types
4	Impact on ecological processes and functionality of ecosystems
5	Impact on overall species and ecosystem diversity
6	Impact on ecological connectivity

A summary of the terrestrial ecological impact significance assessment for the construction and operational phases of the quarry is presented in the following tables.

Table 20: Summary results of the terrestrial ecological impact significance assessment for construction phase impacts associated with the mining permit area (table obtained from the 2024 TBIA).

Construction Phase Impact Assessment		Impact Significance	
		'poor' mitigation scenario	'good' mitigation scenario
C1	**Impact on vegetation structure and plant species composition**	**Moderate**	**Moderately Low**

This impact refers to the direct physical destruction and/or modification of terrestrial habitat and includes habitat loss impacts, habitat and vegetation degradation impacts (e.g., species composition and abundances changes) and invasive alien plant invasion.

Construction phase activities will impact the 'Medium' SEI vegetation community which would result in a loss of habitat within the development footprint itself, and modification of habitat through anticipated edge effects in areas immediately adjacent to the proposed infrastructure. Direct loss of habitat (4.91 ha of habitat loss in total), based on the footprint provided and included in the Primary Project Area of influence under a poor mitigation scenario (without mitigation) would include:

1. Degraded Northern KwaZulu-Natal Moist Grassland ('Medium' SEI) – 4.91 ha.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan.

C2	Impact on populations of species of special concern (i.e., Protected species)	Impact Significance	
		'poor' mitigation scenario	'good' mitigation scenario
		High	Moderately Low

This impact relates to the potential alteration of habitat that supports threatened plant and animal species, including alteration to the ambient environment by nuisance factors such as noise, vibrations, light pollution, etc. produced by people, machinery and vehicles. It also refers to the loss of important habitat that represent sources of food, shelter, etc. for faunal species of conservation concern.

If construction of infrastructure were to take place in areas of 'Medium' SEI, impacts to populations of conservation important species are likely, which could eliminate or reduce the size of conservation important plant populations on-site. It will be important to develop a plant rescue, relocation and protection plan, which would include a detailed search of the footprint for any threatened and/or protected plant species. Faunal impacts associated with infrastructure construction are likely to be of lower significance, given that a large portion of the study area have already been transformed and the surrounding area is transformed/ highly disturbed, with any fauna persisting in the area likely habituated to the existing disturbance regime (existing site mining and stock piling activities, livestock grazing, domestic animals and working dirt roads).

Fauna of conservation concern highlighted as possibly being present within the more intact habitats are unlikely to be breeding within the degraded habitats, and where foraging at the site, these should be easily flushed-out of their habitats and move to adjacent intact areas during construction, with the arrival of noisy construction machinery and labourers. Impacts to fauna of conservation concern are therefore likely to be unlikely and inconsequential overall.

Flora of conservation concern include the provincially protected plant *Aloe marlothii* and *Cussonia spicata*, which although not currently threatened at a national level are increasingly threatened at a provincial level due to habitat loss, over-harvesting and human population expansion. The project development threatens to destroy or damage a substantial population of this protected plant species if not avoided. Given the population size of *Aloe marlothii*, that stands to be impacted, the impact significance where not mitigated is therefore expected to be relatively 'High'. The translocation of protected plants species can help mitigate this impact.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Where protected/threatened plants may be impacted or lost, permits need to be obtained and a protected plant translocation plan must be compiled and implemented to the satisfaction of the provincial conservation authority.

C3	Impact on targets for threatened ecosystems	Impact Significance	
		'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	Moderately Low

This impact refers to the loss of a vegetation unit representative of a rare and/or threatened ecosystem, habitat or vegetation community or a vegetation unit that could be reinstated to such an example with good management and/or rehabilitation.

Where proposed site activities and associated infrastructure traverse Northern KwaZulu-Natal Moist Grassland (Vulnerable), loss of approximately 4.91ha of this vegetation type is unlikely to reduce the capacity to meet provincial and national conservation targets. Further, the proposed development encompasses degraded grassland.

Where threatened species are translocated and rescued successfully and the development footprint is adhered to as much as possible to avoid further permanent loss, impacts should be restricted to take place within degraded 'vulnerable' grassland, this impact can be considered to be of 'Moderately Low' significance.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan

		Impact Significance	
C4	Impact on ecological processes and functionality of ecosystems	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Moderately Low**

This impact refers to the indirect impacts of adjacent land cover modification and transformation on surface runoff, soil moisture and rates of erosion and sedimentation, and associated ecological impacts like invasion by invasive alien plants and habitat degradation. This impact also includes the alteration or deterioration in the chemical and biological characteristics of soil and water, which inevitably impacts negatively on flora and fauna.

Impacts to the structure and condition of vegetation will likely affect ecological processes and the functioning of surrounding intact ecosystems which are known to provide a variety of valuable ecosystem goods and services. Impacts to degraded vegetation will be less significant. Overall impact significance can be regarded as 'Moderately Low'.

Key mitigation recommendations:

- Avoid impacts to primary grassland areas which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located within the mapped primary grassland areas.
- Rehabilitate any primary grassland that may be accidentally impacted.
- Refer to section 6.4 mitigation measures to be implemented.

		Impact Significance	
C5	Impact on overall species and ecosystem diversity	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Low**

This impact refers to the loss of genetic, species, habitat/ecosystem and/or functional diversity.

Overall impacts to species and ecosystem diversity at the site can be considered moderately low to low, with key habitat hosting a low diversity of plant species. Overall, where poorly managed, impact significance can be considered 'Moderately Low' should direct impacts to degraded grassland habitat be incurred, however where protected species are translocated and rescued successfully and development footprint is restricted as much as possible, this impact can be considered to be of 'Low' significance.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan.

		Impact Significance	
C6	Impact on ecological connectivity	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	Low

This impact refers to the potential reduction in ecological connectivity between the study area being assessed and adjacent habitats/ecosystems and the effects this may have on the movement of faunal species.

Whilst the clearing of vegetation along the project area will likely result in direct impacts to vegetation and habitat, vegetation and habitat can recover with time. Impacts on habitat connectivity will likely be a temporary impact following construction and since no key wildlife corridors will be severed, the significance of the impact is likely to be 'Moderately Low'.

There will still be some habitat connectivity surrounding the project area, albeit reduced. Avoiding habitat outside of the project area will assist with maintaining local level connectivity and reducing impact significance to an overall 'Low' level.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas which are to be 'no-go' areas for development and construction crews.

Table 21: Summary results of the terrestrial ecological impact significance assessment for construction phase impacts associated with the mining permit area (table obtained from the 2024 TBIA).

Construction Phase Impact Assessment		Impact Significance	
		'poor' mitigation scenario	'good' mitigation scenario
C1	Impact on vegetation structure and plant species composition	Moderate	Moderately Low

This impact refers to the direct physical destruction and/or modification of terrestrial habitat and includes habitat loss impacts, habitat and vegetation degradation impacts (e.g., species composition and abundances changes) and invasive alien plant invasion.

Construction phase activities will impact the 'Medium' SEI vegetation community which would result in a loss of habitat within the development footprint itself, and modification of habitat through anticipated edge effects in areas immediately adjacent to the proposed infrastructure. Direct loss of habitat (4.91 ha of habitat loss in total), based on the footprint provided and included in the Primary Project Area of influence under a poor mitigation scenario (without mitigation) would include:

1. Degraded Northern KwaZulu-Natal Moist Grassland ('Medium' SEI) – 4.91 ha.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan.

		Impact Significance	
C2	**Impact on populations of species of special concern (i.e., Protected species)**	'poor' mitigation scenario	'good' mitigation scenario
		High	**Moderately Low**

This impact relates to the potential alteration of habitat that supports threatened plant and animal species, including alteration to the ambient environment by nuisance factors such as noise, vibrations, light pollution, etc. produced by people, machinery and vehicles. It also refers to the loss of important habitat that represent sources of food, shelter, etc. for faunal species of conservation concern.

If construction of infrastructure were to take place in areas of 'Medium' SEI, impacts to populations of conservation important species are likely, which could eliminate or reduce the size of conservation important plant populations on-site. It will be important to develop a plant rescue, relocation and protection plan, which would include a detailed search of the footprint for any threatened and/or protected plant species. Faunal impacts associated with infrastructure construction are likely to be of lower significance, given that a large portion of the study area have already been transformed and the surrounding area is transformed/ highly disturbed, with any fauna persisting in the area likely habituated to the existing disturbance regime (existing site mining and stock piling activities, livestock grazing, domestic animals and working dirt roads).

Fauna of conservation concern highlighted as possibly being present within the more intact habitats are unlikely to be breeding within the degraded habitats, and where foraging at the site, these should be easily flushed-out of their habitats and move to adjacent intact areas during construction, with the arrival of noisy construction machinery and labourers. Impacts to fauna of conservation concern are therefore likely to be unlikely and inconsequential overall.

Flora of conservation concern include the provincially protected plant *Aloe marlothii* and *Cussonia spicata*, which although not currently threatened at a national level are increasingly threatened at a provincial level due to habitat loss, over-harvesting and human population expansion. The project development threatens to destroy or damage a substantial population of this protected plant species if not avoided. Given the population size of *Aloe marlothii*, that stands to be impacted, the impact significance where not mitigated is therefore expected to be relatively 'High'. The translocation of protected plants species can help mitigate this impact.

<u>Key mitigation recommendations:</u>

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Where protected/threatened plants may be impacted or lost, permits need to be obtained and a protected plant translocation plan must be compiled and implemented to the satisfaction of the provincial conservation authority.

		Impact Significance	
C3	**Impact on targets for threatened ecosystems**	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Moderately Low**

This impact refers to the loss of a vegetation unit representative of a rare and/or threatened ecosystem, habitat or vegetation community or a vegetation unit that could be reinstated to such an example with good management and/or rehabilitation.

Where proposed site activities and associated infrastructure traverse Northern KwaZulu-Natal Moist Grassland (Vulnerable), loss of approximately 4.91ha of this vegetation type is unlikely to reduce the capacity to meet provincial and national conservation targets. Further, the proposed development encompasses degraded grassland.

Where threatened species are translocated and rescued successfully and the development footprint is adhered to as much as possible to avoid further permanent loss, impacts should be restricted to take place within degraded 'vulnerable' grassland, this impact can be considered to be of 'Moderately Low' significance.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan

		Impact Significance	
C4	**Impact on ecological processes and functionality of ecosystems**	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Moderately Low**

This impact refers to the indirect impacts of adjacent land cover modification and transformation on surface runoff, soil moisture and rates of erosion and sedimentation, and associated ecological impacts like invasion by invasive alien plants and habitat degradation. This impact also includes the alteration or deterioration in the chemical and biological characteristics of soil and water, which inevitably impacts negatively on flora and fauna.

Impacts to the structure and condition of vegetation will likely affect ecological processes and the functioning of surrounding intact ecosystems which are known to provide a variety of valuable ecosystem goods and services. Impacts to degraded vegetation will be less significant. Overall impact significance can be regarded as 'Moderately Low'.

Key mitigation recommendations:

- Avoid impacts to primary grassland areas which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located within the mapped primary grassland areas.
- Rehabilitate any primary grassland that may be accidentally impacted.
- Refer to section 6.4 mitigation measures to be implemented.

		Impact Significance	
C5	**Impact on overall species and ecosystem diversity**	'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Low**

This impact refers to the loss of genetic, species, habitat/ecosystem and/or functional diversity.

Overall impacts to species and ecosystem diversity at the site can be considered moderately low to low, with key habitat hosting a low diversity of plant species. Overall, where poorly managed, impact significance can be considered 'Moderately Low' should direct impacts to degraded grassland habitat be incurred, however where protected species are translocated and rescued successfully and development footprint is restricted as much as possible, this impact can be considered to be of 'Low' significance.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas outside the development footprint which are to be 'no-go' areas for development and construction crews.
- No temporary construction site camps, vehicle parking or material stockpiling / laydown areas to be located outside of the development area.
- Impacts to the surrounding natural grassland must be avoided by staying within the development footprint.
- Alien vegetation must be removed and managed throughout the construction phase.
- Ensure all protected plants are relocated in accordance to the protected plant rescue and translocation plan.

C6	Impact on ecological connectivity	Impact Significance	
		'poor' mitigation scenario	'good' mitigation scenario
		Moderately Low	**Low**

This impact refers to the potential reduction in ecological connectivity between the study area being assessed and adjacent habitats/ecosystems and the effects this may have on the movement of faunal species.

Whilst the clearing of vegetation along the project area will likely result in direct impacts to vegetation and habitat, vegetation and habitat can recover with time. Impacts on habitat connectivity will likely be a temporary impact following construction and since no key wildlife corridors will be severed, the significance of the impact is likely to be 'Moderately Low'.

There will still be some habitat connectivity surrounding the project area, albeit reduced. Avoiding habitat outside of the project area will assist with maintaining local level connectivity and reducing impact significance to an overall 'Low' level.

Key mitigation recommendations:

- Restrict the development to the 32m development buffer.
- Avoid impacts to primary grassland areas which are to be 'no-go' areas for development and construction crews.

Protected Plant Rescue and Translocation:

As mentioned earlier, Eco-Pulse (2024) identified two conservation important plant species within the project site, namely *Aloe marlothii and* Cussonia spicata , which is provincially protected in accordance with the Nature Conservation Management Amendment Act, 1999 (No. 5 of 1999). An appropriate protected plant rescue and translocation plan will need to be developed with a focus on rescuing and transplanting >150 protected plants if the development project is authorised.

Conclusion:

Eco-Pulse concludes that following the initial site inspection one provincially protected plant under the Natal Conservation Ordinance, *Aloe marlothii and Cussonia* were observed to occur within the project site. Necessary plant permits, including rescue and relocation plans from the relevant authorities are required.

Based on the findings of this assessment, one broad vegetation community (Degraded Northern KwaZulu-Natal Moist Grassland) was described on-site, considered to be of fair condition with a 'Medium' SEI rating. In addition, the vegetation community, Northern KwaZulu-Natal Moist Grassland, is endemic to KwaZulu-Natal and listed nationally and provincially as a 'vulnerable' ecosystem. Following the initial site inspection, no SCC were confirmed to occur within the study area.

Recommendation have been made to prevent and reduce potential impacts following the initial steps of the mitigation hierarchy. One important recommendation is the careful rescue and relocation of protected plants by Eco-Pulse ecologists.

Efforts must focus on avoiding harm to protected plants by relocating them appropriately. Adhering strictly to the mitigation and management recommendations in Chapter 5 of the TBIA 2024 report makes the project environmentally acceptable in terms of terrestrial biodiversity.

SITE SPECIFIC FAUNA

(Information extracted from the 2024 Terrestrial Biodiversity Impact Assessment, attached as Appendix H).

Sensitivity Assessment:

As mentioned earlier, the DFFE screening tool shows the animal theme as being of high sensitivity, and the terrestrial biodiversity of very high sensitivity. Faunal features like dens, spoor8 and skat9 were recorded where possible but were not sought out.

Definitive answers regarding the presence or absence of a particular SCC are not always possible. In such situations, the precautionary principle is applied so that preventative action is taken in the face of uncertainty. For species that are difficult to detect, it is not always possible to provide compelling evidence that a species does not occur. Therefore, if the habitat conditions appear suitable and there is data to suggest that the species did or could occur (e.g., confirmed records on adjacent properties), then the precautionary approach is to assume that the species does indeed occur there, and mitigation and management decisions need to be made accordingly.

However, ground truthing revealed that the high animal sensitivity was inaccurate due to the extent of habitat disturbance on the farm and fragmentation by Collings Pass Road that acts as a barrier for migration by faunal species. The presence of human activity and grazing decreases the likelihood that wild mammals may occur on large portions of the site although may occur along open.

Birds of conservation concern were identified through use of the South African Bird Atlas Project (SABAP) database. There are 13 bird species that are considered to be of conservation concern based on their threat status, Of these species, eight may frequent the more intact vegetation communities on the property include the African marsh-harrier (Endangered), Lanner Falcon (Vulnerable), Southern Bald Ibis (Vulnerable), Secretary bird (Vulnerable) and Crowned Eagle (Vulnerable).

Table 22: Summary of the potential occurrence of bird species within the study area. (table obtained from the 2024 TBIA).

Species Name	Status[15]	Habitat Requirements/Preferences (after Roberts, 2015; Chittenden, 2009; Newman, 2002; IUCN, 2017)	Onsite Habitat Requirements Met?	Potential Occurrence on Site	Source
Secretary bird *(Sagittarius serpentarius)*	VU	The species prefers open grassland and scrub, with the ground cover shorter than 50 cm and with sufficient scattered trees as roost/nest sites. It extends into savannah where sufficiently open areas exist (Boshoff and Allan 1997, Dean and Simmons 2005). It is absent from Mountain Fynbos, forest, dense woodland and very rocky, hilly or mountainous woodland (Boshoff and Allan 1997). It occurs from sea-level to montane grasslands over 2000 m. Nests are large, stick platforms usually built on top of isolated flat-crowned trees, and particularly Vachellia	Within distribution range and habitat requirements partially to largely met	Possible	SABAP2
Species Name	**Status[15]**	**Habitat Requirements/Preferences (after Roberts, 2015; Chittenden, 2009; Newman, 2002; IUCN, 2017)**	**Onsite Habitat Requirements Met?**	**Potential Occurrence on Site**	**Source**
		(acacias); where indigenous thorny trees are not available, alien pines or wattles may also be used (Tarboton 2011).			
Denham's bustard *(Neotis denhami)*	NT	Widespread in KwaZulu-Natal, where it is found in both upland grasslands and low-lying coastal grasslands of north-eastern Zululand and adjacent Mozambique (Cyrus and Robson 1980).	Within distribution range and habitat largely met.	Possible	SABAP2
Blue crane	NT	Occur in three core areas, including the eastern grasslands, centred in KwaZulu-Natal (McCann et al. 2007).	Within distribution range and habitat requirements partially to largely met	Possible	SABAP2
Grey crowned crane	EN	Occur in three core areas, including the eastern grasslands, centred in KwaZulu-Natal (McCann et al. 2007).	Within distribution range and habitat requirements partially to largely met	Possible	SABAP2
Crowned Eagle *(Stephanoaetus coronatus)*	VU	In southern Africa, it is restricted to Zimbabwe, central Mozambique and eastern South Africa and Swaziland. The species is found mostly in forest, including gallery and riverine forest, but also occurs in woodland and forested gorges in savannah and grassland (Simmons 2005). Crowned Eagles are readily found in plantations of exotic trees. They normally perch for long periods, resting inside the forest canopy, but will sometimes soar high above the canopy.	Within distribution range and habitat requirements partially to largely met.	Possible	SABAP2
Lanner Falcon *(Falco biarmicus)*	VU	It generally favours open grassland, cleared or open woodland and agricultural land. While breeding it is most common around cliffs used as nesting and roost sites, although it may also use buildings, electricity pylons and trees.	Within distribution range, and habitat requirements fully met.	Possible	SABAP2
Southern Bald Ibis *(Geronticus calvis)*	VU	It prefers high rainfall (>700 mm p.a.), sour and alpine grasslands, characterised by an absence of trees and a short, dense grass sward. It also occurs in lightly wooded and relatively arid country. It forages preferentially on recently burned ground, also using unburnt natural grassland, cultivated pastures,	May visit open grassland and there is suitable breeding habitat present.	Possible	SABAP2

Species Name	Status[15]	Habitat Requirements/Preferences (after Roberts, 2015; Chittenden, 2009; Newman, 2002; IUCN, 2017)	Onsite Habitat Requirements Met?	Potential Occurrence on Site	Source
		reaped maize fields and ploughed areas. It has a varied diet, mainly consisting of insects and other terrestrial invertebrates. It has high nesting success on safe, undisturbed cliffs.			
White Bellied Korhaan *(Eupodotis senegalensis)*	VU	Restricted to eastern South Africa and adjacent south-western Swaziland (Allan 1997d, Barnes 2000k) Occurs in the upper districts and midlands of KwaZulu-Natal.	Within distribution range and habitat largely met.	Possible	SABAP2
Cape Vulture *(Gyps coprotheres)*	VU	One of the most limited distributions of any Old World vulture species, being restricted to southern Africa and predominantly South Africa and Lesotho (Mundy et al. 1992).	Study area occurs within distribution range/on edge of distribution range, however unlikely to be a lot of large mammalian carcasses available to feed on in the area aside from livestock. Therefore, although the species may occasionally pass through the area it is unlikely to occur with the exception of a few opportunistic scavenging events.	Unlikely	SABAP2
White-backed Vulture *(Gyps africanus)*	CR	In South Africa, it is only absent from two of the nine provinces, i.e. Western Cape and Eastern Cape provinces, and from Lesothohe White-backed Vulture inhabits the woodland regions of southern Africa (Mundy et al. 1992, Mundy 1997). Its feeding and foraging habits are similar to those of the congeneric Cape Vulture and it relies primarily on large mammalian carcasses and feeds communally (Piper 2005). It is reported to very occasionally take live prey, e.g. young Springbok Antidorcas marsupialis and Warthog Phacochoerus aethiopicus (Mundy et al. 1992). This vulture is capable of long-distance movements, as evidenced by ring recoveries (Oatley	Study area occurs within distribution range/on edge of distribution range, however unlikely to be a lot of large mammalian carcasses available to feed on in the area aside from livestock. Therefore, although the species may occasionally pass through the area it is unlikely to occur with the exception of a few	Unlikely	SABAP2

Species Name	Status[15]	Habitat Requirements/Preferences (after Roberts, 2015; Chittenden, 2009; Newman, 2002; IUCN, 2017)	Onsite Habitat Requirements Met?	Potential Occurrence on Site	Source
		1998), re-sightings of marked birds (Monadjem et al. 2013) and GPS-GSM tracked birds (Phipps et al. 2013) but is not migratory (Mundy 1997, Piper 2005). Movements can be on a sub-continental scale and GPS-GSM tracked immatures made daily movements up to about 200 km (Phipps et al. 2013). White-backed Vultures typically roost in trees and on pylons (Mundy et al. 1992).	opportunistic scavenging events.		
African marsh-harrier *(Circus ranivorus)*	EN	Inland and coastal wetlands as well as adjacent moist grassland. Breeding demands a stretch of undisturbed long grass with concealed clearings.Within the region, it occurs in high densities in higher rainfall coastal regions from Zululand down to Western Cape, as well as in Mpumalanga, Gauteng, Limpopo and North West provinces (Simmons 2005). It is absent from the drier parts of Northern Cape and inland areas parts of Western Cape.	Within distribution range, however limited wetlands on site that provide suitable habitat, although some intact moist grassland may provide some foraging opportunities for the species.	Possible	SABAP2
African Grass Owl *(Tyto capensis)*	VU	Largely confined to areas of higher rainfall in the eastern half of South Africa.	Within distribution range and habitat largely met.	Possible	EIA Screening Tool

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Elands Spruit Quarry, Ladysmith, Kwa Zulu Natal Province, attached as Appendix I.

As mentioned earlier, the proposed area borders an existing quarry. During the EIA for the quarry, Beyond Heritage was appointed to do a Heritage Impact Assessment of the study area. The HIA report (2024) concluded that:

The Project area is situated north of an existing quarry and mining activities which encroach into the Project area. The southern portion of the Project area is already very disturbed through mining activities. During the survey, a possible packed stone wall (LS001) and stone cairns of unknown purpose (LS002) were identified.

The possible remnants of a stone packed wall at LS001 are too degraded to hold any heritage value and as the site is of low significance, impact to the feature will be low.

Although the stone cairns of LS002 are situated outside the Project area, it can be potentially impacted by debris from blasting of rocks. As stone cairns can represent graves, the site holds potential to be of high significance. The preferable action is to avoid the stone cairns with a 100m buffer zone to avoid impact. If the site cannot be avoided, further investigation will be required to confirm the nature of the stone cairns. This can be done through social consultation and test excavations. If confirmed to be graves, a grave management plan should be compiled. The graves can also be relocated with the relevant permits.

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

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 South African Heritage Resource Authority (SAHRA) 's and AMAFA's approval.

A Needs and Desirability Application Form was submitted to AMAFA on 8 May 2024 to inform them of the proposed project and obtain their comments.

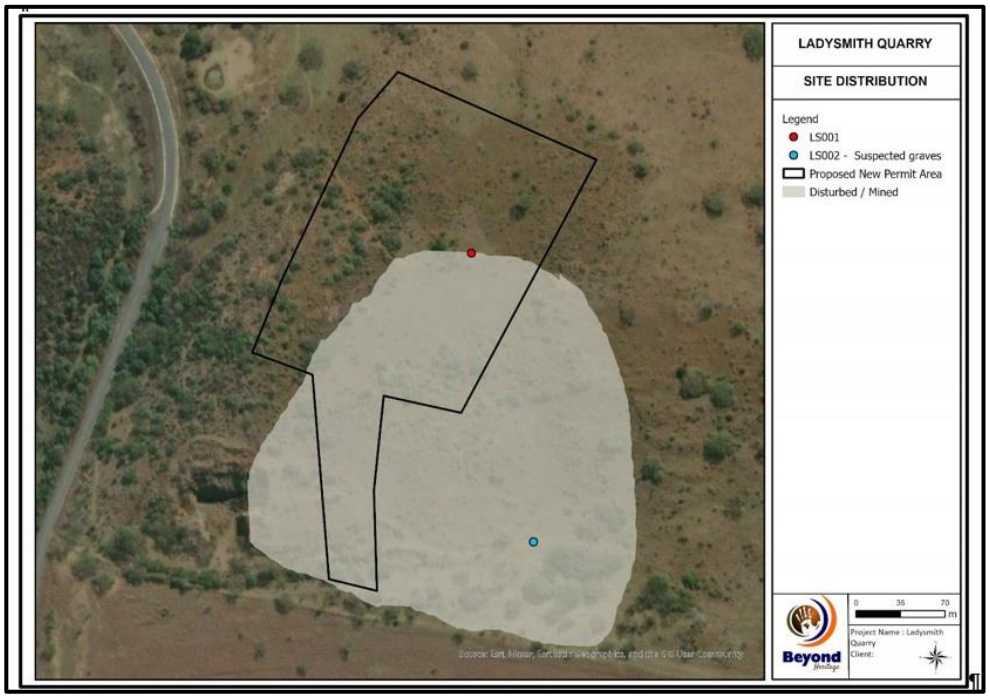

Figure 35: Site distribution map (LS0001) no heritage value, (LS0002) outside of permit area (image obtained from HIA Report).

SITE SPECIFIC INFRASTRUCTURE

No infrastructure exists in the proposed 4.91 ha footprint. Infrastructure in proximity to the proposed footprint include Collings Pass Road, the existing access (farm) road to be used by the mining contractor, the Eskom power lines, and the farm fences. A (empty) hut is within 320m to the earmarked footprint on the bordering property. Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm will be safeguarded against mining related impacts.

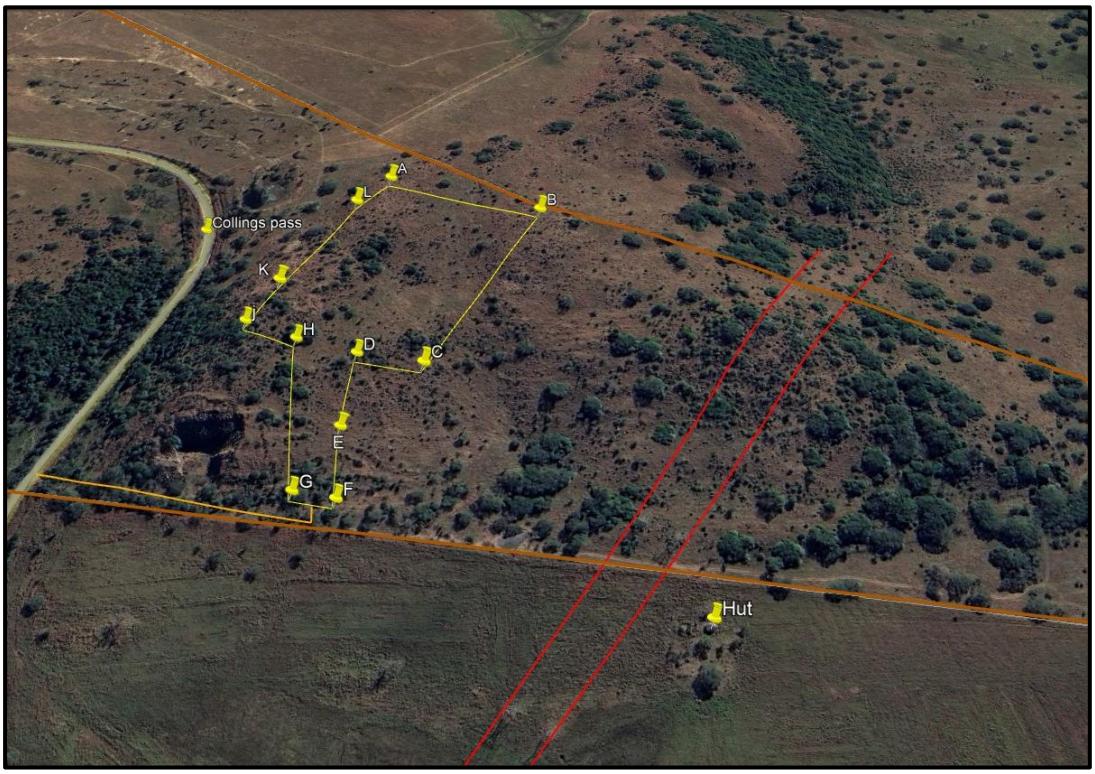

Figure 36: Satellite view showing the structures near the mining area (yellow polygon) red lines show the Eskom power lines, and the hut is indicated by the yellow marker south of the farm boundary (orange line) (image obtained from Google Earth).

(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 D.

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

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

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation

measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Loss of agricultural land

							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	5	5	**13**				

Alteration of natural environment and habitat loss

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

Visual intrusion because of site establishment

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

Impact on vegetation structure and plant species composition

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

Impact on populations of species of special concern

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

Impact on targets for threatened ecosystems

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

Impact on ecological processes and functionality of ecosystems

							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: N/A**				
4	4	1	3	3	3	3	**9**				

Impact on overall species and ecosystem diversity

							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: N/A**				
4	4	1	3	3	3	3	**9**				

Impact on ecological connectivity

							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: N/A**				
4	4	1	3	3	3	3	**9**				

Potential change of natural runoff and drainage patterns

							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-High			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
3	4	1	2.6	5	2	3.5	**9.1**				

Removal of mean annual precipitation from the catchment due to control of runoff water

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
3	4	4	3.6	3	5	4	**14.4**				

Alteration of hydrological and geomorphological processes

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
3	4	4	3.6	3	5	4	**14.4**				

Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic)

							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: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: N/A**				
4	3	2	3	2	3	2.5	**7.5**				

New job opportunities because of the mining operation (Positive Impact)

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

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by mining activities

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

Loss of stockpiled topsoil during mining and stockpiling

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

Dust nuisance because of the disturbance of soil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	1	2	1.6	5	5	5	**8**				

Noise nuisance generated by earthmoving machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	1	1	1.3	4	5	4.5	**5.9**				

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

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	2	3	5	2	3.5	**10.5**				

Potential increase in runoff from bare areas and associated accelerated 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: Mediu			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	1	2.6	5	2	3.5	**9.1**				

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
4	4	2	3.3	4	4	4	**13.2**				

Direct physical loss or modification of freshwater habitat

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	5	2	3.3	2	1	1.5	**4.9**				

Impacts to water quality

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	5	2	3.3	2	1	1.5	**4.9**				

DRILLING AND 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: Full**				
4	4	1	3	4	3	3.5	**10.5**				

Potential damage to Eskom power lines

							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	4	4	3	1	2	**8**				

Potential structural damage to adjacent residence

							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	2	3.3	2	3	2.5	**8.3**				

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: Full**				
4	4	1	3	4	3	3.5	**10.5**				

Noise nuisance because of 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: Full**				
3	4	2	3	4	3	3.5	**10.5**				

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

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: High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	4	4	5	5	5	**20**				

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

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

Noise nuisance because of the mining activities

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

Unsafe working environment for employees

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

Soil contamination from hydrocarbon spills and/or littering

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

Facilitation of erosion due to mining activities

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

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

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

Noise nuisance stemming from operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	2	2.7	4	5	4.5	**12.2**				

Potential contamination of environment due to improper waste management

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

Infestation of the area with invader plant species

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	5	4	4	5	4.5	**18**				

Potential increase in runoff from bare areas and associated accelerated 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: Full**				
3	4	1	2.6	4	4	4	**10.4**				

Potential change of natural runoff and drainage patterns

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

Overloading of trucks impacting road infrastructure

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	5	4	4	5	4.5	**18**				

Degradation of the access road

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

CUMULATIVE IMPACTS:

Direct physical loss or modification of freshwater habitat

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	2	3.3	2	1	1.5	**4.9**				

Alteration of hydrological and geomorphological processes

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	4	3.6	3	5	4	**14.4**				

Impacts to water quality

							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	5	2	3.3	2	1	1.5	**4.9**				

Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects)

							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	5	2	3.3	2	1	1.5	**4.9**				

Cumulative dust nuisance when quarry and stockpile area operate

							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-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	2	3.3	5	5	5	**16.5**				

Cumulative noise nuisance when quarry and stockpile area operate

							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-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	4	3	3.3	5	5	5	**16.5**				

Cumulative visual impact when quarry and stockpile area are developed

							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-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	2	3.3	5	5	5	**16.5**				

Impact on vegetation structure and plant species composition

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	4	4	5	2	3.5	**14**				

Impact on populations of species of special concern

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	5	4.3	5	4	4.5	**19.3**				

Impact on targets for threatened ecosystems

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	4	4	5	2	3.5	**14**				

Impact on ecological process and functionality of ecosystems (terrestrial)

							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	3	3	3	**9**				

Impact on overall species and ecosystem diversity

							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	3	3	3	**9**				

Impact on ecological connectivity (terrestrial)

							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	3	3	3	**9**				

Cumulative impact of invader plants in both the quarry and stockpile footprints

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

Cumulative impact on job opportunities when quarry and stockpile area operate

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

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	5	1	3.3	5	5	5	**16.5**				

Erosion of returned topsoil after rehabilitation

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

Infestation of the reinstated areas by weeds and invader plant species

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium-High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	3	3.6	5	5	5	**18**				

Exposed disturbed area with no indigenous vegetation upon closure

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

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

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	1	3	4	5	4.5	**10.5**				

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

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

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

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

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of

acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

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

Table 23: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

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

Determination of Duration

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

Table 24: Criteria for the rating of duration

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

Determination of Extent/Spatial Scale

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

Table 25: Criteria for the rating of extent / spatial scale.

Rating	Description
1	Immediate, fully contained area

2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

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

Table 26: Example of calculating overall consequence.

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

Determination of Likelihood:

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

Determination of Frequency

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

Table 27: Criteria for the rating of frequency.

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

Determination of Probability

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

Table 28: Criteria for the rating of probability.

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

Overall Likelihood

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

Table 29: Example of calculating overall likelihood.

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

Determination of Overall Environmental Significance:

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

Table 30: Determination of overall environmental significance.

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

Qualitative description or magnitude of Environmental Significance

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

Table 31: Description of environmental significance and related action required.

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

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

High	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

The preferred site alternative identified by the Applicant and project team. Approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated. of the extent already being disturbed/transformed and borders an existing quarry pit on the property which

remains unrehabilitated. Should the Applicant be allowed to mine the proposed area, the quarry will be rehabilitated as part of the closure conditions of this mining permit.

POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT:

- The permit holder will be able to exploit the resource on the property and provide fill material for the intended N11 road upgrade at competitive prices;
- The landowner will be able to further diversify the income generation of the property;
- At least eight new job opportunities will be created by the proposed activity;
- The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers;
- The quarry on the property will be rehabilitated as part of the closure conditions of this mining permit;
- Upon closure of the mine, the area can be returned to agricultural use.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE PROJECT:

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

Table 32: List of potential negative impacts associated with the preferred project proposal.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of the project.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	❖ Visual intrusion because of site establishment.	❖ Medium-High	❖ Medium-High
	❖ Visual intrusion caused by mining activities.	❖ Medium-High	❖ Medium-High
	❖ Visual intrusion associated with the excavation activities.	❖ High	❖ High
	❖ Cumulative visual impact when quarry is developed.	❖ Medium-High	❖ Medium
❖ Site establishment and infrastructure development.	<u>Site Establishment Phase:</u> ❖ Alteration of natural environment and habitat loss.	❖ Medium	❖ Low
	❖ Impact on vegetation structure and plant species composition	❖ Medium	❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Cumulative impacts.	❖ Impact on populations of species of special concern	❖ High	❖ Low-Medium
	❖ Impact on targets for threatened ecosystems	❖ High	❖ Medium
	❖ Impact on ecological processes and functionality of ecosystems (terrestrial)	❖ Medium	❖ Low
	❖ Impact on overall species and ecosystem diversity (terrestrial)	❖ Low	❖ Low-Medium
	❖ Impact on ecological connectivity	❖ Low	❖ Low
	<u>Cumulative Impacts:</u>		
	❖ Impact on vegetation structure and plant species composition	❖ Medium	❖ Low- Medium
	❖ Impact on populations of species of special concern	❖ Medium-High	❖ Medium
	❖ Impact on targets for threatened ecosystems	❖ Medium	Medium
	❖ Impact on ecological processes and functionality of ecosystems	❖ Low-Medium	❖ Low
	❖ Impact on overall species and ecosystem diversity	❖ Low-Medium	❖ Low
	❖ Impact on ecological connectivity (terrestrial)		
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion.	❖ Low-Medium	❖ Low
		❖ Low	❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Facilitation of erosion due to mining activities. ❖ Erosion of returned topsoil after rehabilitation. ❖ Exposed disturbed area with no indigenous vegetation upon closure.	❖ Low-Medium ❖ Low-Medium ❖ Medium	❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium	❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	❖ Low-Medium ❖ Medium ❖ Medium ❖ Medium ❖ Medium-High	❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts. ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the topsoil heaps and stockpile area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stocpkile footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	❖ Medium ❖ Low ❖ Low-Medium ❖ Medium-High	❖ Low ❖ Low ❖ Low-Medium ❖ Low
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact assocated with litter/waste left at the area.	❖ Low ❖ Low ❖ Low ❖ Low	❖ Low ❖ Low ❖ Low ❖ Low
❖ Site establishment & infrastructure development. ❖ Cumulative Impacts	<u>Site Establishment Phase:</u> ❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat ❖ Impacts to water quality	❖ Medium-High ❖ Medium ❖ Medium ❖ Low-Medium ❖ Low ❖ Low	❖ Low ❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
	❖ Potential change of natural runoff and drainage patterns. Cumulative Impacts:	❖ Medium-High	❖ Medium-Low
	❖ Direct physical loss or modification of freshwater habitat	❖ Low	❖ Low
	❖ Alteration of hydrological and geomorphological processes	❖ Medium	❖ Low-Medium
	❖ Impacts to water quality	❖ Low	❖ Low-Medium
	❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects)	❖ Low	❖ Low
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Medium	❖ Low
		❖ Medium	❖ Low
		❖ Medium-High	❖ Low
❖ Drilling and blasting.	❖ Potential damage to Eskom power lines.	❖ Low-Medium	❖ Low
❖ Drilling and blasting.	❖ Potential structural damage to adjacent residence.	❖ Low-Medium	❖ Low
❖ Processing, stockpiling and transporting of material.	❖ Overloading of trucks impacting road infastructure.	❖ Medium-High	❖ Low
	❖ Degradation of the access road.	❖ Medium	❖ Low

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

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

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

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area:

- The excavated area must serve as a final depositing area for the placement of 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.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.
- Rehabilitation must be aligned with the guidelines proposed in the 2024 Terrestrial Biodiversity Impact Assessment.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and at all times kept in good condition.
- Mining equipment must be stored neatly in dedicated areas when not in use.

- ❖ The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- ❖ The excavation must be contained within the approved footprint of the permitted area.
- ❖ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures:

- ❖ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- ❖ The site manager must daily assess the efficiency of all dust suppression equipment.
- ❖ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the 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.
- ❖ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013.

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 possible, the generators must be pointed away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise.
- Best practice measures shall be implemented to minimize potential noise impacts.
- Work hours must be from 07:00 to 18:00 Monday to Saturday. No work may be allowed after hours or on Sundays.

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 stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 1.5 m in height and are not to be sloped more than 1:2 to avoid collapse.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.

- Storm- and runoff water must be diverted around the on-site stockpile area to prevent erosion.
- The 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.
- An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.
- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

- A storm water management plan must be implemented for the duration of the mining activities (see Appendix N).
- It is recommended that construction be undertaken during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible.
- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Vegetation clearing activities must be put on hold when heavy rains are expected.
- Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.

- A silt fence must be installed at the bottom of the perimeter fence to catch sediment carried by surface runoff from bare surfaces at the site. All demarcation must be signed off by the ECO before any work commences.
- No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All runoff must be channelled into the stormwater system.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- Any erosion problems within the mining area because 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 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.
- 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.

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

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.
- The Applicant must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.
- A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.
- A pre-commencement walkthrough must be done by an ecologist to identify and demarcate important species to be relocated and sub habitats not to be disturbed.
- Permits for the removal of protected plant species (especially *Aloe marlothii and* Cussonia spicata) must be obtained and kept on-site in the possession of the flora search and rescue team.
- Bush-clearance may only commence once the plant permits were received, and the important plants were relocated by a suitably qualified person.
- Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible.

- Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- No fires must be allowed on-site.
- Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses.
- A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.

Management of Invasive Plant Species:

- An invasive plant species management plan (Appendix M) 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. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.

Fire Management:

- No open fires to be permitted on site. Fires may only be made within the areas and for purposes approved by the ECO.
- Fire prevention facilities must be present at all hazardous storage facilities.
- Ensure adequate fire-fighting equipment is available and train workers on how to use it.

- Ensure that all workers on site know the proper procedure in case of a fire occurring on site.
- Smoking must not be permitted in areas considered to be a fire hazard.

FAUNA

Protection of Fauna:

- The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set, or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.
- Indigenous vegetation must be reserved wherever possible, and vegetation clearing during the breeding season must be avoided.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

- All mining must be confined to the development footprint area.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify AMAFA.
- Work may only continue once the go-ahead was issued by AMAFA.

LAND USE

Loss of agricultural land for duration of mining:

- The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, mined out/rehabilitated areas could revert to grazing once the grass layer stabilised.

EXISTING INFRASTRUCTURE

Managing the Power Lines:

Building Restrictions for the 11kV Overhead Power Line:

- No building or structures may be erected or installed above or below the surface of the ground, neither may any material which might endanger the safety of this power line be placed within 12 (twelve) metres from the centre line of this power line, or either side (overall servitude width 24 metres).
- The applicant will adhere to all relevant environmental legislation. Dimensions and specifics will be in accordance with ESKOM standards so as to not obstruct Eskom's existing infrastructure in any way.
- No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the applicant must give at least seven working days prior notice of the commencement of work.
- The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act 85 of 1993. Equipment shall be regarded electrically live and therefore dangerous at all times.
- Mining and the use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's prior written permission. If such permission is granted the applicant must five at least fourteen working days prior notice of the commencement of blasting.
- Any third-party servitudes encroaching on Eskom land shall be registered against Eskom's Notaries deed at the applicant's own cost.
- Prior any construction activities, the applicant is required to contact Eskom and detailed Surveyed Plans are to be submitted to this office.

Terms and conditions pertaining to the 275kV Overhead Power Lines (Eskom Tx):

- Eskom Tx's rights and services must be acknowledged and always respected, and Eskom must retain unobstructed access to and egress from its servitudes.

- All work within Eskom's servitude areas shall comply with the relevant Eskom earthing standards in force at the time.
- No construction or excavation work shall be executed within 23.5 metres from any Eskom powerline structure, and/or within 23.5 metres from any stay wire.
- Detailed designs of the proposed mining operations must be referred to Eskom Tx. In these designs Raubex Construction must cater for design specific issues such as acute angle crossings, separation distances and clearances between Eskom Tx's 275kV power lines and the proposed mining area.
- The use of explosives of any type within 500 metres of Eskom Tx's services, shall only occur with Eskom Tx's previous written permission. If such permission is granted the applicant must give at least fourteen working days prior notice of the commencement of blasting.
- Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom Tx's requirements.
- No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom Tx's apparatus and/or services, without prior written permission having been granted by Eskom Tx. If such permission is granted the applicant must give at least seven working days' notice prior to the commencement of work.
- Eskom Tx's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with.
- Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The applicant shall maintain the area concerned to Eskom Tx's satisfaction. The applicant shall be liable to Eskom Tx for the cost of any remedial action which has to be carried out by Eskom Tx.
- The clearances between Eskom Tx's live electrical equipment and the proposed construction work shall be observed as stipulated by the Regulation 19 of Electrical Machinery Regulations 2011 (with reference to SANS10280-1) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
- Equipment shall be regarded electrically live and therefore dangerous at all times.
- It is required of the applicant to familiarise himself with all safety hazards related to Electrical plant.
- The final design (blasting and stockpiles) of your proposed mining area should be referred to this office for final approval.
- No stockpiles may be placed nearer than 200 m from any of the power lines.

Mitigating potential structural damage to adjacent residence:

- An assessment of the structural integrity of Me. Khumalo's residence must be conducted prior to the first blast.
- The neighbouring residents must be notified in writing before each blast.
- Vibration monitoring must be done with each blast. A seismograph must be placed at the Khumalo residence, for at least the first blast, to establish the ground vibrations associated with blasting at the quarry.
- Should the results indicate that the blasting has a real impact on the residence, monitoring must be continued with each blast.
- Any damage to the residence, as a direct result of the mining activities, must be refurbished by the permit holder at his own cost.

Management of the Access Road:

- Access to and from the mining area is permitted from the N11.
- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- Overloading of the trucks must be prevented, and proof of load weights must be filed and be available for auditing by relevant officials.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.
- Prior to commencement of the activities, the Applicant must discuss the maintenance requirements of Collings Pass Road with the Department of Transport (DoT). The proposed activity may not result in the degradation of Collings Pass Road.
- The intersection of the Collings Pass Road and the N11 shall be kept clear of any loose quarry material emanating from the source.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at an off-site workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility,

alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.

- If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a registered facility. Proof of safe disposal must be filed for auditing purposes.
- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, 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 registered facility. Proof must be filed.
- Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a 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.

Management of health and safety risks:

- It must be ensured that the mining area is properly fenced off to prevent incursion by livestock and humans.
- 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 airblast 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.

As mentioned previously Site Alternative 1 is deemed the preferred and only viable site as it has approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated. of the extent already being disturbed/transformed and borders an existing quarry pit on the property which remains unrehabilitated. Should the Applicant be allowed to mine the proposed

area, the quarry will be rehabilitated as part of the closure conditions of this mining permit. Access to the mining area will be possible from the existing farm road, and though the road will need some upgrading, no new access roads need to be constructed.

Moving the proposed mining area further to the east will move the mine to close to the power lines that passes the site ±240 m to the east. Moving the mining area to the west is not possible as the Collings Pass Road borders the site. The mining area cannot be moved to the south as the resource which the Applicant intents to mine is concentrated on the hill and not found further to the south.

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

As mentioned previously the proposed site earmarked for mining has a approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated. of the extent already being disturbed/transformed and borders an existing quarry pit on the property which remains unrehabilitated the proposed GPS coordinates (Table 6). As no permanent infrastructure will be established, the production rate and subsequent stockpiling of the material will dictate the layout of the proposed footprint area. The proposed site was identified as the preferred site and only viable alternative based on the following:

- The existing quarry pit on the property remains unrehabilitated. Moving the proposed mining area further to the east, will not only exclude the existing quarry pit from the mining area, but also move the mine too close to the adjacent power lines that pass the site ±240 m to the east. Moving the mining area to the west is not possible as the Collings Pass Road borders the site. The mining area cannot be moved to the south as the resource which the Applicant intents to mine is concentrated on the hill and not found further to the south.

- Considering the above, the impacts associated with establishing a quarry pit in a greenfield site further away are believed to have a higher significance without the need or motivation to justify it.
- Should the Applicant be allowed to mine the area, the existing quarry will be rehabilitated as part of the closure conditions of this mining permit.
- The existing farm road can be used to access the proposed mining area with minor upgrading needed.
- The 2024 TBIA notes that the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to. The ecologist determined that the overall post-mitigation impact of the proposed activity on the current vegetation- and faunal structure of the application

area will be of moderately low - low significance during construction, and moderate – low significance during operation.

- ❖ The 2024 Wetland Assessment confirmed that there are no wetlands/watercourses within the proposed footprint, and that the proposed site will not impact the adjacent wetland provided that the proposed mitigation measures are implemented.

Considering the above mentioned, the proposed site is believed to be the most practical alternative as the area was previously approved for mining, there is an existing quarry, the topsoil and/or overburden layer of the footprint is relatively shallow, the resource is of good grade, access and rehabilitation is simplified, and the environmental related impacts are acceptable.

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

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

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

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

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Loss of agricultural land

							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	5	5	**13**				

Alteration of natural environment and habitat loss

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25

Rating: Low			Site Layout Alternative 1				Degree of Mitigation: None
2	2	1	1.6	1	5	3	**4.8**

Visual intrusion because of site establishment

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

Impact on vegetation structure and plant species composition

							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**				

Impact on populations of species of special concern

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

Impact on targets for threatened ecosystems

							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**				

Impact on ecological processes and functionality of ecosystems

							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: N/A				
4	4	1	3	2	2	2	**6**				

Impact on overall species and ecosystem diversity

							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: N/A				
4	1	1	2	2	2	2	**2.6**				

Impact on ecological connectivity

							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: N/A**				
4	1	1	2	2	2	2	**2.6**				

Potential change of natural runoff and drainage patterns

							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: N/A**				
3	4	1	2.6	5	2	3.5	**9.1**				

Removal of mean annual precipitation from the catchment due to control of runoff water

							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: N/A**				
2	4	1	2.3	2	2	2	**4.6**				

Alteration of hydrological and geomorphological processes

							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: N/A**				
3	3	2	2.6	2	2	2	**5.2**				

Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic)

							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: N/A**				
3	3	1	2.3	2	1	1.5	**3.4**				

New job opportunities because of the mining operation (Positive Impact)

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

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by mining activities

	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-High			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
3	4	2	3	5	5	5	**15**				

Loss of stockpiled topsoil during mining and stockpiling

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

Dust nuisance because of the disturbance of soil

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	1	2	1.6	3	2	2.5	**4**				

Noise nuisance generated by earthmoving machinery

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: None**				
2	1	1	1.3	3	2	2.5	**3.3**				

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

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

Potential increase in runoff from bare areas and associated accelerated 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: None**				
3	4	2	3	5	2	3.5	**10.5**				

Potential contamination of footprint area and surface runoff because of hydrocarbon spillages

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

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

Direct physical loss or modification of freshwater habitat

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

Impacts to water quality

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

DRILLING AND 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			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	1	3	2	1	1.5	**4.5**				

Potential damage to Eskom power lines

							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	4	4	1	1	1	**4**				

Potential structural damage to adjacent residence

							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**				

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**				
3	1	2	2	5	3	4	**8**				

Noise nuisance because of 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: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	2	2.6	3	3	3	**7.8**				

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

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: High			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
3	5	4	4	5	5	5	**20**				

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

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

Noise nuisance because of the mining activities

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

Unsafe working environment for employees

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	1	1.5	**3.5**				

Soil contamination from hydrocarbon spills and/or littering

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

Facilitation of erosion due to mining activities

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

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

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

Noise nuisance stemming from operation of the processing plant

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	2	2.6	3	4	3.5	**9.1**				

Potential contamination of environment due to improper waste management

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

Infestation of the area with invader plant species

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	1	1.5	**4.9**				

Potential increase in runoff from bare areas and associated accelerated erosion

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
			Consequence			Likelihood					

Severity	Duration	Extent		Probability	Frequency		1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	1	1.5	**4.9**				

Potential change of natural runoff and drainage patterns

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	1	1.5	**4.9**				

Overloading of trucks impacting road infrastructure

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			3				5				
2	3	5	3.3	2	1	1.5	**4.9**				

Degradation of the access road

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	2	2.6	2	2	2	**4.6**				

CUMULATIVE IMPACTS:

Direct physical loss or modification of freshwater habitat

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	4	1	2.3	2	1	1.5	**3.4**				

Alteration of hydrological and geomorphological processes

							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**				

Impacts to water quality

			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: Low			**Site Layout Alternative 1**			**Degree of Mitigation: Full**					
3	5	2	3.3	2	1	1.5	**4.9**				

Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects)

							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	2	3	2	1	1.5	**4.5**				

Cumulative dust nuisance when quarry and stockpile area operate

							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	3	3	**9**				

Cumulative noise nuisance when quarry and stockpile area operate

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**			**Degree of Mitigation: Full**					
3	4	3	3.3	4	5	4.5	**14.8**				

Cumulative visual impact when quarry area is developed

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

Impact on vegetation structure and plant species composition

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

Impact on populations of species of special concern

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
4	4	5	4.3	3	2	2.5	**10.7**				

Impact on targets for threatened ecosystems

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

Impact on ecological process and functionality of ecosystems (terrestrial)

							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**				

Impact on overall species and ecosystem diversity

							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	3	3	3	**9**				

Impact on ecological connectivity (terrestrial)

							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**				

Cumulative impact of invader plants in both the quarry and stockpile footprints

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	2	2	**6.6**				

Cumulative impact on job opportunities when quarry and stockpile area operate

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

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	2	2	**6.6**				

Erosion of returned topsoil after rehabilitation

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low-Medium			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	3	5	3.3	2	2	2	**6.6**				

Infestation of the reinstated areas by weeds and invader plant species

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

Exposed disturbed area with no indigenous vegetation upon closure

							Significance				
							Low	Low-Medium	Medium	Medium-High	High
Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25
Rating: Low			**Site Layout Alternative 1**				**Degree of Mitigation: Full**				
2	2	1	1.6	2	1	1.5	**2.4**				

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

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

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

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

j) Assessment of each identified potentially significant impact and risk

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

Table 33: Assessment of each identified potentially significant impact and risk

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

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		opportunities of the property.	Operational Phase		interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and stockpile area are developed.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	❖ Medium-High ❖ Medium-High ❖ High ❖ Medium-High	<u>Control:</u> Implementing proper housekeeping.	❖ Medium ❖ Medium-High ❖ High ❖ Medium
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	<u>Site Establishment Phase:</u> ❖ Alteration of natural environment and habitat loss. ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<u>Site Establishment Phase:</u> ❖ Medium ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium	<u>Control:</u> Implementing proper housekeeping and the mitigation measures proposed by the specialist.	<u>Site Establishment Phase:</u> ❖ Medium ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity <u>Cumulative Impacts:</u> ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity (terrestrial)			<u>Cumulative Impacts:</u> ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium		<u>Cumulative Impacts:</u> ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low ❖ Low
❖ Site establishment and infrastructure development. ❖ Cumulative impact	❖ New job opportunities because of the mining operation (+)	Contribution to the socio-economic status of the area.	Site Establishment, & Operational Phase.	❖ High+ ❖ High+	N/A	❖ High+ ❖ High+

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	❖ Cumulative impact on job opportunities when quarry and stockpile area operate (+).					
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Erosion of returned topsoil after rehabilitation. ❖ Exposed disturbed area with no indigenous vegetation upon closure.	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	❖ Low-Medium ❖ Medium ❖ Medium ❖ Medium ❖ Low-Medium ❖ Low	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	❖ Low ❖ Medium ❖ Low ❖ Low ❖ Low-Medium ❖ Low
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant.	❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low ❖ Low-Medium ❖ Medium ❖ Medium-High ❖ Medium-High	<u>Control:</u> Dust suppression methods and proper housekeeping.	❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Meduim

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact	❖ Cumulative dust nuisance when quarry and stockpile area operate.					
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low-Medium ❖ Medium ❖ Medium ❖ Medium ❖ Medium-High	<u>Control:</u> Noise suppression methods and proper housekeeping.	❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact ❖ Sloping and landscaping during	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stockpile footprints.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	❖ Medium ❖ Medium-High ❖ High ❖ Medium-High	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	❖ Low ❖ Low -Medium ❖ Low-Medium ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
rehabilitation phase.	❖ Infestation of the reinstated areas by weeds and invader plant species.					
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Medium ❖ Medium ❖ Medium ❖ Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	❖ Low ❖ Low ❖ Low ❖ Low
❖ Site establishment & infrastructure development. ❖ Cumulative Impacts.	<u>Site Establishment Phase:</u> ❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process.	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	<u>Site Establishment Phase:</u> ❖ Low-Medium ❖ Medium ❖ Medium ❖ Low ❖ Low ❖ Low ❖ Low-Medium	<u>Control:</u> Implementing the SWMP.	<u>Site Establishment Phase:</u> ❖ Low-Medium ❖ Low ❖ Low-Medium ❖ Low ❖ Low ❖ Low ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat ❖ Impacts to water quality ❖ Potential change of natural runoff and drainage patterns. <u>Cumulative Impacts:</u> ❖ Direct physical loss or modification of freshwater habitat ❖ Alteration of hydrological and geomorphological processes ❖ Impacts to water quality ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects)			<u>Cumulative Impacts:</u> ❖ Low ❖ Medium ❖ Low ❖ Low		<u>Cumulative Impacts</u>: ❖ Low ❖ Low-Medium ❖ Low ❖ Low
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that	Operational-, and Decommissioning Phase	❖ Medium ❖ Medium ❖ Medium-High	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	❖ Low ❖ Low ❖ Low- Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
rehabilitation phase.		may enter the mining footprint.				
❖ Drilling and blasting.	❖ Potential damage to Eskom power lines.	Damage to the power lines will have a detrimental effect on the electricity supply of the community.	Operational Phase	❖ Low-Medium	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, and Eskom specifications.	❖ Low
❖ Drilling and blasting.	❖ Potential structural damage to adjacent residence.	Damage to the adjacent residence will affect the homeowner.	Operational Phase	❖ Low-Medium	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	❖ Low
❖ Processing, stockpiling, and transporting of material.	❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road.	Collapse of the internal road infrastructure will affect the landowner negatively. If the mine negatively affects public traffic, it may incur additional costs and complaints from the public.	Operational phase	❖ Medium-High ❖ Medium	<u>Control & Remedy:</u> Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	❖ Low ❖ Low
❖ Sloping and landscaping during rehabilitation	❖ Return of the mining area to agricultural use upon closure (+)	The area will be returned to the	Decommissioning Phase	❖ Medium-High+	N/A	❖ Medium-High+

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		landowner for future use.				

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

k) Summary of specialist reports.

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

Table 34: Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Terrestrial Biodiversity Impact Assessment Report Proposed mining permit application and stockpile area on the Remaining Extent of Elands Spruit No 5523, Alfred Duma Municipality, KwaZulu-Natal Province. May 2024 *(See Appendix H for a full copy of the report)*	**Important recommendations for the conservation of the current vegetation structure** ❖ The proponent must be committed to a conservation approach of practice and the actual footprint of disturbance must be kept to a minimum. ❖ Relocation of important species, identification and demarcation of specimens and sub habitats not to be disturbed will have to be done beforehand by a specialist. ❖ Important species (flora) that will be threatened by the development must be relocated to safer habitats by suitable specialists. ❖ Preventative erosion control measures to be put in place. ❖ Conduct alien invasive species monitoring on an annual basis. ❖ Botanical walkthrough should be conducted prior to site establishment, in order to confirm the presence or absence of any Red Data species that may have been missed during this current study.	All the recommendations proposed by the specialist were adapted in this DBAR.	Part A(1)(h)(iv) The environmental attributes associated with the alternatives. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Part A(1)(k) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

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
It's important to note that Eco-Pulse Consulting previously conducted a terrestrial assessment of the current mined area and stockpile zone, situated roughly 500 meters east of the proposed mining permit site. However, a specialist assessment is now required to understand the extent, type, sensitivity/importance of the terrestrial vegetation/habitat, and the impacts to the terrestrial environment by the new mining permit area activities.	**Important recommendations for the invasive alien plants** ❖ The identified alien plants should be eradicated during operational phase. An alien management plan should be compiled for the site. The applicant can implement the alien management plan with the guide of an Ecologist. **Specific conditions recommended for the EA from a flora and fauna perspective.** 1. Implement mitigation controls during the site establishment phase as specified in the mitigation requirements. Monitor and report on their effectiveness. 2. Implement mitigation controls during the operational phase as specified in the mitigation. Monitor and report on their effectiveness. 3. Monitoring of implementation of mitigation controls, especially of invasive alien plants. Effective restoration of the natural habitats that were intact before the mining activities should be implemented and reported on after decommissioning. The report concludes that one broad vegetation community (Degraded Northern KwaZulu-Natal Moist Grassland) was described on-site, considered to be of fair condition with a 'Medium' SEI rating. In addition, the vegetation community, Northern KwaZulu-Natal Moist Grassland, is endemic to KwaZulu-Natal and listed nationally and provnically as a 'vulnerable' ecosystem no SCC were confirmed to occur within the study area. Furthermore, two provincially protected plants under the Natal Conservation Ordinance, *Aloe marlothii* and *Cussonia spicata* were observed to occur within the project site.		Part B(1)(d)(iv) Impacts to be mitigated in their respective phases. Part B(1)(g)-(k) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon….

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
	Necessary plant permits, including rescue and relocation plans from the relevant authorities are required. Adhering strictly to the mitigation and management recommendations in Chapter 5 of this report makes the project environmentally acceptable in terms of terrestrial biodiversity. **<u>Mitigation Measures:</u>** Please refer to Chapter 5 of the report (Appendix H) for a list of the mitigation measures recommended by the by the specialist. Key mitigation recommendations include: 1. Avoiding 'direct impacts' to terrestrial ecosystems wherever possible through appropriate and informed development planning; 2. Secondly, attempting to reduce the risk of incurring significant 'indirect impacts' through the integration of appropriate management of storm water, erosion control and pollution control into the development design and through relevant onsite control measures (where relevant); 3. Thirdly, addressing residual impacts to areas through onsite post-construction phase rehabilitation and re-vegetation; and 4. Lastly, applying relevant biodiversity offsets as a means of compensating for residual impacts associated with the loss of primary vegetation/habitat and/or conservation important species of flora/fauna (not applicable to this project). 5. flora/fauna (not applicable to this project).		

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
	Efforts must focus on avoiding harm to protected plants by relocating them appropriately. Under a best practical mitigation scenario, the project is considered to be environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations in Chapter 5 of this report are strictly adhered to.		
<u>Wetland Assessment Report</u> Proposed expansion of the Elandspruit quarry near Ladysmith, KwaZulu-Natal Province. February 2024 *(See Appendix G for a full copy of the report)* It's important to note that Eco-Pulse Consulting previously conducted a freshwater assessment of the current mined area and stockpile zone, situated roughly 500 meters east of the proposed mining permit site. However, a specialist assessment is now required to	The findings of the specialist wetland assessment conducted by Eco-Pulse Consulting in April 2024, revealed that no freshwater wetlands or rivers at risk of potential impact from the proposed mining permit area, both within the study area and downstream. This assessment builds upon a prior evaluation (Eco-Pulse, 2023; EP671-01), which determined that the proposed site is approximately 155 meters away from the nearest wetland edge. Given this distance, the classification of 'low impact mining,' and the inclusion of a 40-meter buffer zone, the probability of impact was deemed 'unlikely.' As a result, the proposed mining activities do not fall under listed activities according to NEMA because they are not located within or within 32 meters of natural freshwater ecosystems, such as wetlands, rivers, or streams. Additionally, these activities do not fall under Section 21(c) and 21(i) water uses since there are no wetlands or rivers within	All the recommendations proposed by the specialist were adapted in this DBAR.	Part A (1) (h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology. Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.

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
understand the extent, type, sensitivity/importance of watercourses, and the potential risks posed to the freshwater environment by the new mining permit area activities.	the regulated area defined by the Department of Water and Sanitation (DWS), which includes a 500-meter buffer, at risk of potential impact. **OPINION ON LEGISLATIVE IMPLICATIONS:** **National Environmental Management Act (No. 2017 of 1998)** From a freshwater perspective, the proposed mining permit activities do not constitute listed activities under NEMA because they do not occur in or within 32m of natural freshwater ecosystems (i.e., wetland and rivers/streams). **National Water Act (No. 36 of 1998)** Provided that the construction and operational activities are well managed, no negative impacts to downstream natural freshwater ecosystems is expected. Therefore, the proposed activities do not constitute Section 21(c) and 21(i) water uses.		
Heritage Impact Assessment Report May 2024 (See Appendix *I for a full copy of the report)*	The findings of the specialist Hertiage assessment conducted by Beyond Heritage Consulting in April 2024, revealed that the southern portion of the Project area is already much disturbed through mining activities. During the survey, a possible packed stone wall (LS001) and stone cairn of unknown purpose (LS002) were identified; • The possible remains of a stone packed wall at within the mining permit LS001 are too degraded to hold any heritage	All the recommendations proposed by the specialist were adapted in this DBAR.	Part A (1) (h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Heritage Environment. Part A(1)(h)(viii) The possible mitigation

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
	value and as the site is of low significance, impact to the feature will be low; • Stone cairns of LS002 situated outside the Project area, they face potential impact from debris from the blasting of rocks. As stone cairns can often be graves, the site holds potential to be of high significance. A previous survey of that area was done in 2017 and no stone cairns were recorded (van der Walt and Hutten 2017). The preferable action is to avoid the stone cairns with a 100m buffer zone to avoid impact. If the site cannot be avoided, further investigation will be required to confirm the nature of the stone cairns. This can be done through social consultation and test excavations. If confirmed as graves, a grave management plan should be compiled. The graves can also be moved with the relevant permits; **Recommendations:** The following recommendations for Environmental Authorisation apply and the Project may only proceed after receiving comment from SAHRA and AMAFA: • Avoidance of the potential graves (Stone Cairns) at outside of permit area LS002 is preferable with a 100m buffer zone. If this is not be possible;		measures that could be applied and the level of risk.

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
	» It is recommended that further investigation must be done to confirm whether the feature represents graves. This can be done through social consultation and test excavations; » If the site is confirmed as graves, a grave management plan should be compiled; » Alternatively, the grave can be relocated with the relevant permits. • Mining activities must be confined to the approved development footprint only; • Monitoring of the Project area by the ECO during all phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.		

l) Environmental impact statement

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

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

Project proposal:

- The project entails the mining of stone aggregate, gravel on a portion of the Remaining Extent of the farm Elands Spruit 5523 GS, Ladysmith District, KwaZulu-Natal Province. The mining area will be 4.91 ha and the product to be material will be used, by the Applicant, as fill material for the intended road works tender to upgrade the N11 in the vicinity of Ladysmith. The rehabilitation of the mining area upon closure of the site will incorporate the rehabilitation of the quarry on the property.

Topography:

- Due to the impracticality of importing large volumes of fill material to restore the quarry to its original topography, the rehabilitation option (upon closure) is to render the quarry safe and leave it as a minor landscape feature.

Visual Characteristics:

- The viewshed analyses shows that the proposed visual impact will be of medium concern as the mining area will mainly be visible from the south due to the position of the earmarked area against the side of the hill.
- Should the mining permit area (be authorised) be established on site, the visual impact on the receiving environment is deemed to be of medium-high significance.

Air and Noise Quality:

- The proposed activity does not require an air emissions licence.
- Should the Applicant implement the proposed mitigation measures the impact on the air quality of the surrounding environment is deemed to be of low-medium significance.
- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place in a pristine environment, and the impact is therefore deemed compatible with the current operations and of low-medium significance.

- Should both the mining permit area and the additional stockpiling area (separately authorised) be established on site, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance, while the cumulative noise nuisance (after mitigation) will be of medium significance.

Hydrology:

- Two wetland units a channelled valley bottom and a seep was identified within 500 m (±155 m away) of the proposed development footprint.
- No wetlands or watercourse were identified within the application footprint.
- A buffer of 40 m was proposed as no-go area around the identified wetland units. The proposed mining area does not extend into or near to (>100 m away) the proposed buffer area.
- The 2024 wetland study concluded that impacts can be potentially reduced to acceptably 'low' impact significance levels.
- The specialist notes (2024) that the proposed development can be considered acceptable from an ecological perspective based on the provision that the various mitigation measures are strictly adhered to during the various phases of the quarry.
- In January 2023 a previously proposed mining within 500 m of a wetland was authorised under general authorisation in terms of section 39 of the NWA, 1998 by the DWS.

Terrestrial Biodiversity (including fauna and flora:

- It appears the site and surrounding areas have been impacted by clearing of vegetation for subsistence agriculture and the development of roads since 1944.
- One distinct terrestrial vegetation community (Degraded Northern KwaZulu-Natal Moist Grassland) was observed that is in a relatively 'poor' condition.
- The provincially protected plants, *Aloe marlothii* (Mountain Aloe) and (Cussonia spicata is present on site within large colonies (to be relocated). No other SCC's were identified on site.
- The western region is mapped as CBA: Optimal but is in fact disturbed and degraded. While the slopes are associated with rocky outcrops approximately a third of the site has already undergone transformation – unauthorised land use. The site borders an existing quarry pit on the property which remains unrehabilitated. of the new proposed area was previously disturbed/ transformed and used for waste rock dump and is representative of a dense and well-established community of Invasive Alien Plants.

- The proposed mining area covers ±4.91 ha of Medium SEI Vegetation.

- Definitive answers regarding the presence or absence of a particular SCC are not always possible. In such situations, the precautionary principle is applied so that preventative action is taken in the face of uncertainty. For species that are difficult to
- Given that impacts to grassland is unlikely to negate meeting conservation targets set for this type at this stage, biodiversity offsets are not considered relevant to this project.
- Eco-Pulse rates the overall post-mitigation impact of the proposed activity on the current vegetation- and faunal structure of the application area to be of moderately low - low significance during construction, and moderate – low significance during operation.
- Under a best practical mitigation scenario, the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to.
- EDTEA approved the development of the additional stockpile area in January 2023.

Fauna:

- Ground truthing revealed that the high animal sensitivity (DFFE screening tool) was inaccurate due to the extent of habitat disturbance and fragmentation by Collings Pass Road that acts as a barrier for migration by faunal species.
- Faunal features like dens, spoor8 and skat9 were recorded where possible but were not sought out.
- Eco-Pulse further noted Definitive answers regarding the presence or absence of a particular SCC are not always possible. In such situations, the precautionary principle is applied so that preventative action is taken in the face of uncertainty. For species that are difficult to detect, it is not always possible to provide compelling evidence that a species does not occur. Therefore, if the habitat conditions appear suitable and there is data to suggest that the species did or could occur (e.g., confirmed records on adjacent properties), then the precautionary approach is to assume that the species does indeed occur there, and mitigation and management decisions need to be made accordingly.

- There is no evident fatal flaw regarding fauna that would prevent this development from being authorised if the mitigation and monitoring measures proposed by the specialist are implemented by the Applicant.
- EDTEA approved the development of the additional stockpile area in January 2023.

Cultural and Heritage Environment:

- No sites of archaeological, palaeontological, or cultural importance exist at the study area, an application was submitted by Beyond Heritage to AMAFA on 8 May 2024. Chance finding procedures must be implemented.

Existing Infrastructure:

- No infrastructure exists in the 4.91 ha footprint.
- No stockpiles may be placed within 200 m of the adjacent power lines.
- Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm/neighbouring properties will not be impaired.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the project include:

- The permit holder will be able to exploit the resource on the property and provide fill material for the intended N11 road upgrade at competitive prices;
- The landowner will be able to further diversify the income generation of the property;
- At least eight new job opportunities will be created by the proposed activity;
- The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers;
- The quarry on the property will be rehabilitated as part of the closure conditions of this mining permit;
- Upon closure of the mine, the area can be returned to agricultural use.

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

Table 35: Potential negative impacts associated with the proposed activity with a Low-Medium or higher significance/risk.

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Site establishment and infrastructure development**.**	❖ Loss of agricultural land for duration of mining.	❖ Medium	❖ Medium
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and stockpile area are developed.	❖ Medium-High ❖ Medium-High ❖ High ❖ Medium-High	❖ Medium ❖ Medium-High ❖ High ❖ Medium
❖ Site establishment and infrastructure development. ❖ Cumulative impacts.	<u>Site Establishment Phase:</u> ❖ Alteration of natural environment and habitat loss. ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity <u>Cumulative Impacts:</u> ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems	❖ Medium ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium	❖ Medium ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low ❖ Low ❖ Medium ❖ Medium-High ❖ Medium ❖ Low-Medium ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
	❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity (terrestrial)		
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material.	❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	❖ Low-Medium ❖ Medium-High ❖ Medium-High ❖ Medium-High	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material.	❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	❖ Medium ❖ Medium ❖ Medium ❖ Medium ❖ Medium-High	❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium
❖ Cumulative impacts.	❖ Cumulative impact of invader plants in both the quarry and stocpkile footprints.	❖ High	❖ Low-Medium
❖ Site establishment & infrastructure development. ❖ Cumulative Impacts	<u>Site Establishment Phase:</u> ❖ Alteration of hydrological and geomorphological process. <u>Cumulative Impacts:</u> ❖ Alteration of hydrological and geomorphological processes ❖ Impacts to water quality	❖ Medium ❖ Low-Medium ❖ Low	❖ Low-Medium ❖ Low-Medium ❖ Low

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

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

Table 36: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Use the excavated area for the final depositing of 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, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ❖ 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	❖ Effectively restoring the mined area to allow the return of land use to agricultural purposes.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		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. ❖ Align the rehabilitation with the guidelines proposed in the 2024 TBIA.	
VISUAL CHARACTERISTICS Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area. ❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	❖ Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase and minimise the residual impact after closure.
AIR AND NOISE QUALITY Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment. ❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the 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. ❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.	❖ Dust prevention measures are applied to minimise the impact.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts. ❖ Implement monthly fallout-dust monitoring at the site for the duration of the activities and ensure that the results comply with the standards of the National Dust Control Regulations, 2013.	
AIR AND NOISE QUALITY Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. ❖ 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 landowners 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. ❖ Minimise the noise caused by generators. Maintain and equip all generators with sound mufflers, and if possible, point the generators away from the neighbouring land users. Place all generators on a level area/footing to minimise vibration noise. ❖ Implement best practice measures to minimise potential noise impacts.	❖ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Strip and stockpile the 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 areas. ❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 1.5 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the on-site stockpile area to prevent erosion. ❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ❖ Plant an indigenous grass layer immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established.	❖ Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Implement a storm water management plan for the duration of the mining activities. ❖ Undertake construction during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible. ❖ Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. ❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes. ❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ❖ Install a silt fence at the bottom of the perimeter fence to catch sediment carried by surface runoff from bare surfaces at the site. All demarcation must be signed off by the ECO before any work commences. ❖ Do not discharge dirty water emanating from the quarry into the natural environment or any watercourse. Channel all runoff into the stormwater system.	❖ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ 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 (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals 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. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area. ❖ Check settlement ponds every month to assess the amount of sediment collected. Remove sediment at a predetermined depth of sediment and stockpiled separately.	
HYDROLOGY Mitigating the potential impact on the wetland system.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Undertake construction during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible. ❖ Maintain a 40 m buffer around the seep- and valley bottom wetland areas throughout the lifespan of the mining activities and manage it as a no-go area. ❖ Prior to the commencement of the site stake the outer edge of the delineated watercourse (wetlands) and associated buffer zone (by surveyor; to be signed off by the ECO) before work commences (if allowed by the landowner). Maintain the demarcations for the duration of the site. ❖ Do not locate any equipment laydown or storage areas within 40 m of any watercourse and/or within the 1:100 year flood line, whichever is greater in width. ❖ Keep the clearing of natural and semi-natural grasslands to the approved area and to a minimum. ❖ Where it is necessary to remove surface water from the quarry site; pump the water to a site where it will not negatively influence the natural environment through erosion of permanent flooding, possibly the non-perennial stream. ❖ Redirect stormwater (and road-surface run-off) towards remaining wetland features to increase groundwater infiltration, thereby providing sufficient soil moisture to support wetland species (ensure that this water is slowed down, not channelized and spread out across the surface in order to prevent this water flow from causing erosion – where erosion signs are present prompt actions and measures should be	❖ The mining activities have no impact on the nearby wetland system.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		taken to rehabilitate these areas and prevent erosion from occurring in these areas in the future), ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is implemented; ▪ Ensure that the diameters of storm water pipes are sufficient to not result in overly high flow velocities during rainfall events. ▪ Moderate the flow of storm water onto the buffer and wetland features. ❖ To prevent the contamination of the aquatic environment: ▪ Notify the CM and ECO immediately of any pollution incidents on site. ▪ Prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation. ❖ Do not establish any lights within the construction area near the buffer zone.	
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of vegetation removal.	Permit holder to apply for a removal plant permit from Ezemvelo Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ Arrange a pre-commencement walkthrough by an ecologist to identify and demarcate important species to be relocated and sub habitats that may not be disturbed.	❖ Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Obtain permits for the removal of protected plant species (especially *Aloe marlothii and Cussonia spicata*) and kept it on-site in the possession of the flora search and rescue team. ❖ Avoiding nearby/ surrounding ecologically important and sensitive grassland habitat and protected plants; ❖ Implementing a protected plant permitting, rescue and translocation plan where impacts to protected plants cannot be avoided; ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Do not allow grubbing as a method of clearing vegetation. Cut any trees that need to be cleared using chain saws and hauled it from the site using appropriate machinery where practically possible. ❖ Do not burn cleared vegetation to be retained at any time, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ❖ Arrange that the ECO provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
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. Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority. ❖ Undertaking follow-up alien plant control post-construction; and ❖ Implementing a post-construction rehabilitation programme that includes re-vegetation where necessary.	❖ Mining area is kept free of invasive plant species.
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Fire Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Do not permit open fires on site. Only make fires within the areas and for purposes approved by the ECO. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard.	❖ No fire outbreaks as a result of the mining activities.
FAUNA Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous.	❖ Disturbance to fauna is minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	❖ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young. ❖ Ensure all vehicles adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp. ❖ Reserve indigenous vegetation wherever possible and avoid vegetation clearing during the breeding season.	
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 chance find procedure when discoveries are made on site: ❖ Avoidance of the potential graves preferable with a 100m buffer zone. If this is not be possible; ❖ If the site is confirmed as graves, a grave management plan should be compiled; ❖ Alternatively, the grave can be relocated with the relevant permits. ❖ 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.	❖ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ❖ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify AMAFA. ❖ Work may only continue once the go-ahead was issued by AMAFA.	
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/rehabilitated areas back to grazing once the grass layer stabilised.	❖ Mining has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Managing the Power Lines	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Implement or comply with the following requirements of Eskom: Building Restrictions for the 11kV Overhead Power Line: ❖ No building or structures may be erected or installed above or below the surface of the ground, neither may any material which might endanger the safety of this power line be placed within 12 (twelve) metres from the centre line of this power line, or either side (overall servitude width 24 metres). ❖ The applicant will adhere to all relevant environmental legislation. Dimensions and specifics will be in accordance with ESKOM standards so as to not obstruct Eskom's existing infrastructure in any way. ❖ No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted	❖ Mining has no impact on the power lines.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		by Eskom. If such permission is granted the applicant must give at least seven working days prior notice of the commencement of work. ❖ The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act 85 of 1993. Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ Mining and the use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's prior written permission. If such permission is granted the applicant must five at least fourteen working days prior notice of the commencement of blasting. ❖ Any third party servitudes encroaching on Eskom land shall be registered against Eskom's Notaries deed at the applicant's own cost. ❖ Prior any construction activities, the applicant is required to contact Eskom and detailed Surveyed Plans are to be submitted to this office. Terms and conditions pertaining to the 275kV Overhead Power Lines (Eskom Tx): ❖ Eskom Tx's rights and services must be acknowledged and always respected, and Eskom must retain unobstructed access to and egress from its servitudes. ❖ All work within Eskom's servitude areas shall comply with the relevant Eskom earthing standards in force at the time. ❖ No construction or excavation work shall be executed within 23.5 metres from any Eskom powerline structure, and/or within 23.5 metres from any stay wire. ❖ Detailed designs of the proposed mining operations must be referred to Eskom Tx. In these designs Raubex Construction must cater for design specific issues such as acute angle crossings, separation distances and clearances between Eskom Tx's 275kV power lines and the proposed mining area.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ The use of explosives of any type within 500 metres of Eskom Tx's services, shall only occur with Eskom Tx's previous written permission. If such permission is granted the applicant must give at least fourteen working days prior notice of the commencement of blasting. ❖ Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom Tx's requirements. ❖ No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom Tx's apparatus and/or services, without prior written permission having been granted by Eskom Tx. If such permission is granted the applicant must give at least seven working days' notice prior to the commencement of work. ❖ Eskom Tx's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. ❖ Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The applicant shall maintain the area concerned to Eskom Tx's satisfaction. The applicant shall be liable to Eskom Tx for the cost of any remedial action which has to be carried out by Eskom Tx. ❖ The clearances between Eskom Tx's live electrical equipment and the proposed construction work shall be observed as stipulated by the Regulation 19 of Electrical Machinery Regulations 2011 (with reference to SANS10280-1) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). ❖ Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ It is required of the applicant to familiarise himself with all safety hazards related to Electrical plant.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ The final design (blasting and stockpiles) of your proposed mining area should be referred to this office for final approval. ❖ No stockpiles may be placed nearer than 200 m from any of the power lines.	
EXISTING INFRASTRUCTURE Potential structural damage to adjacent residence.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Assess the structural integrity of Me Khumalo's home prior to the first blast. ❖ Notify the neighbouring residents in writing before each blast. ❖ Monitor the vibrations of each blast. Place a seismograph at the Khumalo residence, for at least the first blast, to establish the ground vibrations associated with blasting at the quarry. ❖ Continue monitoring with each blast, should the results indicate that the blasting has a real impact on the residence. ❖ Refurbish any damage to the residence, directly caused by the mining activities.	❖ Mining has no direct impact on the nearby residences.
EXISTING INFRASTRUCTURE Management of the access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Divert storm water around the access road to prevent erosion. ❖ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed 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. ❖ Discuss the maintenance requirements of Collings Pass Road with the Department of Transport (DoT) prior to commencement. Do not allow the proposed activity to result in the degradation of Collings Pass Road. ❖ Keep the intersection of the Collings Pass Road and the N11 clear of any loose quarry material emanating from the source.	❖ The access road remains accessible to the landowner and lawful occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.

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

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		❖ Ensure suitable covered receptacles are always available and conveniently placed for the disposal of general waste. ❖ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. ❖ Handle biodegradable refuse as indicated above. ❖ Encourage re-use or recycling of waste products. ❖ Do not bury or burn waste on the site. ❖ Provide 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. ❖ Implement measures to contain the wastewater and safely dispose thereof. ❖ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. ❖ Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
GENERAL	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	❖ Properly fence the mining area to prevent incursion by livestock and humans.	❖ Employees work in a healthy and safe environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
Management of health and safety risks	Compliance to be monitored by the Environmental Control Officer.	❖ 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. ❖ 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.	

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

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

Additional to those conditions the following must be considered as conditions of the Environmental Authorisation:

- Blasting approvals must be obtained from Eskom Distribution and -Transmission before the first blast as the mining area is within 500 m of the electrical infrastructure.

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

(Which relate to the assessment and mitigation measures proposed)

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

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

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

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

ii) Conditions that must be included in the authorisation

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

Further to this, it is proposed that blasting activities may only commence upon approval of the Blasting Design by Eskom (Distribution & Transmission if applicable).

q) Period for which the Environmental Authorisation is required.

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

r) Undertaking

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

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be ±R 2 283 500.00. Please see the explanation as to how this amount was derived at attached as Appendix K – Financial and Technical Competence Report.

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

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

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

t) Specific Information required by the competent Authority

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

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

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

Also refer to Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site through the life of the activity.

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 proposed mining area will be visible from the nearby Collings Pass Road as well as the N11. Although no permanent infrastructure will be established on site that could permanently affect the visual impact, the removal of vegetation on the proposed mining footprint will extent across 4.91 ha and will impact on the aesthetic quality of the area. It is proposed that the height of the stockpiles must be controlled to manage the visual impact and the Applicant remove as little vegetation as possible to screen the mining area from public view. The significance of the visual impact, because of the proposed activity, is expected to be medium-high for the duration of the operational phase. Should the mining permit area (authorised) be established on site, the cumulative visual impact on the receiving environment is deemed to be of medium-high significance. Once mining ceased and the area, including the existing quarry, is rehabilitated the aesthetic quality of the area will improve and a very little to no residual effect is expected.

- **Dust nuisance caused because of the proposed mining activities:**

  The proposed activity will generate dust because of blasting, the movement of earthmoving equipment, processing of the hard rock, and the loading and transporting of the material from site. The Applicant will have to implement dust suppression measures to control dust generation and prevent a dust nuisance to surrounding landowners/residents. The impact on the surrounding environment is deemed to be of low-medium significance. Should the mining permit area (authorised) be established on site, the cumulative dust nuisance on the receiving environment (after mitigation) is deemed to be of low-medium significance. There will be no residual impact after closure.

- **Noise nuisance because of mining activities:**

  Due to the nature of the proposed activity, noise will be generated because of blasting, the processing of the material, as well as loading and transporting. Work hours will however be restricted to daylight from Monday – Saturday. The nuisance value of noise to be generated by heavy earthmoving equipment and the processing plant, to residence in the near vicinity is deemed to be of

low-medium significance. The noise caused by blasting will be instantaneous and of short duration. The Applicant will timeously inform all the surrounding residents of each blasting event. All vehicles associated with the proposed activity will also 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). Should the mining permit area (authorised) be established on site, the cumulative noise nuisance (after mitigation) will be of medium significance. There will be no residual impact after closure.

- **Potential damage to nearby infrastructure:**

  As mentioned earlier the mining area will be near the Collings Pass Road, the Eskom power lines, and a house of the neighbouring farmer. Should the Applicant contain the mining activities within the boundaries of the permit area the impact on the existing infrastructure near the mining area is deemed to be of low significance.

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

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

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

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

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

As mentioned previously Site Alternative 1 is deemed the preferred and only viable site as approximately a third of the site has already undergone transformation – unauthorised land use and it borders an existing quarry pit that remains unrehabilitated. Should the Applicant be allowed to mine this area the rehabilitation of the existing quarry will form part of the closure conditions for the mining area. The siting of the proposed mining area bordering the existing quarry pit will concentrate all mining related activities to one section of the landowner's property. Access to the mining area will be possible from the existing farm road, and though the road will need some upgrading, no new access roads need to be constructed.

Moving the proposed mining area further to the east, will not only exclude the existing quarry pit from the mining area, but also move the mine to close to the power lines that passes the site ±240 m to the east. Moving the mining area to the west is not possible as the Collings Pass Road borders the site. The mining area cannot be moved to the south as the resource which the Applicant intents to mine is concentrated on the hill and not found further to the south.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Murchellin Saal of Greenmined Environmental (Pty) Ltd that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix P as required.

b) Description of the Aspects of the Activity

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

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

c) Composite Map

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

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

d) Description of impact management objectives including management statements

i) Determination of closure objectives. (Ensure that the closure objectives are informed by the type of environment described)

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

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources.
- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.

- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

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

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the 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 indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the 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 be agriculture (grazing). Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the grass layer (to protect the topsoil) will tie in with the proposed land use.

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

❖ Rehabilitation of the excavated 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.

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 processing area:

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

Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the 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).

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

Any water required for the implementation of the project will be bought from a legal source and transported to the mining area (in a truck) where it will be stored in tanks until used. Presently, no washing of material is proposed, and the Applicant will therefore mainly use the water for dust suppression purposes on denuded areas, the processing plant, and access road (when needed). It is proposed that ±20 000 l water/day will be need for dust suppression measures during the dry months.

iii) Has a water use licence been applied for?

National Environmental Management Act (No. 2017 of 1998)
From a freshwater perspective, the proposed mining permit activities do not constitute listed activities under NEMA because they do not occur in or within 32m of natural freshwater ecosystems (i.e., wetland and rivers/streams). National Water Act (No. 36 of 1998)

Provided that the construction and operational activities are well managed, no negative impacts to downstream natural freshwater ecosystems is expected. Therefore, the proposed activities do not constitute Section 21(c) and 21(i) water uses.

iv) Impacts to be mitigated in their respective phases

Table 37: Impact to be mitigated in their respective phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Demarcation of site with visible beacons.	Site Establishment phase	4.91 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998	Beacons need to be in place throughout the life of the activity.
❖ Site establishment and	Site Establishment & Operational Phase	4.91 ha	**<u>Loss of agricultural land for duration of mining:</u>** ❖ The Applicant signed a lease agreement with the landowner to compensate for the	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix L)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
infrastructure development**.**			loss of agricultural land for the duration of the mining period. If needed, mined/rehabilitated areas could revert to agricultural use once the grass layer stabilised.		
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant.	Site Establishment & Operational Phase	4.91 ha	**<u>Visual Mitigation:</u>** ❖ The site must have a neat appearance and always kept in good condition. ❖ Mining equipment must be stored neatly in dedicated areas when not in use. ❖ The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area. ❖ The excavation must be contained within the approved footprint of the permitted area. ❖ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment- and operational phases.
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	Site Establishment phase	4.91 ha	**<u>Management of vegetation removal:</u>** ❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. ❖ The Applicant must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.	Natural vegetated areas must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment- and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ A pre-commencement walkthrough must be done by an ecologist to identify and demarcate important species to be relocated and sub habitats not to be disturbed. ❖ Permits for the removal of protected plant species (especially *Aloe marlothii and Cussonia spicata)* must be obtained and kept on-site in the possession of the flora search and rescue team. ❖ Avoiding nearby/ surrounding ecologically important and sensitive grassland habitat and protected plants; ❖ Implementing a protected plant permitting, rescue and translocation plan where impacts to protected plants cannot be avoided; ❖ Bush-clearance may only commence once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			saws and hauled from the site using appropriate machinery where practically possible. ❖ Cleared vegetation to be retained at any time may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes. ❖ The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing takes place. ❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. ❖ No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ No fires must be allowed on-site. ❖ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses. ❖ A biodiversity protocol and rehabilitation plan must be in place that can be implemented upon closure.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden.	Site Establishment & Operational Phase	4.91 ha	**<u>Protection of Fauna:</u>** ❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with. ❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person. ❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual. ❖ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. ❖ No snares may be set, or nests raided for eggs or young. ❖ All vehicles must adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ❖ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Indigenous vegetation must be reserved wherever possible, and vegetation clearing during the breeding season must be avoided.		
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to the processing plant.	Site Establishment, & Operational Phase.	4.91 ha	**Archaeological, Heritage and Palaeontological Aspects:** ❖ All mining must be confined to the development footprint area. ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ❖ Avoidance of the potential graves preferable with a 100m buffer zone. If this is not be possible; ❖ If the site is confirmed as graves, a grave management plan should be compiled; ❖ 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	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			archaeologist for an assessment of the finds who must notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA.		
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation.	Site Establishment-, Operational and Decommissioning Phase	4.91 ha	**<u>Topsoil Management</u>** ❖ 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 stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time. ❖ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. ❖ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Topsoil heaps may not exceed 1.5 m in height and are not to be sloped more than 1:2 to avoid collapse. ❖ The temporary topsoil stockpiles must be kept free of invasive plant species.	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix L)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Storm- and runoff water must be diverted around the on-site stockpile area to prevent erosion. ❖ The 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. ❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The grass layer must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material.	Site Establishment-, Operational-, and Decommissioning Phase	4.91 ha	**<u>Fugitive Dust Emission Mitigation Measures:</u>** ❖ The liberation of dust into the surrounding environment must be effectively controlled using, 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 daily assess the efficiency of all dust suppression equipment. ❖ Speed on the haul roads must be limited to 20 km/h and 40 km/h on the 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.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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. ❖ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013.		
❖ Stripping and stockpiling of	Site Establishment-, Operational-, and	4.91 ha	**Noise Handling:**	Noise generation on site must be managed in accordance with the:	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material.	Decommissioning Phase		❖ 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 possible, the generators must be pointed away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise.	❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996	

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Best practice measures shall be implemented to minimize potential noise impacts. ❖ Work hours must be from 07:00 to 18:00 Monday to Saturday. No work may be allowed after hours or on Sundays.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational, and Decommissioning Phase	4.91 ha	**<u>Management of Invasive Plant Species:</u>** ❖ An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. ❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ❖ All stockpiles (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: ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix M)	Throughout the site establishment-, operational, and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ The plants can be uprooted, felled, or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide. Only herbicides which have been certified safe for use in aquatic environments by independent testing authority are to be used.		
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation.	Site Establishment-, Operational and Decommissioning Phase	4.91 ha	**<u>Erosion Control and Storm Water Management:</u>** ❖ A stormwater management plan must be implemented for the duration of the mining activities. ❖ It is recommended that construction be undertaken during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible. ❖ Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. ❖ Vegetation clearing activities must be put on hold when heavy rains are expected. ❖ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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. ❖ A silt fence must be installed at the bottom of the perimeter fence to catch sediment carried by surface runoff from bare surfaces at the site. All demarcation must be signed off by the ECO before any work commences. ❖ No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All runoff must be channelled into the stormwater system. ❖ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. ❖ Any erosion problems within the mining area because of the mining activities		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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 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.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). ▪ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan. ❖ All fuels and chemicals 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. ❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			maintained until such time that revegetation can commence. ❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area. ❖ Settlement ponds must be checked every month to assess the amount of sediment collected. Sediment must be removed at a predetermined depth of sediment and stockpiled separately.		
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and	Site Establishment-, Operational-, and Decommissioning Phase	4.91 ha	**<u>Waste Management:</u>** ❖ Regular vehicle maintenance, repairs and services may only take place at an off-site workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008	Throughout the site establishment-, operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
transporting of material. ❖ Sloping and landscaping during rehabilitation phase.			disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes. ❖ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Mixing and/or decanting of all chemicals and hazardous substances must take place on an impermeable surface and must be protected from the ingress and egress of stormwater.. ❖ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a registered facility. Proof of safe disposal must be filed for auditing purposes.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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 registered facility. Proof must be filed. ❖ Suitable covered receptacles must always be available and conveniently placed for the disposal of general waste. ❖ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes. ❖ Biodegradable refuse must be handled as indicated above. ❖ Re-use or recycling of waste products must be encouraged on site. ❖ No waste may be buried or burned on the site.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ 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.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.		
❖ Stripping and stockpiling of topsoil and/or overburden.	Site Establishment, & Operational Phase.	N/A	**<u>Mitigating the potential impact on the wetland system:</u>** ❖ It is recommended that construction be undertaken during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible. ❖ A 40 m buffer must be maintained around the seep- and valley bottom wetland areas throughout the lifespan of the mining activities and must be regarded as a no-go area. ❖ Prior to the commencement of the site the outer edge of the delineated watercourse (wetlands) and associated buffer zone must be staked out by a surveyor to be signed off by the ECO before work commences (if allowed by the landowner). The demarcations are to remain for the duration of the site. ❖ No equipment laydown or storage areas may be located within 40 m of any watercourse and/or within the 1:100 year flood line, whichever is greater in width.. ❖ The clearing of natural and semi-natural grasslands must be kept to a minimum and restricted to the approved footprint. ❖ Where it is necessary to remove surface water from the quarry site; water must be	All water related matters must be managed in terms of the: ❖ NWA, 1998 ❖ GA conditions	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			pumped to a site where it will not negatively influence the natural environment through erosion of permanent flooding, possibly the non-perennial stream. ❖ To prevent a decrease in groundwater infiltration storm water (and road-surface run-off) should be redirected towards remaining wetland features to increase groundwater infiltration, thereby providing sufficient soil moisture to support wetland species (ensure that this water is slowed down, not channelized and spread out across the surface in order to prevent this water flow from causing erosion – where erosion signs are present prompt actions and measures should be taken to rehabilitate these areas and prevent erosion from occurring in these areas in the future), ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is compiled and implemented; ▪ The diameters of storm water pipes should be sufficiently large to not result in overly high flow velocities during rainfall events. ▪ The flow of storm water onto the buffer and wetland features must be moderated. ❖ To prevent the contamination of the aquatic environment:		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			▪ The contractor must notify the CM and ECO immediately of any pollution incidents on site. ▪ The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation. ❖ No lights must be established within the construction area near the buffer zones.		
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	Operational-, and Decommissioning Phase	4.91 ha	**<u>Management of health and safety risks:</u>** ❖ It must be ensured that the mining area is properly fenced off to prevent incursion by livestock and humans. ❖ 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.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards	Throughout the site establishment-,operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ The compliance of ground vibration and airblast 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.		
❖ Drilling and blasting.	Operational Phase	N/A	**Managing the power lines:** Building Restrictions for the 11kV Overhead Power Line: ❖ No building or structures may be erected or installed above or below the surface of the ground, neither may any material which might endanger the safety of this power line be placed within 12 (twelve) metres from the centre line of this power line, or either side (overall servitude width 24 metres). ❖ The applicant will adhere to all relevant environmental legislation. Dimensions and specifics will be in accordance with ESKOM standards so as to not obstruct Eskom's existing infrastructure in any way. ❖ No mechanical equipment, including mechanical excavators or high lifting	The power lines must be protected in accordance with all Eskom specifications.	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the applicant must give at least seven working days prior notice of the commencement of work. ❖ The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act 85 of 1993. Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ Mining and the use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's prior written permission. If such permission is granted the applicant must five at least fourteen working days prior notice of the commencement of blasting. ❖ Any third party servitudes encroaching on Eskom land shall be registered against Eskom's Notaries deed at the applicant's own cost. ❖ Prior any construction activities, the applicant is required to contact Eskom and detailed Surveyed Plans are to be submitted to this office. Terms and conditions pertaining to the 275kV Overhead Power Lines (Eskom Tx):		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Eskom Tx's rights and services must be acknowledged and always respected, and Eskom must retain unobstructed access to and egress from its servitudes. ❖ All work within Eskom's servitude areas shall comply with the relevant Eskom earthing standards in force at the time. ❖ No construction or excavation work shall be executed within 23.5 metres from any Eskom powerline structure, and/or within 23.5 metres from any stay wire. ❖ Detailed designs of the proposed mining operations must be referred to Eskom Tx. In these designs Raubex Construction must cater for design specific issues such as acute angle crossings, separation distances and clearances between Eskom Tx's 275kV power lines and the proposed mining area. ❖ The use of explosives of any type within 500 metres of Eskom Tx's services, shall only occur with Eskom Tx's previous written permission. If such permission is granted the applicant must give at least fourteen working days prior notice of the commencement of blasting. ❖ Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom Tx's requirements.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom Tx's apparatus and/or services, without prior written permission having been granted by Eskom Tx. If such permission is granted the applicant must give at least seven working days' notice prior to the commencement of work. ❖ Eskom Tx's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. ❖ Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The applicant shall maintain the area concerned to Eskom Tx's satisfaction. The applicant shall be liable to Eskom Tx for the cost of any remedial action which has to be carried out by Eskom Tx. ❖ The clearances between Eskom Tx's live electrical equipment and the proposed construction work shall be observed as stipulated by the Regulation 19 of Electrical Machinery Regulations 2011 (with reference to SANS10280-1) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). ❖ Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ It is required of the applicant to familiarise himself with all safety hazards related to Electrical plant.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ The final design (blasting and stockpiles) of your proposed mining area should be referred to this office for final approval. ❖ No stockpiles may be placed nearer than 200 m from any of the power lines.		
❖ Drilling and blasting. ❖ Cumulative impact.	Operational Phase	N/A	**Mitigating potential structural damage to adjacent residence:** ❖ An assessment of the structural integrity of Me Khumalo's residence must be conducted prior to the first blast. ❖ The neighbouring residents must be notified in writing before each blast. ❖ Vibration monitoring must be done with each blast. A seismograph must be placed at the Khumalo residence, for at least the first blast, to establish the ground vibrations associated with blasting at the quarry. ❖ Should the results indicate that the blasting has a real impact on the residence, monitoring must be continued with each blast. ❖ Any damage to the residence, as a direct result of the mining activities, must be refurbished by the permit holder at his own cost.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment-, and operational phases.
❖ Processing, stockpiling, and transporting of material.	Operational phase	±200 m	**Access road Management:** ❖ Access to and from the mining area is permitted from the N11. ❖ Storm water must be diverted around the access road to prevent erosion.	The access road must be managed in accordance with the: ❖ NRTA, 1996	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited. ❖ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. ❖ Overloading of the trucks must be prevented, and proof of load weights must be filed and be available for auditing by relevant officials. ❖ The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads. ❖ The intersection of the Collings Pass Road and the N11 shall be kept clear of any loose quarry material emanating from the source. ❖ Prior to commencement of the activities, the Applicant must discuss the maintenance requirements of Collings Pass Road with the Department of Transport (DoT). The proposed activity may not result in the degradation of Collings Pass Road.		
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of	Site establishment-, and operational phase	4.91 ha	**<u>Fire Management:</u>** ❖ No open fires to be permitted on site. Fires may only be made within the areas and for purposes approved by the ECO. ❖ Fire prevention facilities must be present at all hazardous storage facilities.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.			❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Smoking must not be permitted in areas considered to be a fire hazard.		
❖ Sloping and landscaping during rehabilitation phase.	Decommissioning Phase	4.91 ha	**Rehabilitation/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	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix L)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			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. ❖ The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. ❖ On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			❖ On completion of mining operations, the surface of all plant-, 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. ❖ Rehabilitation must be aligned with the guidelines proposed in the 2024 Terrestrial Biodiversity Impact Assessment.		

e) Impact Management Outcomes

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

Table 38: Impact Management Outcomes.

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. • Modify through alternative method.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	STANDARD TO BE ACHIEVED
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development**.**	❖ Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix L)
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impact.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and stockpile area are developed.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Alteration of natural environment and habitat loss. ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Areas of conservation importance must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Erosion of returned topsoil after rehabilitation.	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix L)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	❖ Exposed disturbed area with no indigenous vegetation upon closure.				
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact.	❖ Dust nuisance caused because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Dust suppression methods and proper housekeeping.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
❖ Stripping and stockpiling of topsoil and/or overburden.	❖ Infestation of the topsoil heaps and mining area with	Infestation of the footprint by invader plant species may	Site Establishment-, Operational, and	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	Weeds and invader plants on site must be managed in accordance with the:

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. ❖ Sloping and landscaping during rehabilitation phase.	weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stocpkile footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	affect the biodiversity of the receiving environment.	Decommissioning Phase		❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling and transporting of material.	❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process. ❖ Impacts to ecological connectivity and/or	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	<u>Control:</u> Implementing the SWMP.	Any water related matters must be managed in accordance with the: ❖ NWA, 1998 ❖ GA conditions

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat ❖ Impacts to water quality ❖ Potential change of natural runoff and drainage patterns. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects).				
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards
❖ Drilling and blasting.	❖ Potential damage to Eskom power lines.	Damage to the power lines will have a detrimental effect on the electricity supply of the community.	Operational Phase	Stop & Control: Adherance to the blasting rules and regulations, and Eskom specifications.	The power lines must be protected in accordance with all Eskom specifications.
❖ Drilling and blasting.	❖ Potential structural damage to adjacent residence.	Damage to the adjacent residence will affect the homeowner.	Operational Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Processing, stockpiling, and transporting of material.	❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road.	Collapse of the internal road infrastructure will affect the landowner and lawful occupiers negatively. If the mine negatively affects public traffic, it may incur additional costs and complaints from the public.	Operational phase	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leabing it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: ❖ NRTA, 1996

f) Impact Management Actions

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

Table 39: Impact Management Actions.

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Control through management and monitoring.	Beacons need to be in place throughout the life of the mine.	Mining is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development**.**	❖ Loss of agricultural land for duration of mining.	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine. The impact could be controlled through progressive rehabilitation.	Throughout site establishment- and operational phases.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983 ❖ Closure Plan (Appendix L)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impacts.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrustion assoiated with the excavation activities. ❖ Cumulative visual impact when quarry and stockpile area are developed.	Control: Implementing proper housekeeping.	Throughout site establishment- and operational phases.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment and infrastructure development. ❖ Cumulative Impacts	❖ Alteration of natural environment and habitat loss. ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity.	Control: Implementing proper housekeeping.	Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.	Areas of conservation importance must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and overburden. ❖ Excavation, loading and hauling to the processing plant.	❖ Loss of stockpiled topsoil during mining and stockpiling. ❖ Potential increase in runoff from bare areas and associated accelerated erosion.	Control & Remedy: Proper housekeeping and storm water management.	Throughout operational- and decommissioning phases.	Topsoil stripping must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 ❖ Closure Plan (Appendix L)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation.	❖ Facilitation of erosion due to mining activities. ❖ Potential increase in runoff from bare areas and associated accelerated erosion. ❖ Erosion of returned topsoil after rehabilitation. ❖ Exposed disturbed area with no indigenous vegetation upon closure.			
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts.	❖ Dust nuisance caused because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	Control: Dust suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities.	Control: Noise suppression methods and proper housekeeping.	Throughout site establishment-, and operational phase.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts.	❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.			
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts. ❖ Sloping and landscaping during rehabilitation phase.	❖ Infestation of the topsoil heaps and mining area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stocpkile footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.	Control & Remedy: Implementation of an invasive plant species management plan.	Throughout operational- and decommissioning phases.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the mining area.	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Throughout operational- and decommissioning phases.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Processing, stockpiling and transporting of material.	❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat ❖ Impacts to water quality. ❖ Potential change of natural runoff and drainage patterns. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects).	Control: Implementing the SWMP.	Throughout site establishment-, and operational phase.	Any water related matters must be managed in accordance with the: ❖ NWA, 1998 ❖ GA conditions
❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Sloping and landscaping during rehabilitation phase.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational- and decommissioning phases.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards
❖ Drilling and blasting.	❖ Potential damage to Eskom power lines.	Stop & Control: Adherance to the blasting rules and regulations, and Eskom specifications.	Throughout operational phase.	The power lines must be protected in accordance with all Eskom specifications.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Drilling and blasting.	❖ Potential structural damage to adjacent residence.	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational phase.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Processing, stockpiling, and transporting of material.	❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road.	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leabing it in a representative or better condition than prior to mining.	Throughout site establishment- and operational phases.	The access road must be managed in accordance with the: ❖ NRTA, 1996

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the 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 indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil. The applicant will comply with the minimum closure objectives as prescribed by DMRE.

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

The Draft Basic Assessment Report included all the environmental objectives in relation to closure and was available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period. Subsequently, the comments received on the DBAR were incorporated into this report, that will also be made available for perusal of the I&AP's and stakeholders over 30-days commenting period.

(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 E.

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

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done on all areas to be rehabilitated. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix E 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:

- 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 (DMRE) may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification

Rehabilitation of the Processing Area:

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

- Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the 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), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMRE).

(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	Stone Aggregate, Gravel
Saleable mineral by-product	None

Risk ranking

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Extensive

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	NO
2(A)	Demolition of steel buildings and structures	-	NO
2(B)	Demolition of reinforced concrete buildings and structures	-	NO
3	Rehabilitation of access roads	-	NO
4(A)	Demolition and rehabilitation of electrified railway lines	-	NO
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	NO
5	Demolition of housing and facilities	-	NO
6	Opencast rehabilitation including final voids and ramps	YES	-
7	Sealing of shafts, adits and inclines	-	NO
8(A)	Rehabilitation of overburden and spoils	-	NO
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	NO
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	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	319 431	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	168 695	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	22 450	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.10
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 40: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Ladysmith Quarry			**Location:**	Ladysmith		
Evaluators:	M Saal			**Date:**	9 May 2024		
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^2	0	22	1.00	1.10	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	305	1.00	1.10	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	449	1.00	1.10	R 0.00
3	Rehabilitation of access roads	m^2	0	55	1.00	1.10	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	529	1.00	1.10	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	289	1.00	1.10	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	609	1.00	1.10	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	319431	0.04	1.10	R 56 219.86
7	Sealing of shaft, audits and inclines	m^3	0	164	1.00	1.10	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	212954	1.00	1.10	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	265230	1.00	1.10	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	770354	0.51	1.10	R 0.00
9	Rehabilitation of subsided areas	ha	0	178317	1.00	1.10	R 0.00
10	General surface rehabilitation	ha	0.91	168695	1.00	1.10	R 168 863.70

11	River diversions	ha	0	168695	1.00	1.10	R 0.00
12	Fencing	m	0	192	1.00	1.10	R 0.00
13	Water Management	ha	0	64143	0.17	1.10	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.91	22450	1.00	1.10	R 121 252.45
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 346 336.00
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 314 850.91		**Sub Total 1**	R 363 652.80

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 21 819.17
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 36 365.28
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 421 837.25
		Vat (15%)	R 63 275.59
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 485 112.84**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of **R485 112.84.**

(f) Confirm that the financial provision will be provided as determined.

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanisms for monitoring compliance

Table 41: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation of site with visible beacons	Maintenance of beacons	❖ Visible beacons need to be placed at the corners of the mining area.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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
❖ Site establishment and infrastructure development.	Land Use: ❖ Loss of agricultural land for duration of mining.	❖ Mining schedule	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ If needed, sign mined/rehabilitated areas back to grazing once the grass layer stabilised.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment and infrastrucutre development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Cumulative impacts.	Visual Characteristics: ❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by mining activities. ❖ Visual intrusion associated with the excavation activities. ❖ Cumulative visual impact when quarry and stockpile area are developed.	❖ Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Cumulative impacts.	<u>Terrestrial Biodiversity, Conservation Areas and Groundcover:</u> ❖ Alteration of natural environment and habitat loss. ❖ Impact on vegetation structure and plant species composition ❖ Impact on populations of species of special concern ❖ Impact on targets for threatened ecosystems ❖ Impact on ecological processes and functionality of ecosystems ❖ Impact on overall species and ecosystem diversity ❖ Impact on ecological connectivity.	❖ Visible beacons indicating the boundary of the mineable area. ❖ Removal permit to relocate protected species. ❖ Indigenous grass mix to seed reinstated areas upon closure.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Botanist to identify plants of importance. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. ❖ Arrange a pre-commencement walkthrough by an ecologist to identify and demarcate important species to be relocated and sub habitats that may not be disturbed.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Obtain permits for the removal of protected plant species (especially *Aloe marlothii*) and kept it on-site in the possession of the flora search and rescue team. ❖ Do not allow grubbing as a method of clearing vegetation. Cut any trees that need to be cleared using chain saws and hauled it from the site using appropriate machinery where practically possible. ❖ Only commence with bush-clearance once the plant permits were received, and the important plants were relocated by a suitably qualified person. ❖ Do not burn cleared vegetation to be retained at any time, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ❖ Arrange that the ECO provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing takes place. ❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ❖ Do not translocated, uprooted, or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. ❖ Do not allow fires on-site. ❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses.	

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
			❖ Generate a biodiversity protocol and rehabilitation plan that can be implemented upon closure.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or oberburden. ❖ Cumulative impacts.	Fauna Management	❖ Toolbox talks to educate employees how to handle fauna that enter the work areas.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure no fauna is caught, killed, harmed, sold, or played with. ❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ❖ Arrange a suitably trained individual to undertake the handling and relocation of any animal perceived to be dangerous/venomous/poisonous. ❖ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Ensure all vehicles adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ❖ Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp. ❖ Reserve indigenous vegetation wherever possible and avoid vegetation clearing during the breeding season.	
❖ Site establishment and infrastructure development. ❖ Excavation, loading and hauling to the processing plant.	<u>Cultural and Heritage Environment.</u>	❖ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Confine all mining to the development footprint area. ❖ Implement the following chance find procedure when discoveries are made on site: ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the AMAFA. ▪ Work may only continue once the go-ahead was issued by AMAFA.	
❖ Stripping and stockpiling of topsoil and/or vegetation.	<u>Geology and Soil:</u> ❖ Loss of stockpiled topsoil during mining and stockpiling.	❖ Earthmoving equipment to strip and stockpile topsoil. ❖ Indigenous grass mix to be established on topsoil heaps (if needed). ❖ Erosion control infrastructure (if needed).	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ 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 areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 1.5 m and not sloped more than 1:2 to avoid collapse. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the on-site stockpile area to prevent erosion. ❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ❖ Plant a grass layer (indigenous) immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the grass layer for optimum production. Rehabilitation extends until the first grass layer is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
❖ Stripping and stockpiling of topsoil and/or overburden; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant; ❖ Processing, stockpiling and transporting of material. ❖ Cumulative impacts.	<u>Air and Noise Quality:</u> ❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	❖ Gravimetric dust monitoring equipment. ❖ Dust suppression equipment such as a water car, water dispenser and sprayers on the crusher plant. ❖ Signage that clearly reduce the speed on the access roads.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Daily assess the efficiency of all dust suppression equipment. ❖ Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. ❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. ❖ Install water sprayers at the crusher plant to alleviate dust generation from the 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.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Flatten loads to prevent spillage during transportation on public roads. ❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. ❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts. ❖ Implement monthly fallout-dust monitoring at the site for the duration of the activities and ensure that the results comply with the standards of the National Dust Control Regulations, 2013.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant; ❖ Processing, stockpiling and	<u>Air and Noise Quality:</u> ❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance because of blasting. ❖ Noise nuisance because of the mining activities. ❖ Noise nuisance stemming from	❖ Personal noise exposure monitoring equipment. ❖ Signage indicating noise zones. ❖ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
transporting of material. ❖ Cumulative impacts.	operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	❖ Noise mufflers fitted to generators.	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 landowners 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. ❖ Minimise the noise caused by generators. Maintain and equip all generators with sound mufflers, and if possible, point the generators away from the neighbouring land users. Place all generators on a level area/footing to minimise vibration noise. ❖ Implement best practice measures to minimise potential noise impacts. ❖ Restrict work hours from 07:00 to 18:00 Monday to Saturday. Do not allow work on Sundays or afterhours.	
❖ Stripping and stockpiling of topsoil and/or overburden; ❖ Processing, stockpiling and	<u>Terrestrial biodiversity, conservation areas and groundcover:</u> ❖ Infestation of the topsoil heaps and mining area with	❖ Designated team to cut or pull out invasive plant species that germinated on site. ❖ Herbicide application equipment.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
transporting of material. ❖ Cumulative impacts. ❖ Sloping and landscaping during rehabilitation.	weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stocpkile footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species.		❖ 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. ❖ Only use herbicides that are certified safe for use in aquatic environments by an independent testing authority.	❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material.	<u>Hydrology:</u> ❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process.	❖ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area. ❖ Schedule for the visual monitoring of the buffer zone and water units.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Implement a stormwater management plan for the duration of the mining activities. ❖ Undertake construction during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
❖ Sloping and landscaping during rehabilitation.	❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat ❖ Impacts to water quality ❖ Potential change of natural runoff and drainage patterns. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects).		❖ Place vegetation clearing on hold when heavy rains are expected. ❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Ensure that adequate slope protection is provided when mining within steep slopes. ❖ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ❖ Install a silt fence at the bottom of the perimeter fence to catch sediment carried by surface runoff from bare surfaces at the site. All demarcation must be signed off by the ECO before any work commences. ❖ Do not discharge dirty water emanating from the quarry into the natural environment or any watercourse. Channel all runoff into the stormwater system. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.	

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			❖ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. ❖ Contain all fuels and chemicals 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. ❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion	

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			and sediment control structures once vegetation cover has successfully recolonised the affected areas. ❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area. ❖ Check settlement ponds every month to assess the amount of sediment collected. Remove sediment at a predetermined depth of sediment and stockpiled separately.	
❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Excavation, loading and hauling to the processing plant; ❖ Processing, stockpiling and transporting of material; ❖ Sloping and landscaping during rehabilitation.	<u>General:</u> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Soil contamination from hydrocarbon spills and/or littering. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with	❖ Oil spill kit. ❖ Sealed drip trays. ❖ Formal waste disposal system with waste registers.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure regular vehicle maintenance, repairs and services only take place at an off-site workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.

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	litter/waste left at the mining area.		collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. ❖ If a diesel bowser is used on site, equip it with a drip tray at all times. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Ensure mixing and/or decanting of all chemicals and hazardous substances take place on an impermeable surface that is protected from the ingress and egress of stormwater. ❖ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a registered facility. File proof. ❖ Obtain an oil spill kit, and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Clean spills immediately, within two hours of occurrence, 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 registered facility. File proof.	

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			❖ Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste. ❖ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a 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. ❖ Implement measures to contain the waste water and safely dispose thereof.	

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			❖ 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.	
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Cumulative impacts.	<u>Hydrology:</u> ❖ Potential change of natural runoff and drainage patterns. ❖ Removal of mean annual precipitation from the catchment due to control of runoff water. ❖ Alteration of hydrological and geomorphological process. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic). ❖ Direct Physical loss or medication of freshwater habitat	❖ Stormwater Management Plan.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Undertake construction during the dry season to reduce erosion and sedimentation risks associated with summer rainfall in this region if possible. ❖ Maintain a 40 m buffer around the seep- and valley bottom wetland areas throughout the lifespan of the mining activities and manage it as a no-go area. ❖ Prior to the commencement of the site stake the outer edge of the delineated watercourse (wetlands) and associated buffer zone (by surveyor; to be signed off by the ECO) before work commences (if allowed by the landowner). Maintain the demarcations for the duration of the site.	Applicable throughout site establishment-, and operational phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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	❖ Impacts to water quality ❖ Potential change of natural runoff and drainage patterns. ❖ Impacts to ecological connectivity and/or ecological disturbance impacts (aquatic aspects)..		❖ Do not locate any equipment laydown or storage areas within 40 m of any watercourse and/or within the 1:100 year flood line, whichever is greater in width. ❖ Keep the clearing of natural and semi-natural grasslands to the approved area and to a minimum. ❖ Keep the clearing of natural and semi-natural grasslands to a minimum. ❖ Where it is necessary to remove surface water from the quarry site; pump the water to a site where it will not negatively influence the natural environment through erosion of permanent flooding, possibly the non-perennial stream. ❖ Redirect stormwater (and road-surface run-off) towards remaining wetland features to increase groundwater infiltration, thereby providing sufficient soil moisture to support wetland species (ensure that this water is slowed down, not channelized and spread out across the surface in order to prevent this water flow from causing erosion – where erosion signs are present prompt actions and measures should be taken to rehabilitate these areas and prevent erosion from occurring in these areas in the future), ❖ To prevent an increase in surface water flow velocity: ▪ Ensure that an approved storm water plan is implemented; ▪ Ensure that the diameters of storm water pipes are sufficient to not result in overly high flow velocities during rainfall events. ▪ Moderate the flow of storm water onto the buffer and wetland features.	

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			❖ To prevent the contamination of the aquatic environment: ▪ Notify the CM and ECO immediately of any pollution incidents on site. ▪ Prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation. ❖ No lights must be established within the construction area near the buffer zones.	
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant; ❖ Sloping and landscaping during rehabilitation.	<u>Health and Safety:</u> ❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Stocked first aid box. ❖ Level 1 certified first aider. ❖ All appointments in terms of the Mine Health and Safety Act, 1996. ❖ Vibro recorder.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Properly fence the mining area to prevent incursion by livestock and humans. ❖ 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).	Applicable throughout operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			❖ 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. ❖ 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.	
❖ Drilling and blasting.	<u>Existing Infrastructure:</u> ❖ Potential damage to Eskom power lines.	❖ Contact number of an Eskom representative.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Implement or comply with the following requirements of Eskom: Building Restrictions for the 11kV Overhead Power Line: ❖ No building or structures may be erected or installed above or below the surface of the ground, neither may any material which might endanger the safety of this power line be placed within 12 (twelve) metres from the centre line of this power line, or either side (overall servitude width 24 metres).	Applicable throughout operational phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			❖ The applicant will adhere to all relevant environmental legislation. Dimensions and specifics will be in accordance with ESKOM standards so as to not obstruct Eskom's existing infrastructure in any way. ❖ No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the applicant must give at least seven working days prior notice of the commencement of work. ❖ The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act 85 of 1993. Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ Mining and the use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's prior written permission. If such permission is granted the applicant must five at least fourteen working days prior notice of the commencement of blasting. ❖ Any third party servitudes encroaching on Eskom land shall be registered against Eskom's Notaries deed at the applicant's own cost. ❖ Prior any construction activities, the applicant is required to contact Eskom and detailed Surveyed Plans are to be submitted to this office.	

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			Terms and conditions pertaining to the 275kV Overhead Power Lines (Eskom Tx): ❖ Eskom Tx's rights and services must be acknowledged and always respected, and Eskom must retain unobstructed access to and egress from its servitudes. ❖ All work within Eskom's servitude areas shall comply with the relevant Eskom earthing standards in force at the time. ❖ No construction or excavation work shall be executed within 23.5 metres from any Eskom powerline structure, and/or within 23.5 metres from any stay wire. ❖ Detailed designs of the proposed mining operations must be referred to Eskom Tx. In these designs Raubex Construction must cater for design specific issues such as acute angle crossings, separation distances and clearances between Eskom Tx's 275kV power lines and the proposed mining area. ❖ The use of explosives of any type within 500 metres of Eskom Tx's services, shall only occur with Eskom Tx's previous written permission. If such permission is granted the applicant must give at least fourteen working days prior notice of the commencement of blasting. ❖ Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom Tx's requirements.	

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			❖ No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom Tx's apparatus and/or services, without prior written permission having been granted by Eskom Tx. If such permission is granted the applicant must give at least seven working days' notice prior to the commencement of work. ❖ Eskom Tx's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. ❖ Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The applicant shall maintain the area concerned to Eskom Tx's satisfaction. The applicant shall be liable to Eskom Tx for the cost of any remedial action which has to be carried out by Eskom Tx. ❖ The clearances between Eskom Tx's live electrical equipment and the proposed construction work shall be observed as stipulated by the Regulation 19 of Electrical Machinery Regulations 2011 (with reference to SANS10280-1) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). ❖ Equipment shall be regarded electrically live and therefore dangerous at all times. ❖ It is required of the applicant to familiarise himself with all safety hazards related to Electrical plant. ❖ The final design (blasting and stockpiles) of your proposed mining area should be referred to this office for final approval.	

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			❖ No stockpiles may be placed nearer than 200 m from any of the power lines.	
❖ Drilling and blasting.	<u>Existing Infrastructure:</u> ❖ Potential structural damage to adjacent residence.	❖ Contact number of the homeowner. ❖ Vibro reader.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Assess the structural integrity of Me Khumalo's home prior to the first blast. ❖ Notify the neighbouring residents in writing before each blast. ❖ Monitor the vibrations of each blast. Place a seismograph at the Khumalo residence, for at least the first blast, to establish the ground vibrations associated with blasting at the quarry. ❖ Continue monitoring with each blast, should the results indicate that the blasting has a real impact on the residence. ❖ Refurbish any damage to the residence, directly caused by the mining activities.	Applicable throughout operational phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Processing, stockpiling and transporting of material.	<u>Existing Infrastructure:</u> ❖ Overloading of trucks impacting road infrastructure.	❖ Grader to restore the road surface when needed.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout operational phase.

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	❖ Degradation of the access road.		❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Access to and from the mining area from the N11, permitted by SANRAL. ❖ Divert storm water around the access road to prevent erosion. ❖ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed 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. ❖ Discuss the maintenance requirements of Collings Pass Road with the Department of Transport (DoT) prior to commencement. Do not allow the proposed activity to result in the degradation of Collings Pass Road. ❖ Keep the intersection of the Collings Pass Road and the N11 clear of any loose quarry material emanating from the source.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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❖ Site establishment & infrastructure development. ❖ Stripping and stockpiling of topsoil and/or overburden. ❖ Drilling and blasting. ❖ Excavation, loading and hauling to the processing plant. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation phase.	<u>Fire Management</u>	❖ Fire fighting equipment. ❖ Fire fighting training for employees.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Do not permit open fires on site. Only make fires within the areas and for purposes approved by the ECO. ❖ Ensure fire prevention facilities are present at all hazardous storage facilities. ❖ Ensure adequate fire-fighting equipment is available and train workers on how to use it. ❖ Ensure that all workers on site know the proper procedure in case of a fire occurring on site. ❖ Do not permit smoking in areas considered to be a fire hazard.	Applicable throughout site establishment, and operational phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Sloping and landscaping	<u>Topography:</u>	❖ Earthmoving equipment to reinstate mined-out areas.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout decommissioning phase.

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during rehabilitation.	❖ Landscaping of mining area.	❖ Indigenous grass mix to be established on reinstated area. ❖ Erosion control infrastructure (when needed).	❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ 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, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ❖ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			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. ❖ Align the rehabilitation with the guidelines proposed in the 2024 TBIA.	

l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

i) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and hazardous waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **<u>Site Management:</u>**
  - Stay within boundaries of site – do not enter adjacent properties.
  - Keep tools and material properly stored.
  - Smoke only in designated areas.
  - Use toilets provided – report full or leaking toilets.
- **<u>Water Management and Erosion:</u>**
  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.
  - Check that dirty water is kept from clean water.
  - Do not swim in or drink from quarry pits.

❖ **Waste Management:**

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

❖ **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

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

❖ **Discoveries:**

- Stop work immediately.
- Notify site manager/supervisor.
- Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

❖ **Air Quality:**

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

❖ **Driving and Noise:**

- Use only approved access roads.
- Respect speed limits.
- Only use turn-around areas – no crisscrossing through undisturbed areas.
- Avoid unnecessary loud noises.

- Report or repair noisy vehicles.

❖ **Vegetation and Animal life:**

- Do not remove any plants or trees without approval of the site manager.
- Do not collect firewood.
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
- Report any animal trapped in the work area.
- Do not set snares or raid nests for eggs or young.

❖ **Fire Management:**

- Do not light any fires on site, unless contained in a drum at demarcated area.
- Put cigarette butts in a rubbish bin.
- Do not smoke near gas, paints or petrol.
- Know the position of firefighting equipment.
- Report all fires.
- Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually)

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports **X**
b) the inclusion of comments and inputs from stakeholders and I&AP's **X**
c) the inclusion of inputs and recommendations from the specialist reports where relevant, a **X**
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein **X**

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

13 May 2024

Date:

UNDERTAKING

I, …. Shaun Collins …the undersigned and duly authorised thereto by……*Raubex Construction (Pty) Ltd*……..……..

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

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

SIGNED at …KZN…….. this …13…… day ……May…… 2023

FINAL DOCUMENT TO BE SIGNED BY APPLICANT

SIGNATURE

WITNESSES:

1……

2……

Official use

APPROVAL

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

SIGNED at …… this …… day …… 202…….

REGIONAL MANAGER
KWAZULU-NATAL

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B
1:250 000 LOCALITY MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

SURROUNDING LAND USE MAP

APPENDIX E
REHABILITATION PLAN

APPENDIX F1 & F2

COMMENTS AND RESPONSE REPORT

&

PROOF OF PUBLIC PARTICIPATION

APPENDIX G
WETLAND ASSESSMENT REPORT

APPENDIX H

TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

APPENDIX I

HERITAGE IMPACT ASSESSMENT

APPENDIX J

SUPPORTING IMPACT ASSESSMENT

APPENDIX K
FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX L

CLOSURE PLAN

APPENDIX M

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX N

STORMWATER MANAGEMENT PLAN

APPENDIX O

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX P

CV AND EXPERIENCE RECORD OF EAP