

PROPOSED STOCKPILING 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 & ENVIRONMENTAL MANAGEMENT PROGRAMME

SEPTEMBER 2022

REFERENCE NUMBER:

DC23/0005/2022: KZN/EIA/0001820/2022

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EXECUTIVE SUMMARY

The Applicant, Raubex Construction (Pty) Ltd, applied for environmental authorisation (EA) to establish a 10.5 ha area for stockpiling and crushing of material mined from the quarry on the Remaining Extent of the farm Elands Spruit No 5523, uThukela Magisterial District, KwaZulu-Natal.

The Applicant will transport the material from the quarry into the stockpile area. The rock will be reduced to various sized gravels at the crushing and screening plant upon which it will be stockpiled. Trucks will transportation the final product. The infrastructure will be of temporary nature. The farm track will 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 ±12 employees.

The project requires an EA from the Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). This report, the Draft Basic Assessment Report (DBAR), forms part of the departmental requirements.

Preferred Site Alternative

Site Alternative 1 was identified as the only viable site that will have the least impact on the receiving environment.

Preferred Technology Alternative

The use of temporary infrastructure at the operation is the most viable and preferred technology alternative as it entails the use of infrastructure that is either track-based or can be removed without difficulty.

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 **31 October 2022**. The comments received on the DBAR will be incorporated into the final BAR to be submitted to DEDTEA.

Basic Assessment Report

The key findings of the BAR are:

Topography:

- ❖ The use of the earmarked area for the stockpiling of materials will not have an impact on the topography of the farm as no areas need to be excavated.

Visual Characteristics:

- ❖ The viewshed analysis shows that the upper part of the stockpile area will have a medium visual impact, and the lower part will have a low visual impact. The cumulative visual impact has a medium significance.

Air and Noise Quality:

- ❖ Should the Applicant implement the proposed mitigation measures the impact on the air quality will be of low significance. The cumulative air quality impact has a low-medium significance.
- ❖ The nuisance value of noise generated at the site is deemed to be of low-medium significance. The cumulative noise impact has a medium significance.

Hydrology:

- ❖ The proposed stockpile area falls within 500 m from a wetland and requires Water Use Authorisation in terms of the National Water Act, 1998.
- ❖ The stockpile area is >160 m from the outer boundary of the wetland, and therefore outside the 70 m buffer proposed by the specialist.

Terrestrial Biodiversity, Conservation Areas, and Groundcover:

- ❖ The project area does not extend across a critical biodiversity area, nor are there any species of conservation concern (fauna or flora).
- ❖ The terrestrial biodiversity impact assessment concludes that there are no fatal flaws that would prevent the development from being authorised.

Cultural and Heritage Environment:

- ❖ No sites of archaeological, palaeontological, or cultural importance exist at 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.

The outcome of the BAR showed that if the mitigation measures and monitoring programmes proposed in this document is implemented, no fatal flaws could be identified that prevents the activity continuing.

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
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)
EMPR	Environmental Management Programme
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	Hydrogeomorphic
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
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)
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
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RBX-KZN	Raubex-KZN (Pty) Ltd
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANRAL	South African National Roads Agency SOC Ltd
SANS	South African National Standards
SCC	Species of Conservation Concern
SDS	Safety Data Sheet
TBIA	Terrestrial Biodiversity Impact Assessment
WIA	Wetland Impact Assessment
WMA	Water Management Area

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BASIC ASSESSMENT REPORT
And
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL ACT, 1998 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (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:	DC23/0005/2022: KZN/EIA/0001820/2022

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

(APPENDIX 1 SECTION 2)

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

(APPENDIX 1 SECTION 3(1)(a))

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental (Pty) Ltd

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the Act. 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: Ms Christine Fouché (Senior Environmental Specialist)
Tel No.: 082 811 8514
Fax No.: 086 546 0579
E-mail address: christine.f@greenmined.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP

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

(2) Summary of the EAP’s experience.

Ms Fouché has seventeen years’ experience in doing Environmental Impact Assessments in South Africa. Ms. Fouche is a registered Environmental Assessment Practitioner with EAPASA (Environmental Assessment Practitioners Association of South Africa) since 2019. See a list of past projects attached as Appendix L.

(APPENDIX 1 SECTION 3(1)(b))

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	Remaining Extent of the farm Elands Spruit No 5523
Application area (Ha)	10.5 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

(APPENDIX 1 SECTION 3(1)(c))

c) Locality map

The requested map is attached as Appendix B.

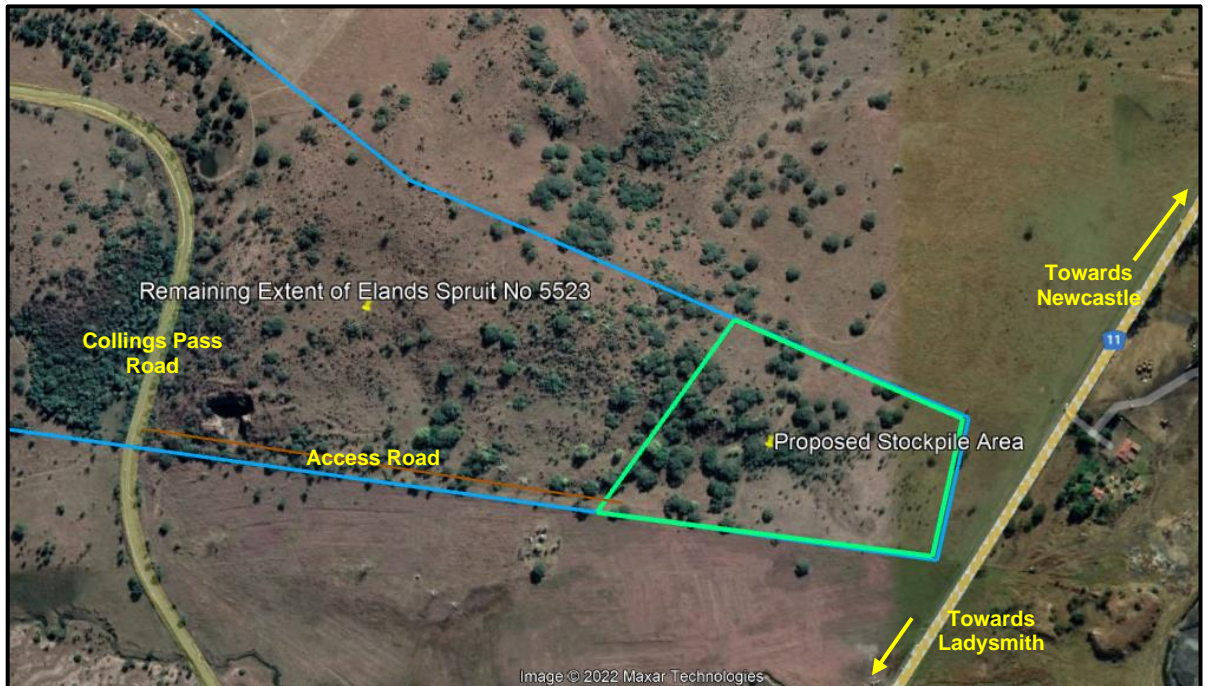


Figure 1: Satellite view of the proposed stockpile area (green polygon) submitted by Raubex Construction (Pty) Ltd (image obtained from Google Earth).

(APPENDIX 1 SECTION 3(1)(d))

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

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the proposed activities

NAME OF ACTIVITY	Aerial extent of the activity	LISTED ACTIVITY	APPLICABLE NOTICE	LISTING
Demarcation of site with visible beacons.	10.5 ha	N/A	Not listed	
Site establishment and infrastructure development.	10.5 ha	X	GNR 327 LN 1 Activity 24 GNR 327 LN 1 Activity 27	
Stripping and stockpiling of topsoil	10.5 ha	X	GNR 327 LN 1 Activity 27	
<p><i>GNR 327 Listing Notice 1 Activity 24:</i></p> <p><i>The development of a road –</i> <i>(ii) with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 metres;</i> <i>but excluding a road –</i> <i>(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;</i> <i>(b) where the entire road falls within an urban area; or</i> <i>(c) which is 1 kilometre or shorter.</i></p>				
<p>The project will necessitate the improvement of the farm track to gain access to the proposed stockpile area and allow the comfortable movement of project vehicles to and from the site. The surface of the access road will be improved, re-gravelled where needed, and the width increased to ±10 m. Also refer to <i>Part A(1)(d)(ii) Description of the activities to be undertaken – Access Road.</i></p>				
<p><i>GNR 327 Listing Notice 1 Activity 27:</i></p> <p><i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</i> <i>(i) the undertaking of a linear activity; or</i> <i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>				
<p>The establishment of the stockpile area will necessitate the removal of the current vegetation layer to allow the placement of the product stockpiles. Also refer to <i>Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation.</i></p>				
Processing, stockpiling, and transporting of material.	10.5 ha	N/A	Not listed	
Replacing the topsoil and vegetating the disturbed area.	10.5 ha	N/A	Not listed	

ii) Description of the activities to be undertaken

Background Information:

Raubex KZN (Pty) Ltd (hereafter referred to as RBX-KZN) holds a mining permit (DMRE Ref No: KZN 30/5/1/3/2/10518 MP) to mine aggregate from a 4.9 ha area on the Remaining Extent of the farm Elands Spruit No 5523, uThukela District. The RBX-KZN permit will be valid until February 2023 (upon renewal). Due to the mining of the area being dependant on a SANRAL tender for the upgrade of the N11 (not awarded yet), mining has not yet commenced at the site. With the forthcoming lapsing of the existing mining permit (RBX-KZN), and the imminent awarding of the SANRAL contract for the upgrade of the N11, Raubex Construction (Pty) Ltd (hereafter referred to as the "Applicant") identified the need for a new mining permit on the above mentioned 4.9 ha area. The aim of the mining permit application is to secure the resource for the SANRAL contract to upgrade the N11 that borders the farm to the east. The mining permit application was submitted to the Department of Mineral Resources and Energy (DMRE) in August 2022 and is still pending.

Project Proposal:

In addition to the mining of the quarry (to be approved by DMRE), the Applicant also intends to establish an area for stockpiling and crushing (when needed) of the material that is mined at the quarry, on 10.5 hectares of the abovementioned property. The establishment of the stockpiling area needs a (separate) environmental authorization to be approved by the Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) (separate application than the DMRE one).

The following table lists the GPS coordinates of the proposed stockpile area as shown on the Project Plan attached as Appendix A.

Table 3: GPS Coordinates of the proposed stockpile footprint

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	28°22'00.229"	29°56'51.125"	-28.366730°	29.947535°
B	28°22'04.736"	29°57'03.137"	-28.367982°	29.950871°
C	28°22'11.047"	29°57'01.436"	-28.369735°	29.950399°
D	28°22'09.010"	29°56'43.999"	-28.369169°	29.945555°

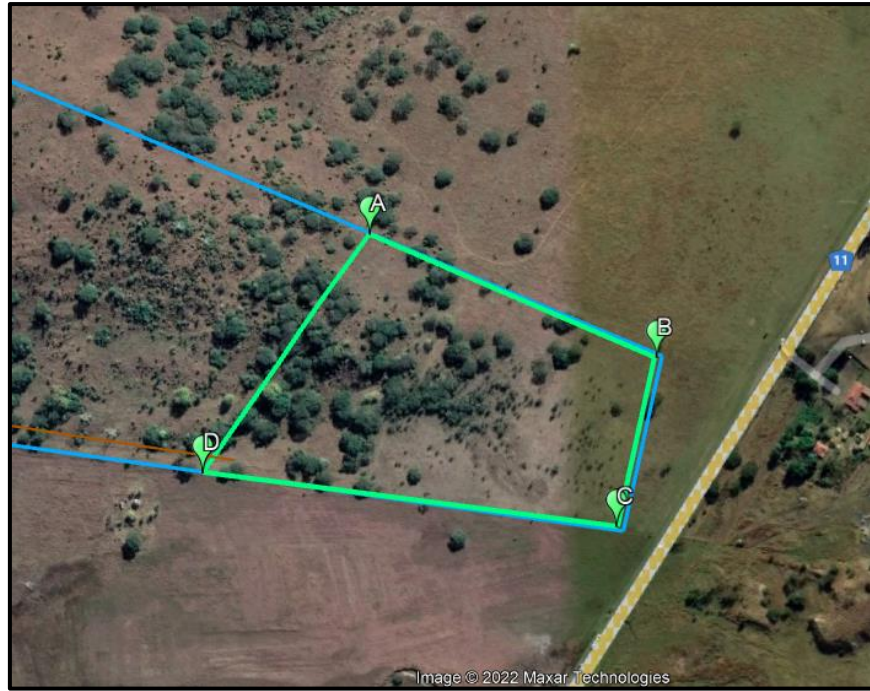


Figure 2: Satellite view showing the location of the stockpile area (green polygon) in relation to the surrounding area, where the blue line indicates the farm boundary (image obtained from Google Earth).

Should the EA be issued, and the proposed activity be allowed, the 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 authorised area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of machinery and equipment.
- (2) *Operational phase* that will entail the stockpiling and crushing (when needed) of the material mined from the quarry on the property until it is transported from site.
- (3) *Decommissioning phase* which entails the rehabilitation of the affected environment. The EA holder will further be responsible for the seeding of all rehabilitated areas.

PHASES OF THE PROJECT

1. Site Establishment Phase:

Site establishment entails the demarcation of the boundaries, clearance of vegetation, and stripping and stockpiling of topsoil as detailed below:

❖ Demarcation of Boundaries:

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

❖ Access Road:

The proposed stockpile area will be reached via the existing farm track turning from Collings Pass. No equipment or vehicles will access the N11 directly from the stockpile area without prior approval from SANRAL. The Applicant proposes to upgrade ± 700 m of the road to allow comfortable movement of project related equipment and vehicles. The surface of the access road will be improved, re-gravelled where needed, and the width increased to ± 10 m.

An application for Access to Roads was submitted (in 2017) as part of the RBX-KZN mining permit application to the KZN Department of Transport (DoT). The application was for the turning of project vehicles from the farm onto the Collings Pass Road. Although no response was received on the said application, the DoT will be invited to comment as stakeholders on this application (EA for the stockpile area) and any comments received from them will be incorporated into the FBAR.

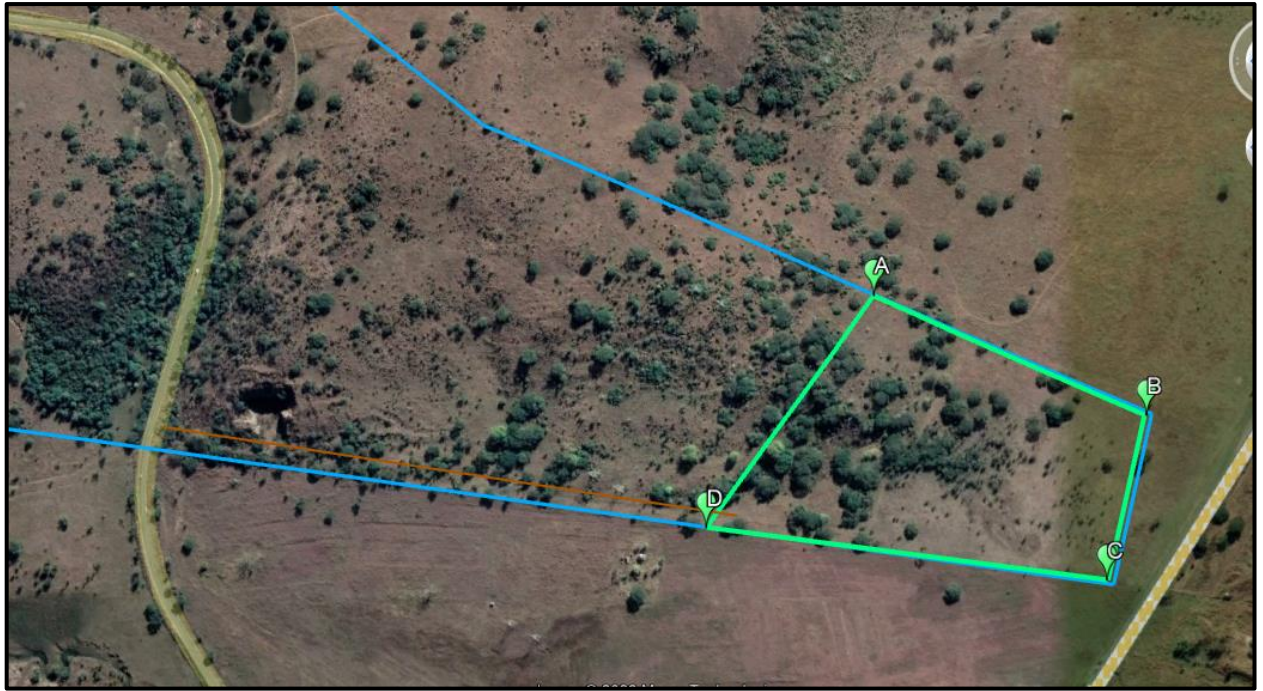


Figure 3: Satellite view showing the path of the access road (brown line) to the proposed stockpile area (green polygon).

❖ **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, Conservation Areas, and Groundcover)

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 open grassland with a patch of woody trees. No species of conservation concern (SCC) were observed on site. The Applicant will strive to conserve as much vegetation as possible and revegetate the area with locally adapted species once it is no longer required for stockpiling.

❖ **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 within the approved 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 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 2 m in height to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

❖ **Introduction of Machinery and Site Equipment:**

The infrastructure to be used on site will all be of temporary and mobile nature. Containers will be used for office and storage purposes, and a weigh bridge will be established (temporary). The storage of fuel (if any) will be below the threshold of the NEMA EIA listed activities. No water will be abstracted from the proposed stockpile area, and the plant will be powered with generators. The ablution facilities will be chemical toilets that will be serviced by registered suppliers. The office and storage containers, weigh bridge and ablution facilities will most likely be placed at the entrance to the site, while the crushing plant will be of mobile nature, moving around the site as needed.

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

- A temporary wash bay;
- ADT trucks;
- Chemical ablution facilities;
- Containers used as site office, workshop, and storage room;
- Crushing and screening plant (mobile);
- Earthmoving- and excavating equipment;
- Weighbridge with control room;
- Generators; and a
- Water truck.

2. *Operational Phase:*

The Applicant submitted this application for environmental authorisation in anticipation of a SANRAL road works tender to upgrade the N11 in the vicinity of Ladysmith. Presently it is proposed that the product to be generated at the quarry on the property will be used, by the Applicant, as fill material for the intended road works project.

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 where it will be reduced to various sized gravels. The screened material will be delivered to various size category stockpiles. Transportation of the final product will be from the stockpile area to the end point by means of trucks. The proposed project will

appoint ±12 employees (skilled & unskilled) that will daily be transported to site. The site work hours will be from 07:00 to 18:00 Monday – Saturday (no work on Sundays).

Should this application be successful, the Applicant intends to:

1. demarcate the boundaries of the stockpile area;
2. strip the topsoil off the earmarked area and stockpile it for later use in rehabilitation;
3. stockpile the processed material in various size categories within the boundaries of the approved area;
4. process the material through crushing and screening;
5. load and transport the material from the stockpiles onto trucks that will transport it to clients or the N11 road project;

❖ **Water Use:**

Any water required for the implementation of the project will be bought and transported to the stockpile 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 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 EA 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 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.

❖ **Servicing and Maintenance:**

A temporary workshop and wash bay will be established on site where minor servicing and emergency repairs of project related equipment/machinery will take place. The wash bay will have an impermeable floor and drain into an oil sump that will be serviced by a qualified contractor. No wash water will be allowed to drain into the surrounding environment. No bulk storing of fuel (>80 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet in temporary containers/secured cages.

❖ **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 registered 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.

Decommissioning Phase:

The decommissioning phase will entail the reinstatement of the stockpile area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. The reinstated area will be seeded with an appropriate grass mix.

The decommissioning activities will therefore consist of the following:

- ❖ Removing all stockpiled material;
- ❖ Removing all 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. Upon replacement of the topsoil, the area will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

(APPENDIX 1 SECTION 3(1)(e))

e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

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.
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: <i>Physical Environment – Geology and Soil.</i> Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of invader plant species.</i>	The mitigation measures proposed for the site includes specifications of the CARA, 1983.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
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 – <i>Human Environment</i> . Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Archaeological, Heritage and Palaeontological Aspects</i> .	An application in terms of Section 41 of the said act was submitted to AMAFA on 04 August 2022 and final comment was received on 17 August 2022 (refer to Appendix F for a copy).
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) ❖ GNR 327 Listing Notice 1 Activity 24 ❖ GNR 327 Listing Notice 1 Activity 27	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DEDTEA-KZN. Ref No: DC23/0005/2022: KZN/EIA/0001820/2022.
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 – <i>Air and Noise Quality</i> . Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Fugitive Dust Emission Mitigation Measures</i> .	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - <i>Biological Environment</i> Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Vegetation</i>	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.

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.
	<i>Removal & Management of invader plant species.</i>	
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 – <i>Waste Management.</i>	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 – <i>Management of Vegetation Removal.</i>	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 – <i>Human Environment.</i> Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Archaeological, Heritage and Palaeontological Aspects.</i>	The mitigation measures proposed for the site includes specifications of the NHRA, 1999. An application in terms of Section 41 of the said act was submitted to AMAFA on 04 August 2022 and final comment was received on 17 August 2022.
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 – <i>Hydrology.</i> Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Potential Impact on the wetland system.</i> Part B(1)(d)(iii) Has a water use licence been applied for?	The mitigation measures proposed for the site includes specifications of the NWA, 1998. The proposed area falls within 500 m of a wetland area and requires Water Use Authorization in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for water uses as defined in section 21 of the Act. An application for water use approval will be submitted to the DWS.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations.
Alfred Duma Local Municipality Final Integrated Development Plan 2020/2021 (IDP).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – <i>Socio-economic Environment</i> .	The description of the study area's socio-economic status is in accordance with that of the IDP.

(APPENDIX 1 SECTION 3(1)(f))

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 a historically abandoned quarry that was 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 Applicant identified the earmarked site in anticipation of a SANRAL road works tender to upgrade the N11 in the vicinity of Ladysmith. The proposed stockpile area is ideally located to supply the anticipated road works project with fill material.

The proposed labour complement of the activity will be twelve employees (skilled & unskilled). 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 reside on the site, they will be selected from the surrounding community.

The operation of 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 considered?	<p>As discussed under Part A(1)(h)(iv)(1)(a) <i>Type of environment affected by the proposed activity</i>, the KZN Biodiversity Sector Plan shows the site does not extend across a CBA. The DFFE screening tool shows both the animal- and plant theme as being of medium sensitivity. However, the overall site is highly sensitivity in terms of terrestrial biodiversity due to the area being within a Strategic Water Source Area. The project site is more than 5 km from any NEM:PAA listed private game or nature reserve, or other conservation areas. The vegetation type of the site is Northern KwaZulu-Natal Moist Grassland that is classified as Least Threatened, and no SCC were identified on site. The TBIA concludes that there are no evident fatal flaws that would prevent this development from being authorised, nor being conducted in a sustainable manner.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> ❖ 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 – Biodiversity Conservation Areas; ❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ❖ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover, ❖ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. 	Desirable
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?		
How will this development pollute and/or degrade the biophysical environment?	<p>Due of the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will be removed to allow the stockpiling of the material at the site, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the TBIA did not identify and SCC or fatal flaws regarding the development. Therefore, should the EA holder adhere to the conditions of the TBIA (incorporated in this report) it is believed that the impact on the biophysical environment is of acceptable significance.</p>	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
What waste will be generated by this development?	<p>The general waste to be generated at the stockpile area 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 office area 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.</p> <p>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.</p>	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	<p>During the mining permit application process for RBX-KZN, a Heritage Impact Assessment (HIA) was done by HCAC in collaboration with Dr Lloyd Rossouw. The HIA did not find any archaeological sites or artefacts of significance, and the palaeontological report concluded that there are no major palaeontological grounds to suspend the proposed development provided that all excavations are restricted to within the boundaries of the footprint (mining permit). The development of the proposed stockpile area was presented to AMAFA in August 2022 and approved within the limits of the general stipulated conditions and mitigation measures proposed by AMAFA. Concerning this, the proposed development will not impact any landscapes and/or sites that constitute the nation's cultural heritage.</p>	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	<p>The proposed project will not have a direct impact on non-renewal natural resources.</p>	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

How will this development impact on the ecological integrity of the area?

Question	Response	Level of Desirability
How will this development use and/or impact on 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 and transported to site. The contractor will be encouraged to consider the use of non-potable water for the proposed 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 only clear the areas that will be needed for the project. Blanket clearing will be avoided as far as possible. An environmental control officer (ECO) will assess the compliance of the EA holder with the conditions of the EA and EMPR.	Highly Desirable
How will the ecological impacts result from this development impact on people's environmental right?	The stockpile area 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 proposed operation will be of medium significance. If the monitoring programs, proposed in this document, be implemented it is believed that the environmental rights of the surrounding residents/public will not be affected by the ecological impacts associated with the proposed activity.	Highly Desirable
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If approved, the project will create at least eight new work opportunities to locals and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the project 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 project 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

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
<p>Based on all the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?</p>	<p>If the mitigation measures proposed in this document are adhered to, the preferred site entails the stockpiling of material on a 10.5 ha area without influencing the status of the ecosystem type, or red data species.</p>	<p>Desirable</p>
<p>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</p>	<p>Also refer to:</p> <ul style="list-style-type: none"> ❖ 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 – Biodiversity Conservation Areas; ❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ❖ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover. 	

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 project will create at least eight new work opportunities to locals and will also contributed an additional source of income (compensation) to the landowner. It is proposed that the project 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 project 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 project 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.	The project will contribute to the area in that the landowner will receive compensation, the project will create employment opportunities, and the sales of the material will directly and indirectly promote the economy of the area as mentioned earlier.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures included in this report.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in <i>Part A(1)(t)(i)(1) Impact on the socio-economic conditions of any directly affected person</i> , 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 area 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 operation will be of medium significance. If the monitoring programs, proposed in this document, be 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 project will create at least eight new work opportunities to locals and will also contributed an additional source of income (compensation) to the landowner. It is proposed that the project 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 proposed project 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 is adhered to, the preferred site entails the stockpiling of material on a 10.5 ha area without influencing the status of the ecosystem type or red data species. Should the EA application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the employment of at least eight residents, and support of the local economy.	Highly Desirable
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in	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.	

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?		
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?	<p>The project will operate in accordance with, amongst others, the following:</p> <ul style="list-style-type: none"> ❖ CARA, 1983 – to ensure agriculture 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; 	Highly Desirable
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?	<p>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).</p>	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	<p>Presently, it is proposed that the project will create a minimum of eight employment opportunities to locals. In a municipal area with an unemployment rate of 38%, new job opportunities are of high significance. Further to this, and as mentioned earlier, the procurement progression plan of Raubex Construction supports local enterprises, of which preferences are given to HDSA & women owned local suppliers (where possible).</p>	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 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 project will operate in accordance with the specifications of 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 project will appoint ±12 employees (skilled & unskilled), 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 stockpile area will operate under a valid environmental authorisation to be issued by DEDTEA-KZN. Compliance of the site with the approved EMPR, and EA conditions will be reported on as per departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when applicable). As mentioned earlier, the stockpile area will be fully rehabilitated and vegetated upon closure. If the disturbed areas are successfully rehabilitated no long-term management burden will be left behind.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

What is the socio-economic context of the area?

Question	Response	Level of Desirability
<p>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.</p>	<p>The Applicant is committed to rehabilitate the stockpile area once the activities cease. The company already possess all the equipment needed to remove the stockpiled material, reinstate the topsoil, and landscape the area. A seed mix of indigenous grass species will be bought, and the area will be vegetated as soon as the topsoil was replaced. These decommissioning activities form part of the EMPR to be approved by DEDTEA-KZN and will therefore become a legal requirement to be implemented upon closure of the site.</p>	<p>Highly Desirable</p>
<p>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</p>	<p>If the mitigation measures proposed in this document are adhered to, the preferred site entails the use of a 1 ha area for stockpiling purposes without influencing the status of the ecosystem type, or red data species.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> ❖ 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. 	<p>Highly Desirable</p>

(APPENDIX 1 SECTION 3(1)(g))

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

1. PREFERRED SITE ALTERNATIVE

Site Alternative 1 was identified as the preferred alternative deemed to be the most practical and only viable site based on the following:

- ❖ The proposed stockpile area was identified over the most level and low-lying portion of the farm that was historically used for storage of material during previous road construction projects (vegetation cover re-established through succession).
- ❖ Due to the Eskom power line crossing through the property, the stockpile area cannot be moved to the west as it will encroach into the power line servitude.
- ❖ The Applicant already entered into a land use agreement with the landowner and prefers to keep the stockpile area near the quarry from where the material will be mined to reduce transport costs. Therefore, moving the stockpile area from the Remainder of the farm Elands Spruit No 5523, isn't deemed a viable or cost effective option.
- ❖ Should the stockpile area be moved to the south (onto the neighbouring property) it will move even closer to the wetland system that passes the area. The wetland report proposed that an ecological buffer of 70 m be maintained around the wetland system. Therefore the stockpile area shouldn't move (south) in the direction of the wetland. The proposed stockpile area (S1) is >70 m from the wetland system and therefore outside the ecological buffer.
- ❖ Fencing of the proposed stockpile area (S1) from the rest of the agricultural activities on the farm will be relatively easy when the impact is contained in the most eastern corner of the camp.
- ❖ The TBIA concluded that there are no fatal flaws that would prevent the development of the stockpile area (S1) from being authorised.

2. PREFERRED TECHNOLOGY ALTERNATIVE

The use of mobile/temporary infrastructure/equipment (T1) at the proposed operation is the most viable and preferred technology alternative as it entails the use of infrastructure and/or machinery that is either track-based or can be removed without difficulty. The

positive aspects associated with the use of temporary infrastructure and mobile equipment firstly enables the Applicant to move the infrastructure within the boundaries of the stockpile area as the project progresses. Secondly the decommissioning phase is facilitated as the removal of infrastructure and mobile equipment from the area is easy, of low cost and highly effective.

3. ASSESSMENT OUTCOME

During the environmental impact assessment process the feasibility of the proposed alternatives (S1, T1, and T2) 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, S1 and T1 showed a lesser impact on the receiving environment and were therefore identified as the preferred options. The project proposal was aligned with this and incorporates the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint is depicted on the attached site activities plan (Appendix C).

(APPENDIX 1 SECTION 3(1)(h))

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

i) Details of the development footprint alternatives considered.

1. SITE ALTERNATIVE

During the planning phase the project team considered a few alternative positions for the placement of the stockpile area (as discussed below), however, Site Alternative 1 was subsequently identified as the only viable site that will have the least impact on the receiving environment. As the other sites were already rejected during the planning phase, these positions were not further assessed during the EIA process.

Site Alternative 1 (Preferred Site):

Site Alternative 1 (S1) entails the development of the 10.5 ha stockpile area within the GPS coordinates as listed in Table 3 and depicted below.



Figure 4: Satellite view showing the preferred location of the stockpile area (green polygon) in relation to the surrounding area, where the blue line indicates the farm boundary (image obtained from Google Earth).

As mentioned earlier, Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the **preferred site and only viable site alternative** due to the following reasons:

- ❖ The proposed stockpile area was identified over the most level and low-lying portion of the farm that was historically used for storage of material during previous road construction projects (vegetation cover re-established through succession).
 - Placing the proposed stockpile area above the proposed mining area (see following figure), isn't viable as the area isn't level and the access to this area will be more complex than what is required for the currently proposed site.
 - This area also has Aloes (*Aloe marlotthi*) that is a specie of conservation concern (SCC) in KZN. The current position of the stockpile area (S1) does not encroach on any Aloes or other specially protected vegetation.
 - Placing the stockpile area above the quarry will have a higher visual impact due to its elevated position.

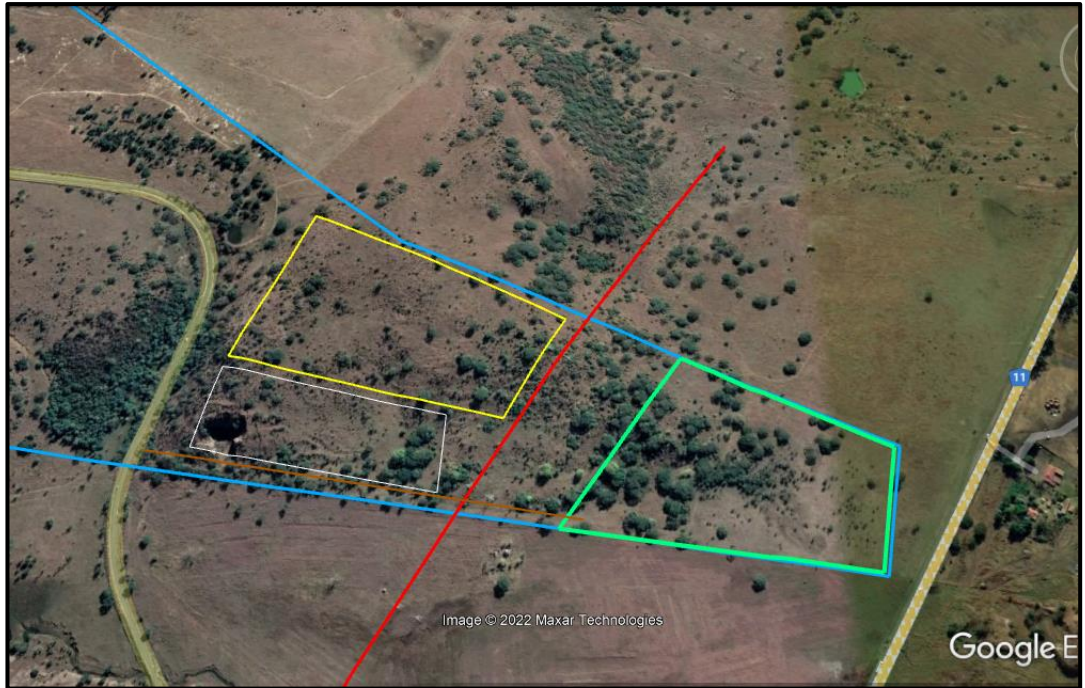


Figure 5: Map showing the layout of the area should the stockpile area (yellow polygon) be placed above the quarry (white polygon) compared to placing the stockpile area east of the quarry (green polygon). The red line indicates the Eskom power line, and the farm boundaries are shown by the blue lines (image obtained Google Earth)

- ❖ Due to the Eskom power line crossing through the property, the stockpile area cannot be moved to the west as it will encroach into the power line servitude.
- ❖ The Applicant already entered into a land use agreement with the landowner and prefers to keep the stockpile area near the quarry from where the material will be mined to reduce transport costs. Therefore, moving the stockpile area from the Remainder of the farm Elands Spruit No 5523, isn't deemed a viable or cost effective option.
 - The farm track turning from Collings Pass Road can be upgraded to provide simple access between the quarry and the stockpile area if the stockpile area is established at the eastern corner of the property (green polygon in following figure).
 - Should the stockpile area be placed on the neighbouring property to the north-east the Applicant (yellow polygon in following figure) will have to enter into a site usage agreement with another landowner. Access to this area (from the quarry) will be more complicated and expensive, causing project related traffic to travel larger distances through at least two properties.
 - If the stockpile area is placed on the far western side of the earmarked property (pink polygon in following figure), the trucks transporting the material will have to drive an additional ± 1 km on the Collings Pass Road before turning

from the road to the stockpile area. This additional traffic on the Collings Pass Road can be eliminated if the material is stockpiled on the same side of the farm as the quarry is located. This will also entail less/shorter distance of road infrastructure that needs to be improved and maintained for the duration of the project.

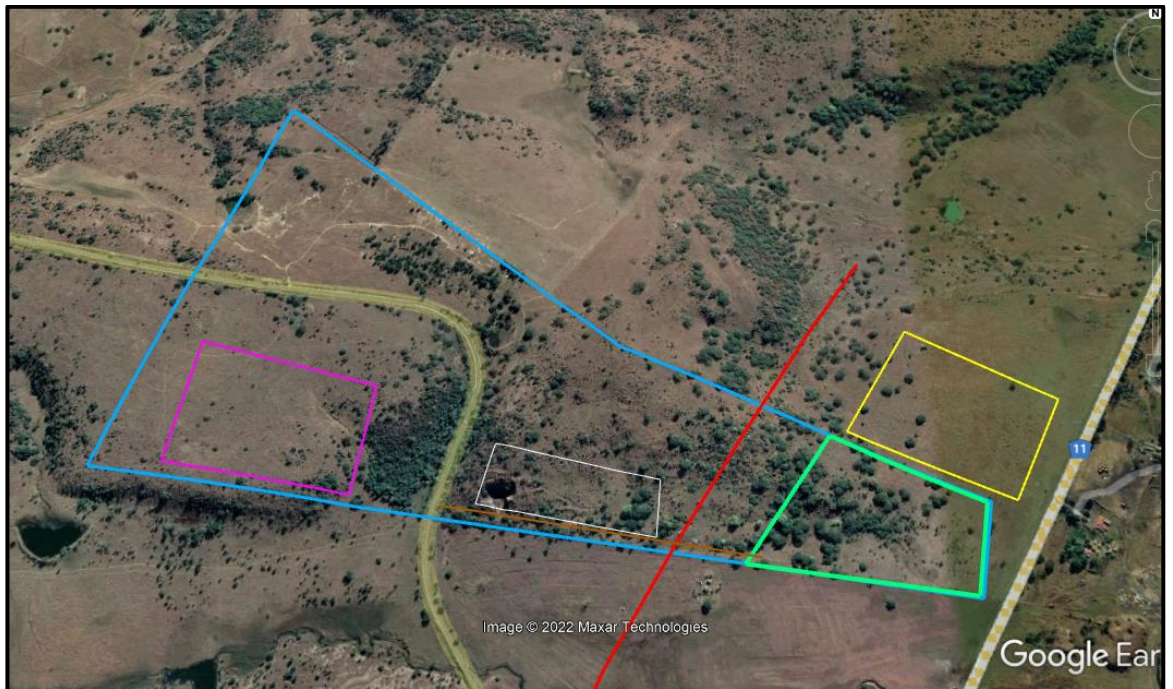


Figure 6: Map showing the layout of the area should the stockpile area (yellow polygon) be placed on the north-eastern bordering property, or opposite Collings Pass Road (pink polygon) compared to placing the stockpile area east of the quarry (green polygon). The red line indicates the Eskom power line, and the farm boundaries are shown by the blue lines (image obtained Google Earth)

- ❖ Should the stockpile area be moved to the south (onto the neighbouring property) it will move even closer to the wetland system that passes the area. The wetland report proposed that an ecological buffer of 70 m be maintained around the wetland system. Therefore the stockpile area shouldn't move (south) in the direction of the wetland. The proposed stockpile area (S1) is >70 m from the wetland system and therefore outside the ecological buffer.
 - Currently no access exists to the potential area (yellow polygon in following figure) and an access road will have to be planned in agreement with the landowner.
 - Apart from moving the stockpile area nearer (within 70 m) to the wetland system, the area will also be on the opposite side of a hut belonging to the

landowner. This will mean that the project trucks will have to drive past the hut when delivering and collecting material. Although the hut is empty, this is not an ideal situation and should be avoided if possible.

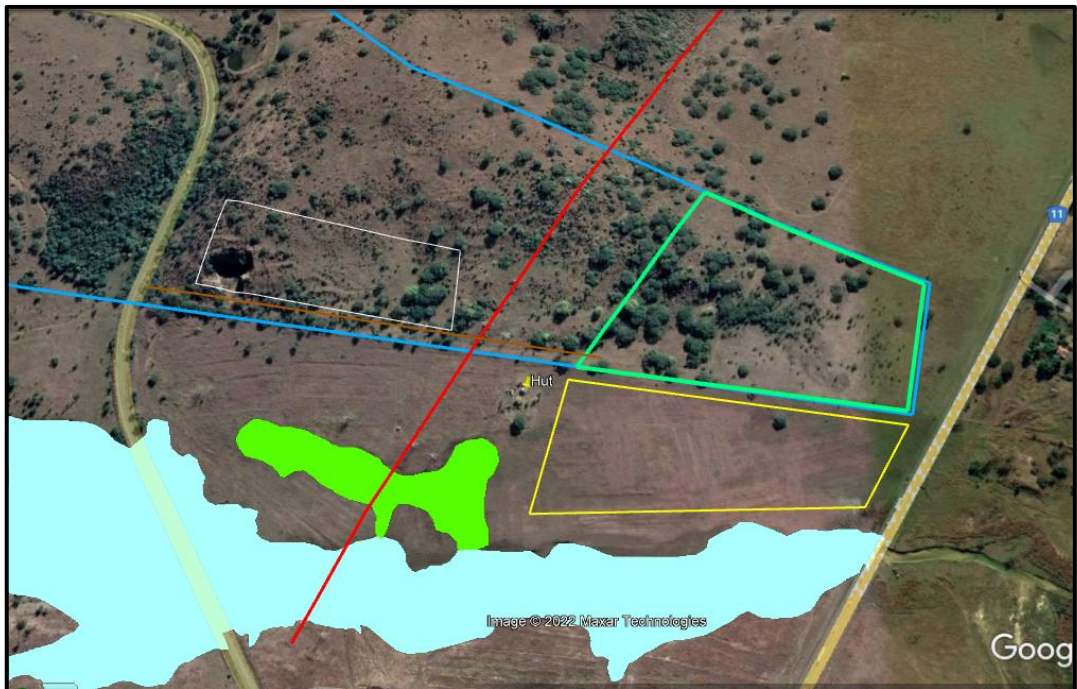


Figure 7: Map showing the layout of the area should the stockpile area (yellow polygon) be placed on the southern bordering property compared to placing the stockpile area east of the quarry (green polygon). The red line indicates the Eskom power line, and the farm boundaries are shown by the blue lines. The green and blue shaded areas show the wetland system (image obtained Google Earth).

- ❖ Fencing of the proposed stockpile area (S1) from the rest of the agricultural activities on the farm will be relatively easy when the impact is contained in the most eastern corner of the camp.
- ❖ The TBIA concluded that there are no fatal flaws that would prevent the development of the stockpile area (S1) from being authorised.

Considering the above mentioned, Site Alternative 1 is believed to be the most practical and only viable site.

2. ACTIVITY ALTERNATIVE

No other activity alternative exists that would meet the need and desirability of the Applicant other than the No-go Alternative which would be to retain the site as an undeveloped area. This would, however, not address the need for a stockpile area

where the mined material could be kept and processed. As such no alternative activities have been considered further.

3. LAYOUT ALTERNATIVE

Due to the nature of the proposed activity and the preferred use of temporary and mobile equipment the layout of the earmarked footprint is of no real consequence. The use of the stockpile area will require the clearance of the vegetation cover from the greater part of the footprint to allow the placement of the material stockpiles. The machinery and equipment will operate in between the stockpiles and the containers (offices, storage, etc) will be placed at the most practical location. Presently, it is proposed that the office and storage containers, weigh bridge and ablution facilities will most likely be placed at the entrance to the site, while the crushing equipment will be move around the site as needed. Refer to Appendix C for a copy of the Site Activities Plan. No alternative layouts have been considered further.

4. TECHNOLOGY ALTERNATIVE

The use of temporary infrastructure and mobile equipment (Preferred Option) was compared to the use of permanent infrastructure and fixed equipment, at the stockpile area, for duration of the operational phase.

- ❖ Technology Alternative 1 (T1): Temporary infrastructure/equipment entails the use of infrastructure and/or machinery that is either track-based or can be removed without difficulty. The positive aspects associated with the use of temporary infrastructure and mobile equipment firstly enables the Applicant to move the infrastructure within the boundaries of the stockpile area as the project progresses. Secondly the decommissioning phase is facilitated as the removal of infrastructure and mobile equipment from the area is easy, of low cost and highly effective.
- ❖ Technology Alternative 2 (T2): In contrast to the above, the use of permanent infrastructure and fixed equipment will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, lengthen the period required for rehabilitation as well as increase the rehabilitation cost as the permanent structures either must be decommissioned or be maintained after the closure of the site. Due to the small scale and limited timeframe of the project (duration of the N11 road improvement project), fixed equipment isn't deemed practical or necessary.

Considering the above, the use of mobile/temporary infrastructure/equipment (T1) at the proposed operation is deemed the most viable and preferred technology alternative.

5. 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 earmarked area will be used to stockpile the material mined from the quarry on the property before it is used as fill material in the upgrade of the N11 national road. If however, the no-go alternative is implemented the Applicant will not be able to stockpile the material on the property.

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

- ❖ the Applicant will not have sufficient space to stockpile the material mined from the quarry. This will affect production rates and have a direct impact on the construction duration of the N11 project.
- ❖ transporting the material from the quarry to a nearby stockpile area on the same property without the need to use public roads will reduce the traffic required on public roads by 50% as the trucks will only access the Collings Pass Road when the material is delivered to the client/site. The hauling costs will also be highly reduced. This will not be possible if the no-go option is implemented.
- ❖ the landowner will not receive compensation from the Applicant, and in doing so diversity the income generated from the property;
- ❖ the proposed job opportunities, associated with the proposed project, will be lost to the surrounding community.

ii) Details of the Public Participation Process Followed

English and isiZulu site notices were placed at the site entrance, Matiwane Community, turnoff from the N11 onto the Collings Pass Road, as well as the Ladysmith Library on 20 September 2022. As the southern neighbour (represented by Me Khumalo) does not have access to email, a meeting was held with her on 20 September 2022 where the project was explained, and any comments invited.

The project will be advertised in the Ladysmith Gazette (30 September 2022), 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 31 October 2022. The

comments received on the DBAR will be incorporated into the final BAR to be submitted to DEDTEA. The following I&AP's and stakeholders will be informed of the project:

Table 6: List of the I&AP's and stakeholders that will be notified of this application.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
<p><u>Landowner:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Surrounding landowners & lawful occupiers:</u></p> <ul style="list-style-type: none"> ❖ Mr WS Mitchell-Innes (care of Mr IF Mitchell-Innes); Portion 6 of the farm Roode Poort No 1045. ❖ Mr SB Mgaga; Portion 1 of the farm Roode Poort No 1045. ❖ Matiwane Trust (care of the ward councillor); ❖ Matiwans Kop Trading Co; 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 on property. 	<ul style="list-style-type: none"> ❖ 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 Human Settlements, Water and Sanitation; ❖ Department of Labour; ❖ Department of Mineral Resources and Energy; ❖ Department of Transport; ❖ Eskom Ltd; ❖ Ezemvelo / KZN Wildlife; ❖ SANRAL; ❖ South African Heritage Resources Agency; and ❖ uThukela District Municipality.

iii) Summary of issues raised by I&As

Table 7: 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 Received	Comments	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.
<u>AFFECTED PARTIES</u>	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 EA application and signed the departmental landowner consent form (refer to Appendix F).		
Lawful occupier/s of the land	-	-			
Me Khumalo ❖ Lawful occupier south of the application area.	X	20 September 2022	A meeting was held with Me Khumalo (in Ladysmith) to inform her of the application. The meeting was held in English and isiZulu, and English and isiZulu pamphlets introducing the project were also handed to Me Khumalo during the meeting. Me Khumalo did not have comments regarding the proposed stockpiling area at the time of the meeting. Me Khumalo will also be invited to comment on the DBAR.	Appendix F – Proof of Public Participation Process	
Rotimode (Pty) Ltd ❖ Prospecting right holder on the property.	X		Any comments received on the draft BAR will be incorporated into the final BAR.		
Landowners or lawful occupiers on adjacent properties	X	-			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Received	Comments	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.
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.	
Matiwan's 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) ❖ Elands Spruit No 16154	X			Any comments received on the draft BAR will be incorporated into the final BAR.	
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		-	-	-	-

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 Received	Comments	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.
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.			
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	-	-	-	-
Other Competent Authorities affected	-	-	-	-	-
AMAFA / Heritage KZN	X	04 August 2022	Greenmined applied in terms of Section 41 of the KwaZulu-Natal AMAFA and Research Institute Act (5/2018) and the NHRA, 1999 for comments on the proposed development of a site to AMAFA.		Appendix F – Proof of Public Participation Process

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 Received	Comments	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.
	17 August 2022		Greenmined presented the project at the Heritage Officers' Committee Meeting of AMAFA.		
	30 August 2022		Greenmined received the Final Decision from AMAFA regarding the project, as listed below.		The conditions were incorporated into this report.
<p>Final Decision submitted by AMAFA on the proposed project:</p> <p>“The KZN Amafa and Research Institute (the Institute) reviewed the application on the 17 August 2022 and considered your application: The Committee resolved not to object to the development within the limits of the general stipulated conditions and mitigation measures.</p> <p>STANDARD CONDITIONS</p> <ol style="list-style-type: none"> 1. The KwaZulu-Natal Amafa and Research Institute should be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice. 2. No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. 3. Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist. 4. Should any remains, that could potentially be human remains be found on-site, the South African Police Service (SAPS) should be contacted and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu-Natal Amafa and Research Institute. 5. No activities are allowed within 50m of a site that contains rock art. 6. Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage and environmental (NEMA) legislation. 7. The committee resolved not to object to the development within the limits of the general stipulated conditions and mitigation measures. Should you have any further queries, please contact the designated official using the case number quoted above in the case header. Should you have any further queries, please contact the designated official using the case number quoted above in the case header.” 					
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 Received	Comments	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.	
Department of Mineral Resources and Energy	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			Any comments received on the draft BAR will be incorporated into the final BAR.	
<u>OTHER AFFECTED PARTIES</u>	-	-	-	-	
N/A	-	-	-	-	
<u>INTERESTED PARTIES</u>	-	-	-	-	
N/A	-	-	-	-	

iv) The Environmental attributes associated with the alternatives.

(1) Baseline Environment

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

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 activity.

PHYSICAL ENVIRONMENT

CLIMATE

The following chart shows the maximum, minimum and average temperatures (21°C daytime, 15°C nighttime) 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.

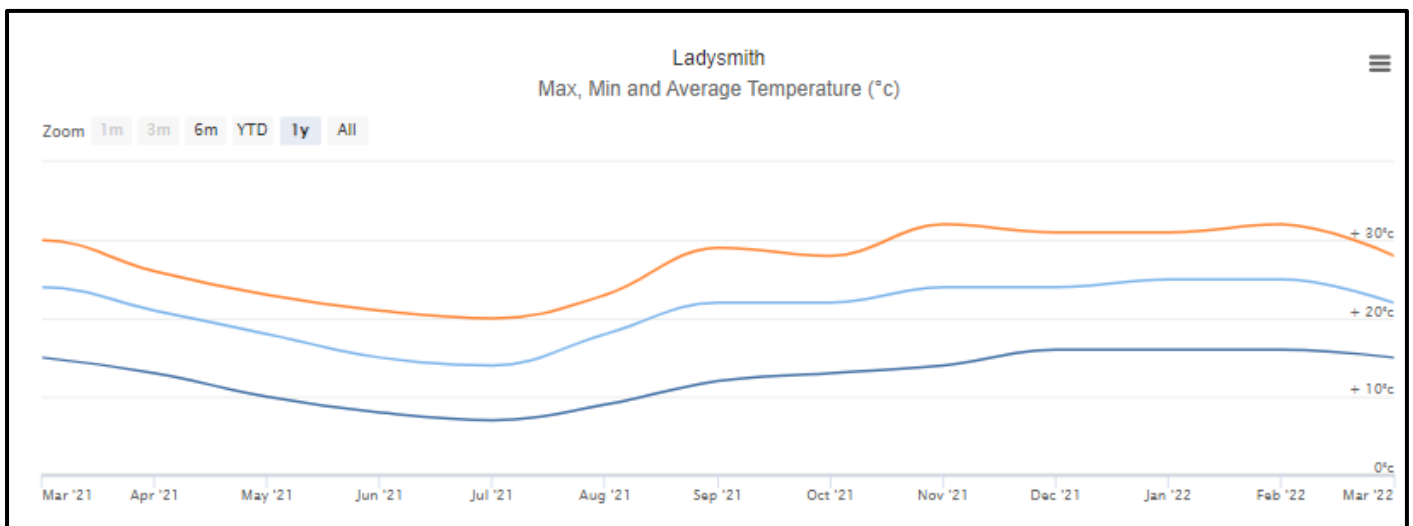


Figure 8: Maximum, minimum, and average temperature of the Ladysmith region where the orange line indicates the maximum temperature, the light blue line shows the averages, and the dark blue line shows the minimum temperatures (chart obtained from <http://www.worldweatheronline.com>)

The TBIA reports the mean annual precipitation of the area to be 840 mm. 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).

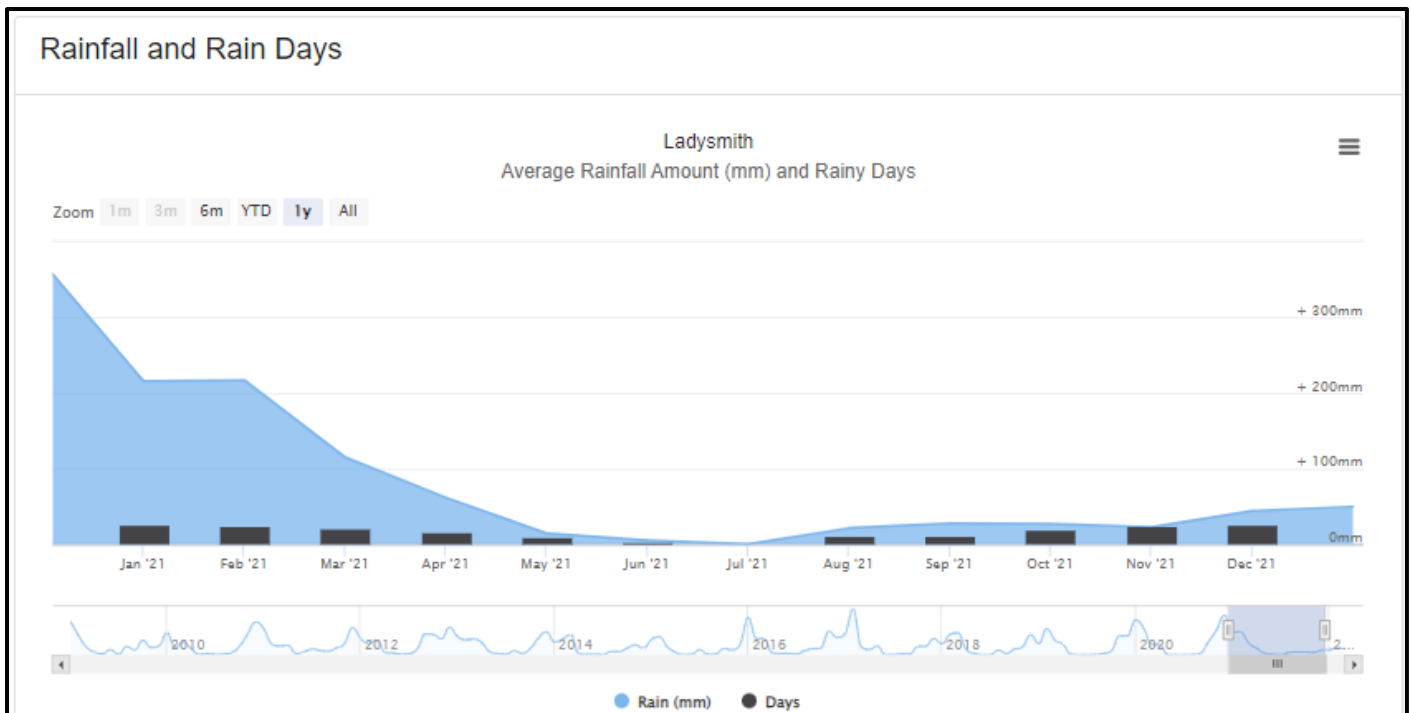


Figure 9: Average rainfall amount and rainy days count for the Ladysmith region (chart obtained from <http://www.worldweatheronline.com>)

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).

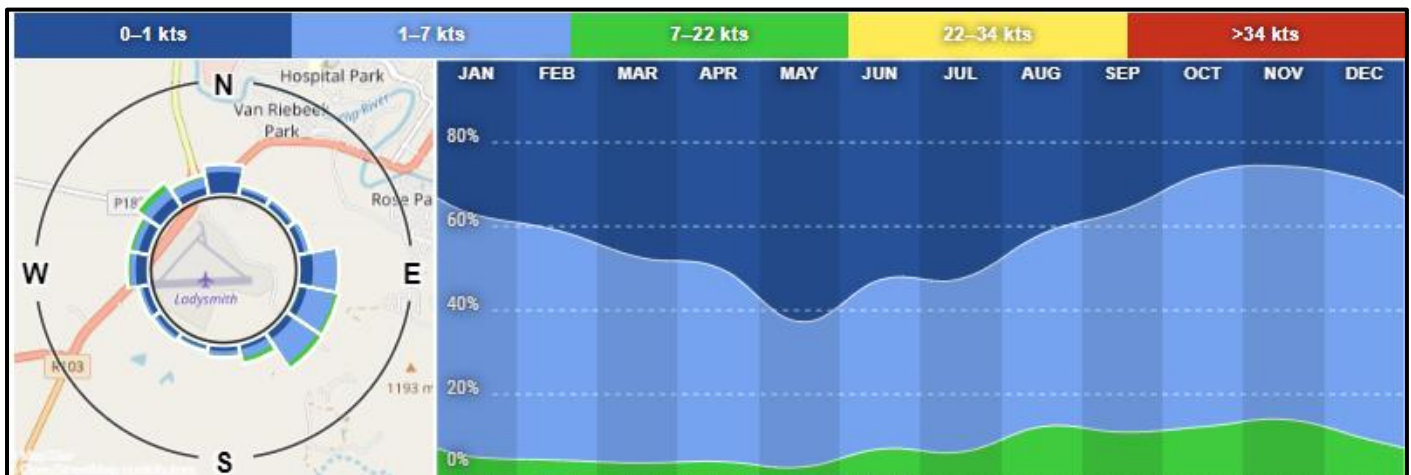


Figure 10: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Ladysmith area (image obtained from <http://www.windfinder.com/windstatistics/ladysmith>).

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.

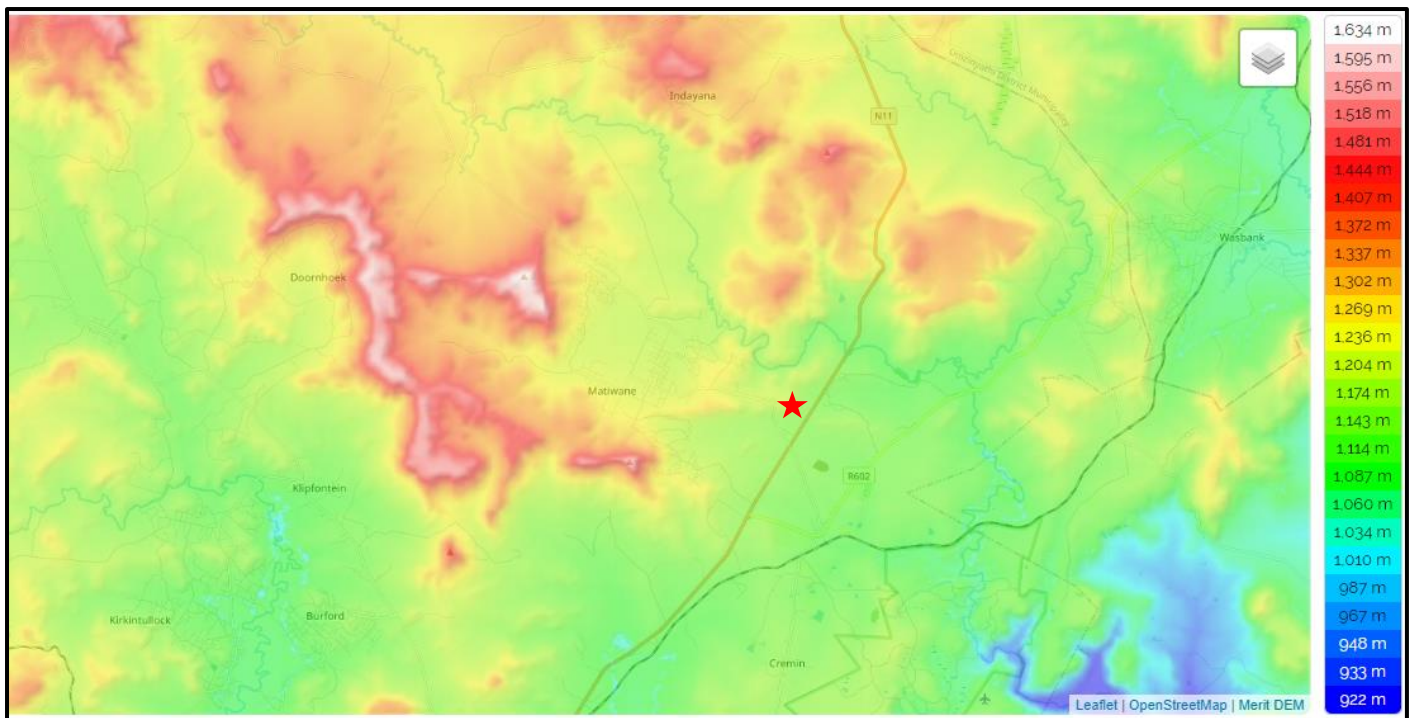


Figure 11: Map showing the topography of the greater Ladysmith area where the red star indicates the application area (image obtained from <http://www.en-za.topographic-map.com/maps/gwpq/South-Af>).

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

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 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

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 Road 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 dolerite intrusion (dolerite sills and dykes). It is from such an intrusion that the rock to be stockpiled 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, topography, 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 cause 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 marginal 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
- ❖ Foothlope: Avalon, Valsrivier, Glencoe, Glenrosa, Dundee, Bainsvlei
- ❖ Valley Bottom: Valsrivier, Dundee

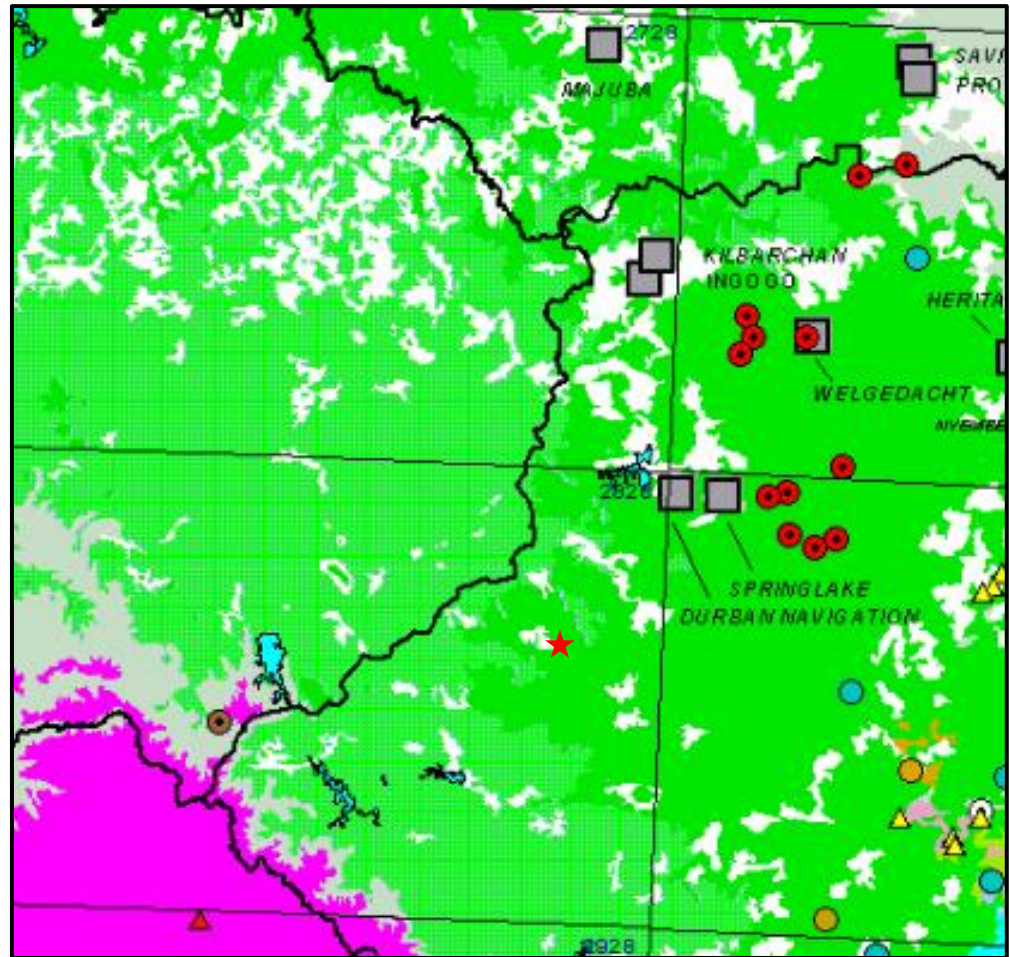


Figure 12: Indication of the simplified geology of the study area, where green represents the Dwyka and Ecca Groups (part of the Karoo Supergroup), white the dolerite intrusions, crossed green the Beaufort Group, grey the Molteno, Elliot and Clarens formations, and pink represents the Namaqua and Natal Metamorphic Provinces. The proposed stockpile area is indicated by the red star. (Image obtained from the Council for Geoscience)

HYDROLOGY

(Information extracted from the Environmental Impact Assessment Report and Environmental Management Programme Report of the RBX-KZN mining permit, 2017)

The Wetland Impact Assessment (WIA) that was done when RBX-KZN applied for the mining permit in 2017 was used as hydrology source for this study as the findings of the document is also applicable to the proposed stockpile area due to its proximity to the quarry. The WIA notes that the study area is located within the Sundays River Catchment where it forms the upper reaches of the V60C Quaternary Catchment Area. The Sundays River Catchment forms part of the Thukela Water Management Area. The Sundays River flows in a south-easterly direction from the Eastern Escarpment to

its confluence with the Thukela River near the Bushmans River confluence. Commercial dryland agriculture dominates the area and there are also fairly large tracts of trial/communal land in the lower reaches of the catchment. Other than the Slangdraai Dam, which has a full supply capacity of 10.3 million m³, there is no significant storage in this catchment area. Irrigation within the catchment is supplied from farm dams or from run-of-river flows. Coal mining abounds in the upper areas of the catchment which contributes both to water quality problems and is a source of return flows. According to the Present Ecological State (DWS PES, 1999) the condition of the Sundays River is classified as Class A, which indicates that the river is mostly in an unmodified and natural state.

According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, the proposed stockpile area falls within an upstream River NFEPA.

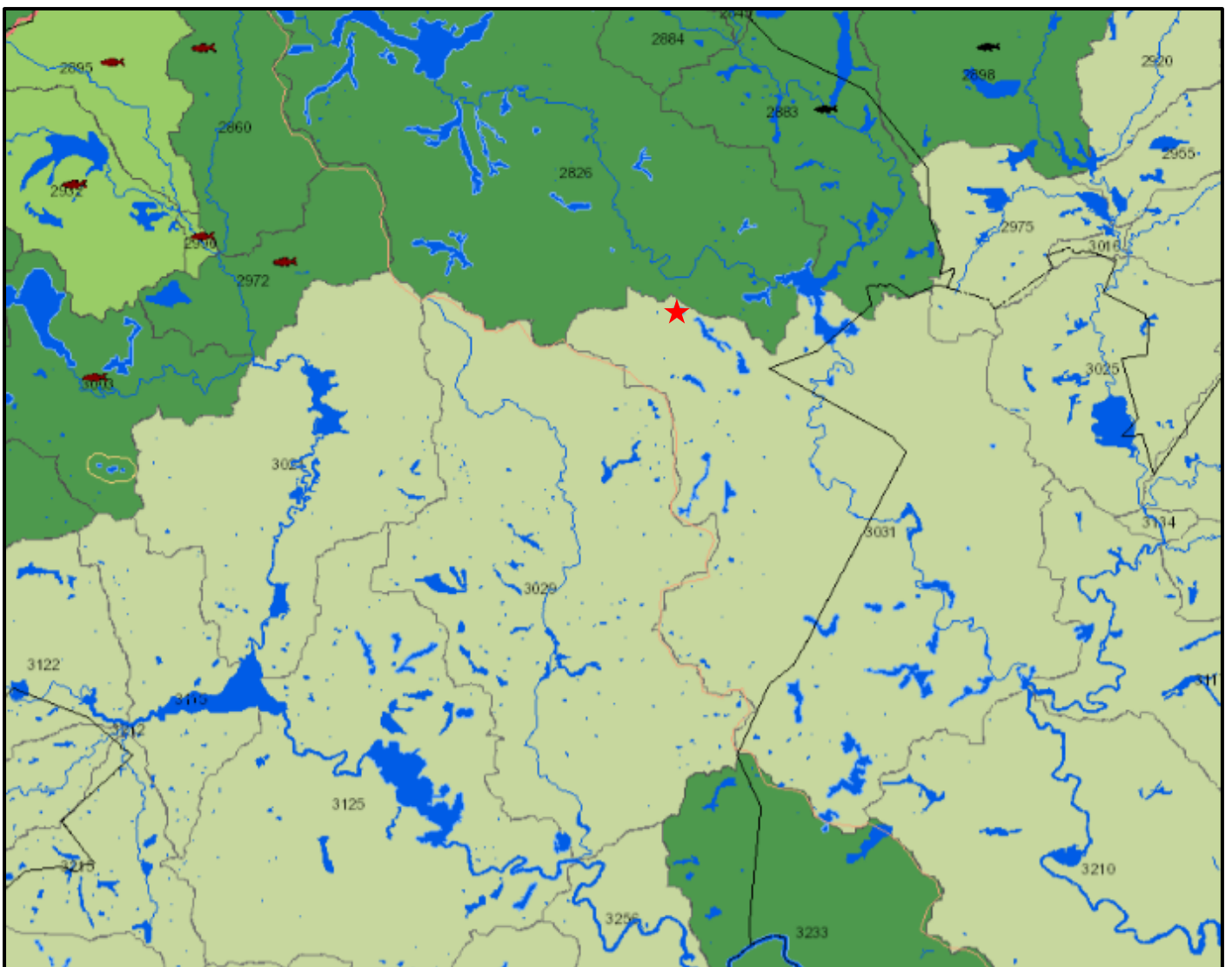


Figure 13: According to the National Wetlands and NFEPA BGIS Map Viewer the stockpile area (red star) is within an Upstream River NFEPA (light green) area (image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

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

BIOLOGICAL ENVIRONMENT

BIODIVERSITY CONSERVATION AREAS

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

The KZN Biodiversity Sector Plan shows that the proposed stockpile area does not extend across a Critical Biodiversity Area (CBA).



Figure 14: 2014 KZN Biodiversity Sector Plan showing the position of the stockpile area (blue polygon) in relation to the identified CBA (grey area); (image obtained from BGIS Map Viewer – 2014 KZN Biodiversity Sector Plan).

The DFFE screening tool shows both the animal- and plant theme as being of medium sensitivity. However, the overall site is highly sensitivity in terms of terrestrial biodiversity due to the area being within a Strategic Water Source Area.

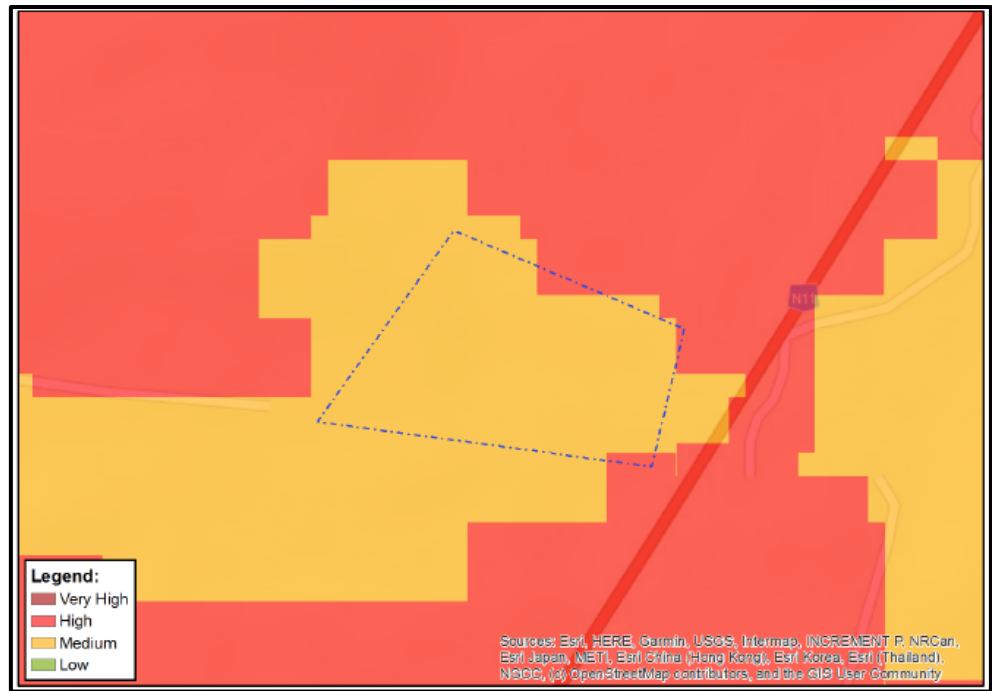


Figure 15: DFFE screening tool outputs for animal species (image obtained from DFFE screening tool report).

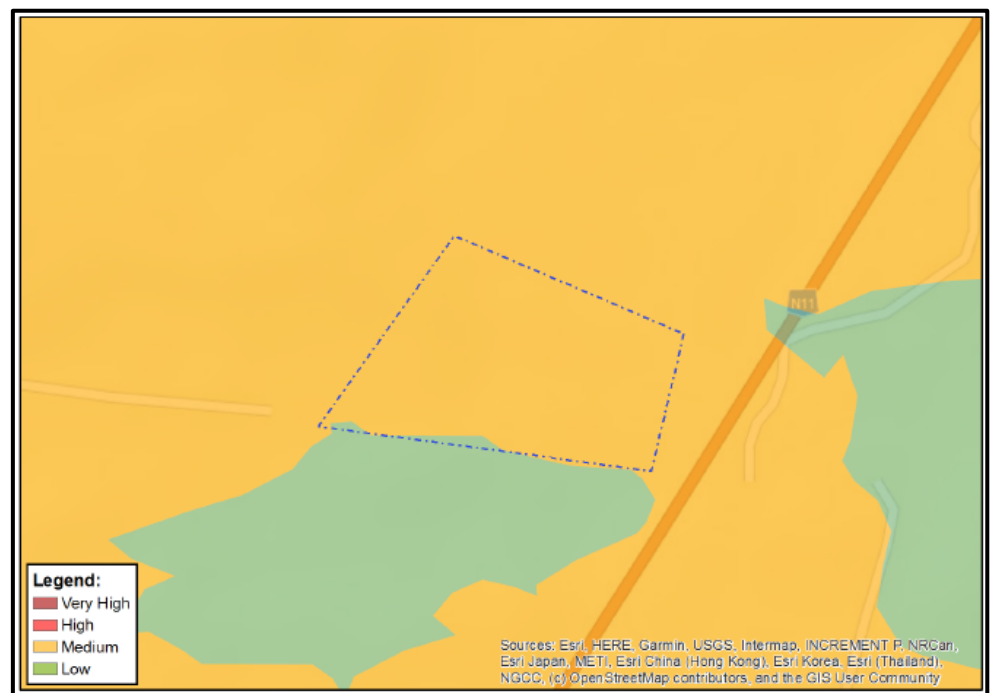


Figure 16: DFFE screening tool outputs for plant species (image obtained from DFFE screening tool report).

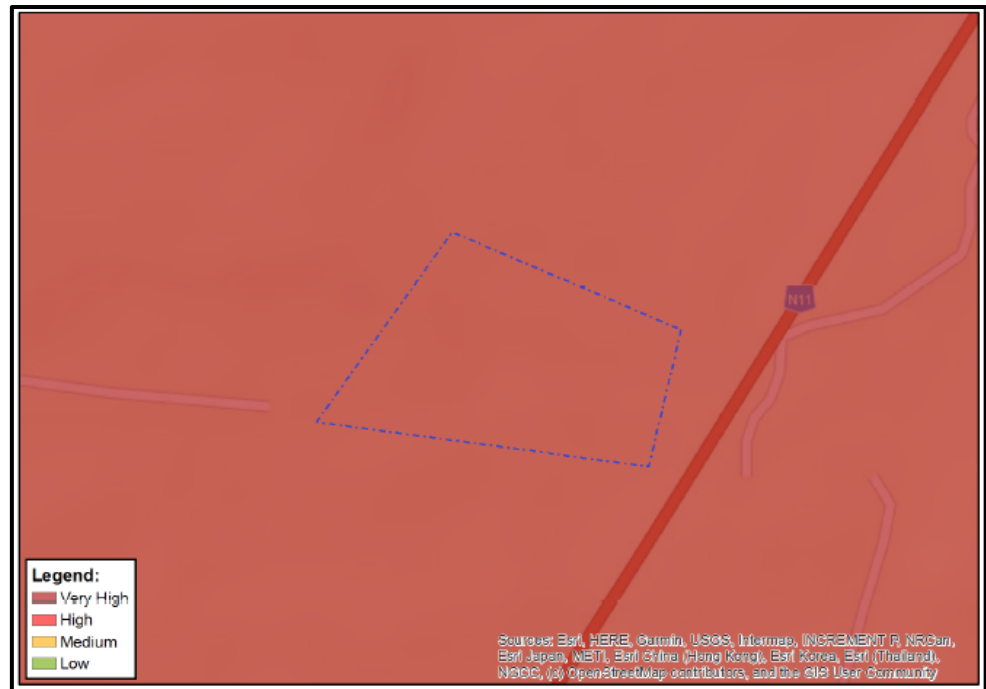


Figure 17: DFFE screening tool outputs for terrestrial biodiversity (image obtained from DFFE screening tool report).

The project site is more than 5 km from any NEM:PAA listed private game or nature reserve, or other conservation areas.

Also refer to Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas, and Groundcover.

GROUNDCOVER

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

According to Mucina and Rutherford (2006) the natural vegetation type of the study area is classified as Northern KwaZulu-Natal Moist Grassland (Gs 4).

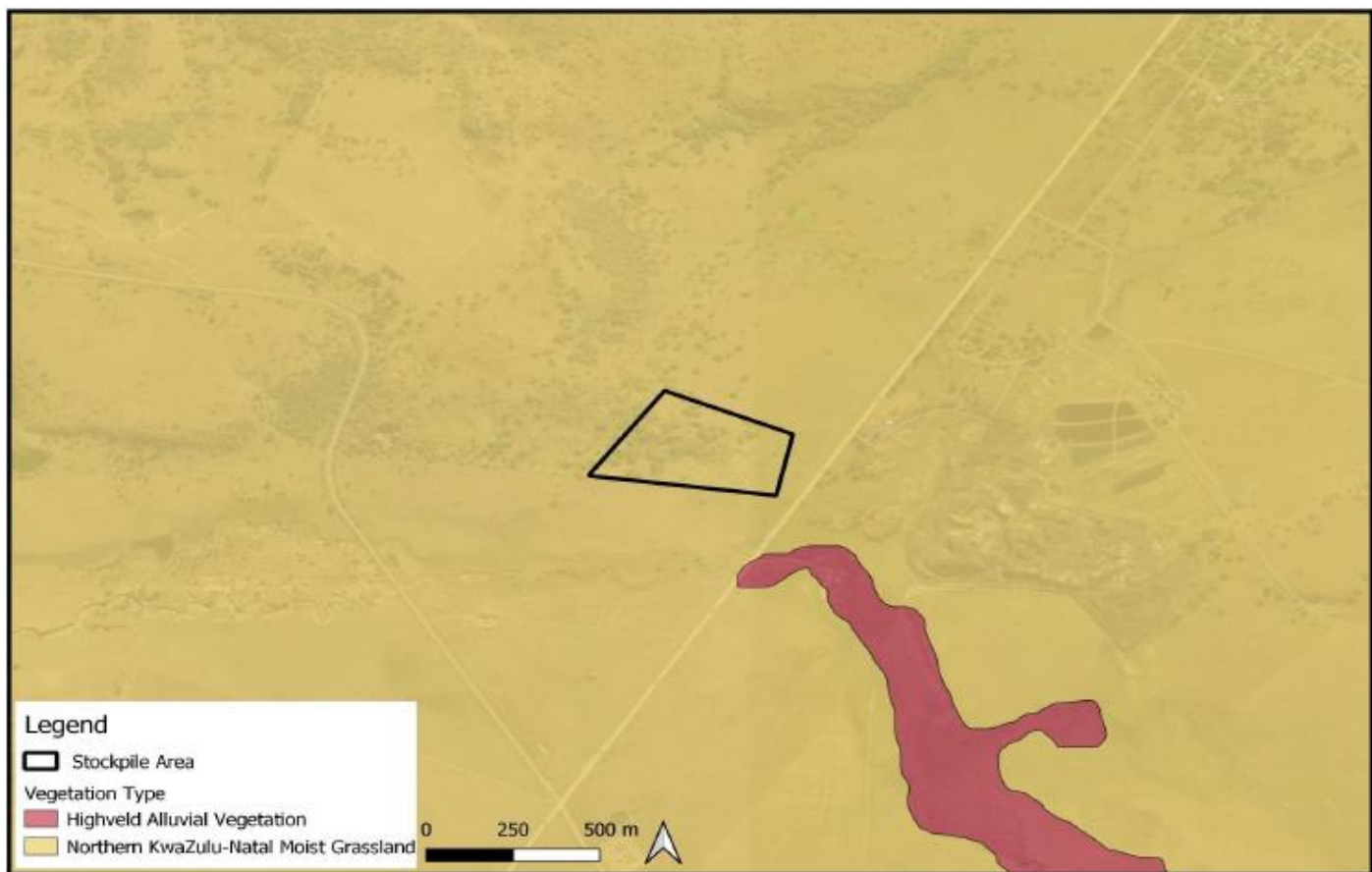


Figure 18: Vegetation cover map showing the study area (black polygon) within the Northern KwaZulu-Natal Moist Grassland (Gs 4) vegetation type (image obtained from the TBIA).

This vegetation type is predominantly found in the northern and north-western regions of the KwaZulu-Natal Province, where it forms a discontinuous rim around the upper Thukela Basin and is situated almost entirely within the catchment of the Thukela River. The most extensive areas are in the vicinity of Winterton, Bergville, Fort Mistake, Dannhauser, Dundee, north of Ladysmith and west of Newcastle. Present at altitudes between 1 040–1 440 m.

The vegetation type's status is categorised as Least Threatened. About 6% has been transformed by plantations or cultivated land. The conservation target of the vegetation type is 23% of which only 2% is statutorily conserved in the Sterkfontein Dam Nature Reserve and Ncandu Nature Reserve. The TBIA (Appendix H) compared the SANBI NEW POSA to relevant literature detailing Protected and Red Data plant species lists to compile a list of Red Data plant species that may potentially occur within the study area. There are no historical floral records around 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, Conservation Areas, and Groundcover.

FAUNA

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

As mentioned earlier, the DFFE screening tool notes the animal theme as being of medium sensitivity. The TBIA lists historical records of faunal species recorded around the study area (see Appendix H).

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

(Information extracted from the Environmental Impact Assessment Report and Environmental Management Programme Report of the RBX-KZN mining permit, 2017)

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening palaeontologically sensitive areas at the onset of a project. When the footprint of the proposed 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.

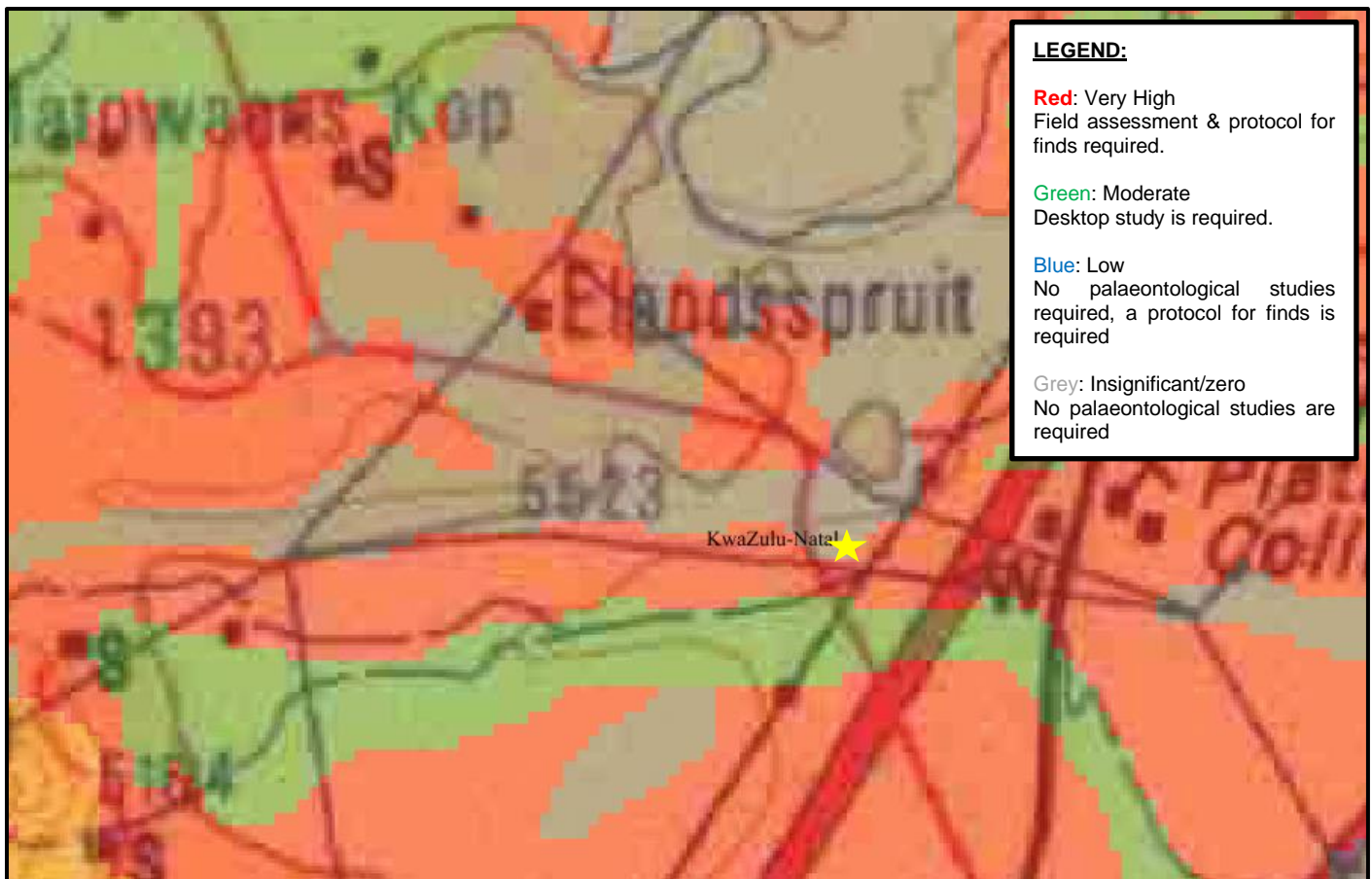


Figure 19: The SAHRA palaeontological sensitivity map shows the proposed footprint (yellow star) falls in an area of Insignificant/Zero (grey) concern.

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 earmarked area is in Ward 24 of the Alfred Duma Local Municipality (ADLM). The ADLM was formed after the redetermination of boundaries in terms of section 21 of the Local Government, the Municipal Demarcation Act 1998 (Act No.27 of 1998) which resulted in municipalities being disestablished and their former areas of jurisdiction merged under new municipalities to be established. The Emnambithi/Ladysmith Municipality and Indaka Local Municipality are part of the municipalities that have merged to form the new Alfred Duma Local Municipality.

The ADLM is one of three municipalities in the uThukela District with Ladysmith, Ezakheni, Steadville and Colenso/Nkanyezi as main urban areas. Ladysmith is the primary urban area, located along the N11 national route, 20 kilometres off the N3 national route.

According to the ADLM IDP (2020/2021) the area has a population of 356 276 with an average annual population growth rate of 0.015%. South Africa is estimated to have

an average annual growth rate of 1.17% and the growth rate of the ADLM it therefore well below the national growth rate.

Gender Profile

The age/sex distribution of the ADLM shows that 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 area. 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.

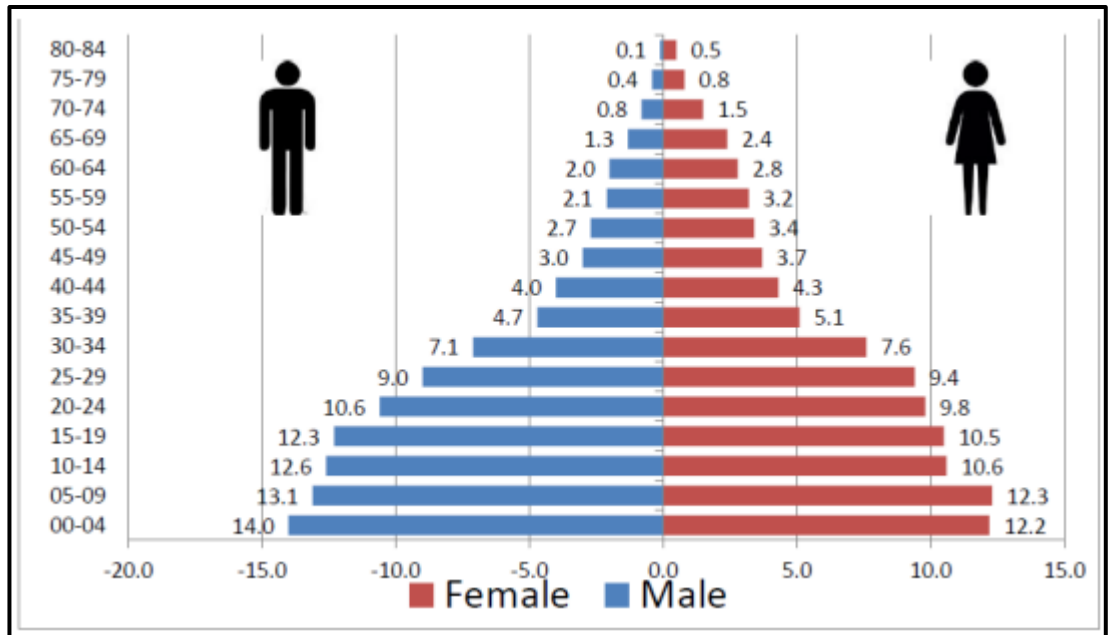


Figure 20: Gender and age distribution profile (image obtained from the ADLM IDP 2020/2021).

Population Profile

The municipality is highly dominated by the black African population group which makes up over 80% of the municipality's population structure followed by Coloureds, Indians, and white people last.

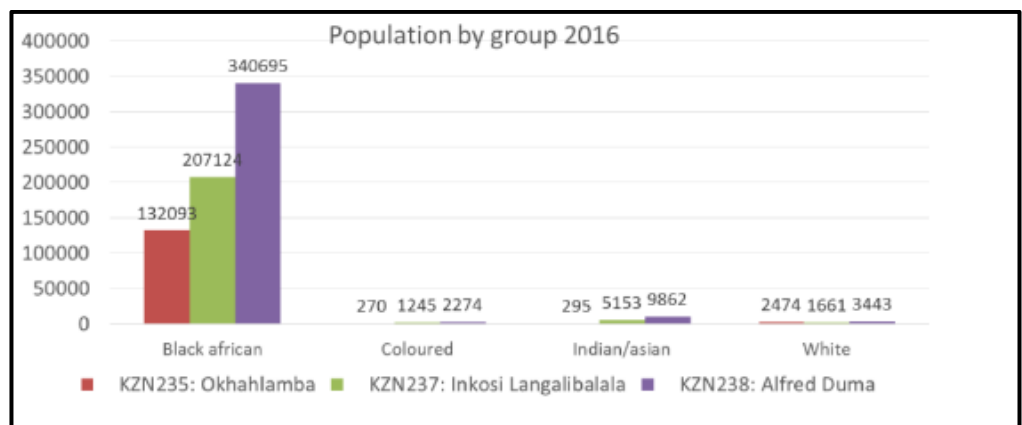


Figure 21: Racial distribution of the ADLM (image obtained from the ADLM IDP 2020/2021).

Economic Profile

Although agriculture occupies the largest amount of land in the Municipality, its significance as an economic sector has declined over time. The importance of the manufacturing sector has increased substantially in both contributions to total output and as a source of employment. However, this sector has itself experienced variable trends with signs of decline becoming evident in the last few decades. The growing sub-sector in the employment of people in Alfred Duma is the Retail, Accommodation and catering which are currently employing almost 24% of the economically active population, followed by General Government employing 18% and Community and Personal Services employing 16%. These three main employment contributors fall under the tertiary sector.

The employment status of the Alfred Duma Local Municipality depicts that most of the population are not economically active ($\pm 40.6\%$). The high number of unemployed individuals in the municipality can mainly be attributed to lack of education, poor healthcare, and the unavailability of employment opportunities in both the private and public sectors of the municipality.

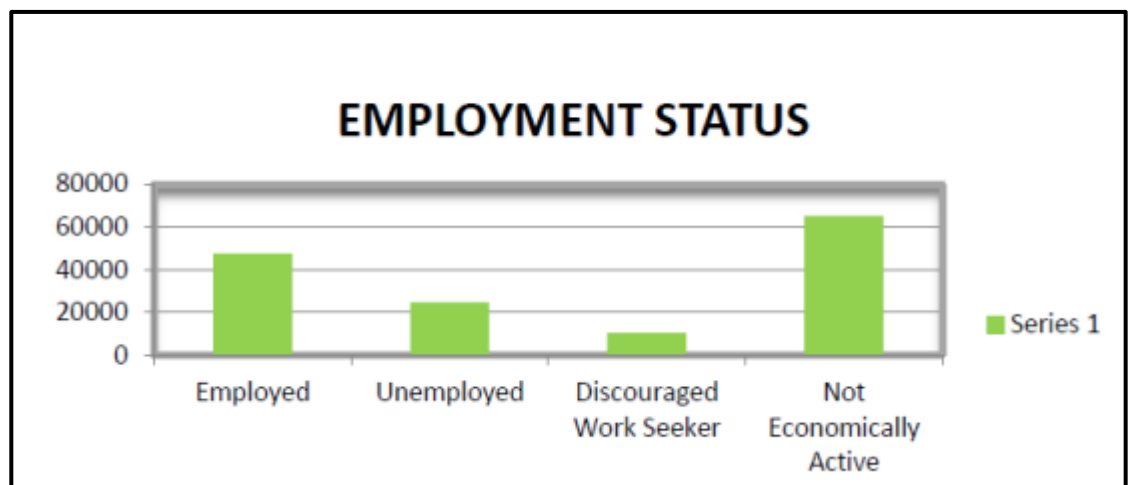


Figure 22: Employment status of the ADLM (image obtained from the ADLM IDP 2020/2021)

In Alfred Duma as of 2015, close to three fifths (59%) of the population accounted for the working age bracket (15-64 years). The unemployment rate was 38% in 2015.

In the ADLM 46.3% of the population do not earn an income while almost 22% earns between R 1-R4800 per year, which is less than R 400 per month. 39.6% of the income earning population earn below R 1 600 per month. Only 7.5% of the population earn over R 1 600 per month, which indicates that a large percentage of the Alfred Duma population is living in poverty. As a result, the urbanisation that is currently taking place is the urbanisation of poverty.

Education Levels

Alfred Duma has a population with low literacy and education levels with about 75% of the population not having access to matric certificates. 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.

(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 earmarked area:

Table 8: 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	YES	-	The Elandslaagte Truck stop is ±230 m east of the proposed stockpile area, opposite the N11.
Light industrial	-	NO	-
Medium industrial	-	NO	-
Heavy industrial	-	NO	-
Power station	-	NO	-
High voltage power line	YES	-	A high voltage Eskom power line runs past the proposed area with the nearest pylon being ±100 m from the western boundary of the site.
Office/consulting room	-	NO	-
Military or police base / station / compound	-	NO	-
Spoil heap or slimes dam	YES	-	The spoil heaps of the coal mine (opposite the N11) are ±260 m east of the stockpile area.
Quarry, sand or borrow pit	YES	-	The existing mining area on the property is ±200 m from the proposed stockpile area.
Dam or reservoir	-	NO	-
Hospital/medical centre	-	NO	-
School/ crèche	-	NO	-
Tertiary education facility	-	NO	-
Church	-	NO	-
Old age home	-	NO	-
Sewage treatment plant	-	NO	-
Train station or shunting yard	-	NO	-
Railway line	-	NO	-
Major road (4 lanes or more)	-	NO	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	-
Landfill or waste treatment site	-	NO	-
Plantation	-	NO	-
Agriculture	YES	-	The proposed 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 was identified within 500 m (south) of the proposed area.
Nature conservation area	-	NO	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
Mountain, hill, or ridge	YES	-	The hill being mined is within 500 m of the stockpile area.
Museum	-	NO	-
Historical building	-	NO	-
Protected Area	-	NO	-
Graveyard	-	NO	-
Archaeological site	-	NO	-
Other land uses (describe)	-	NO	-

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The site specific topography has a gradual sloping landscape, slanting mainly in a south-eastern direction. To the west of the focus area the topography continues an upwards slope where 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 1 145 meters with the highest point recorded at the north-western corner (A) at 1 162 m and the lowest point recorded at the south-eastern corner (1 136 m). The average loss of elevation from the highest to the lowest point is ~26.8 m with an average slope (south-easterly) of 1.2% (Max. Slope: 3.8%).

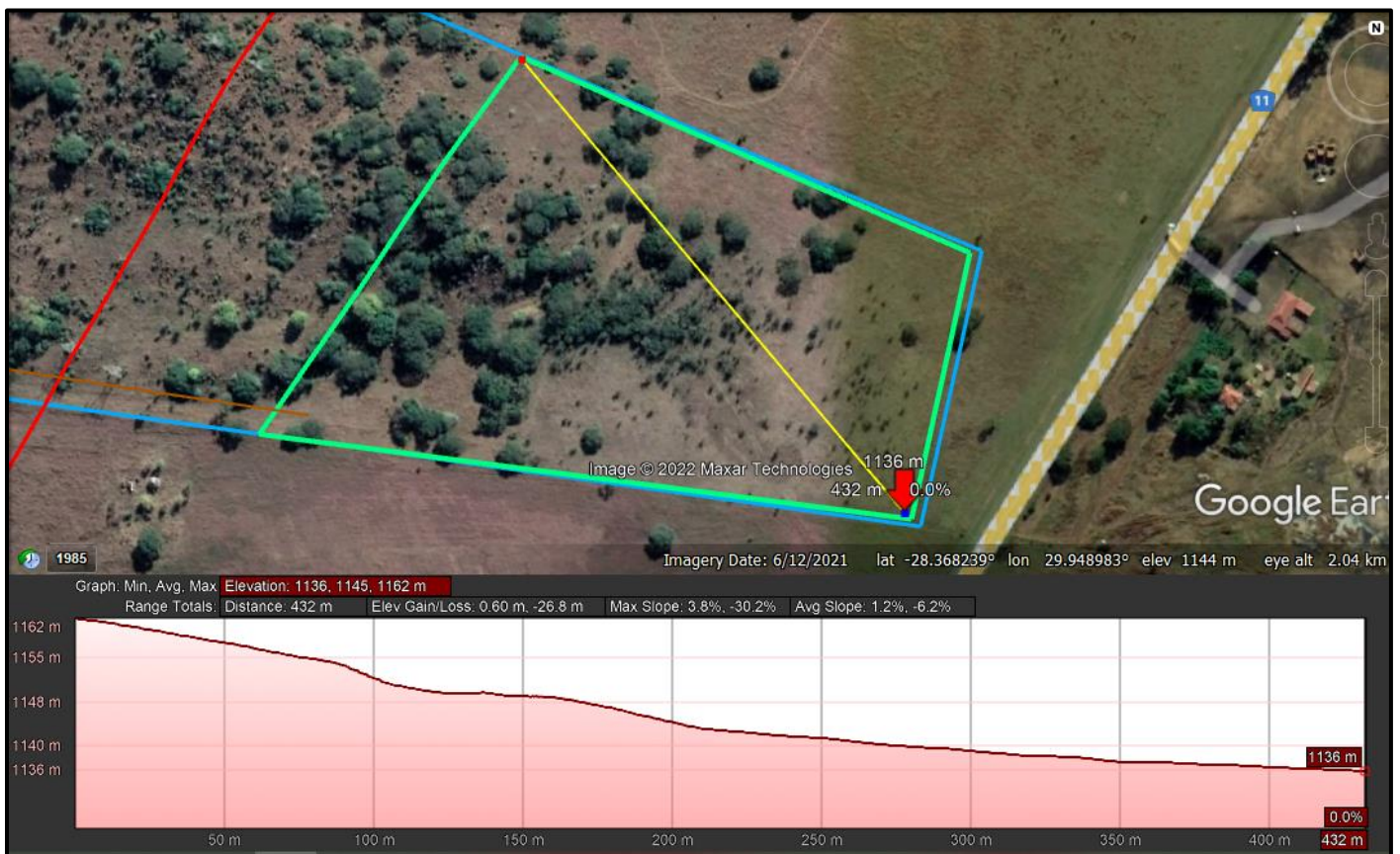


Figure 23: Elevation profile of the proposed site (Image obtained from Google Earth).

The use of the earmarked area for the stockpiling of materials will not have an impact on the topography of the farm as no areas need to be excavated. The operation of the area will merely require the removal of topsoil (± 300 mm) that will be returned upon closure of the site. The potential impact of the proposed project on the topography of the area is deemed insignificant. If the proposed closure actions, as prescribed in the EMPR are implemented the project will have no residual impact on the topography.

SITE SPECIFIC VISUAL CHARACTERISTICS

The following figure shows the viewshed analysis 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 stockpile area will be visible. The analysis shows that the upper part of the stockpile area will have a medium visual impact as the area will mainly be visible from higher laying areas towards the north, east and south. The lower part of the area will have a low visual impact as it will only be visible from a few areas mainly towards the south. Although the proposed area will be visible within the above mentioned ± 10 km radius, it is proposed that as the distance between the development and the observer increases the visual impact will decrease.



Figure 24: Viewshed analysis of the highest corner (A) of the earmarked area where the green shaded areas indicate the positions from where the area (green polygon) will be visible. (Image obtained from Google Earth).

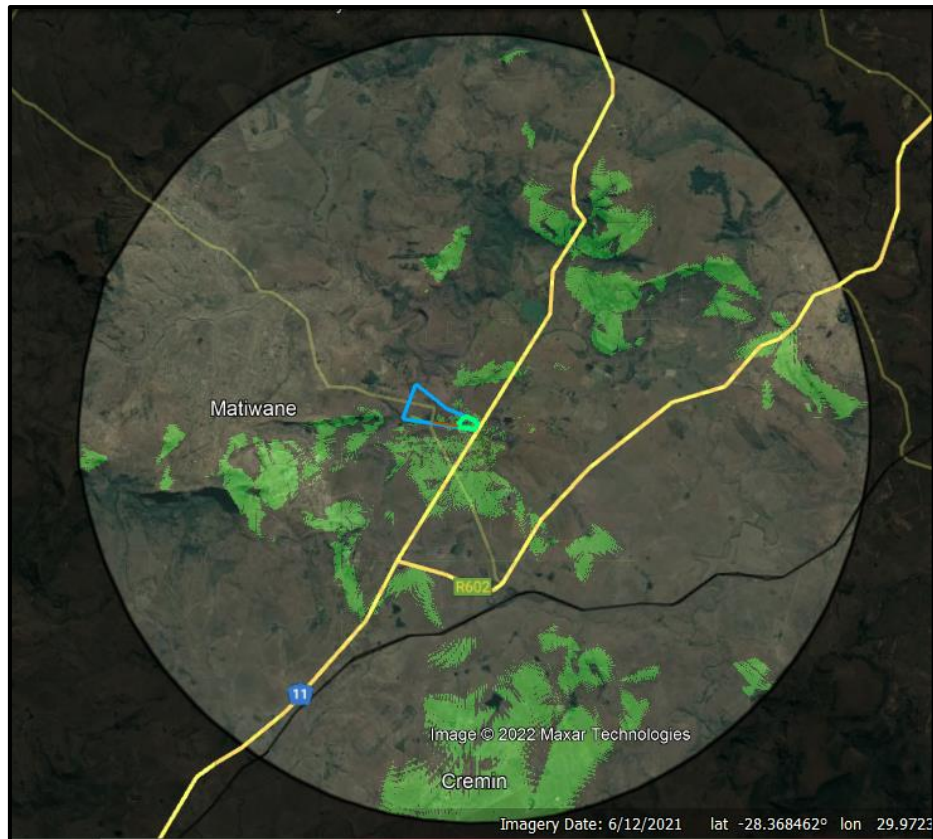


Figure 25: Viewshed analysis of the lowest-lying corner (C) of the earmarked area where the green shaded areas indicate the positions from where the area (green polygon) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The nearest residential dwellings to the earmarked area are those of the surrounding neighbour (Me. Khumalo) at ± 530 m south-west, while the Elandslaagte Truck Stop is ± 220 m east of the site (opposite the N11). The Collings Pass Road borders the area ± 645 m to the west, with the N11 passing the property ± 50 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. Although the quarry isn't operational, it has the potential to also contribute dust to the receiving environment.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed 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 area will be blown away from the residence of Me Khumalo, the N11, as well as the Truck Stop. Should the Applicant

implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance. However, should the quarry and the stockpile area be operational the cumulative air quality impact 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 stockpile area will contribute to these daily noise levels. The proposed activity will contribute noise generated because of crushing and screening as well as transporting of material. As mentioned earlier, the work hours of the site 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. Should the quarry and the stockpile area be operational the cumulative noise impact is deemed to be of 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 will only be of temporary nature. The impact is therefore deemed acceptable with the provision that the mitigation measures and monitoring programmes (specified in this document) are implemented.

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 stockpile area will not have an impact on the geology of the area and if the mitigation measures regarding stormwater management is implemented on site, no impact could be identified that may negatively impact the soil.

SITE SPECIFIC HYDROLOGY

(Information extracted from the Wetland Assessment Report compile by Eco-care Consultancy (Pty) Ltd during the mining permit application of the RBX-KZN mining permit, 2017. See Appendix G for a copy of the specialist study)

An unnamed non-perennial watercourse drains most of the upper reaches of the V60C Quaternary Catchment Area. A portion of this watercourse traverse the focus area of the study and the wetland types associated with this watercourse, located south of the existing quarry, formed the focus of the wetland assessment study. This non-perennial water course originates as numerous smaller tributaries within the vicinity of the Matiwane informal settlement. After the union of these smaller tributaries the non-

perennial watercourse flows mostly in an easterly direction for the next 4 km (passing just south of the proposed stockpile area). Smaller tributaries originate along the higher lying ridges and hills to the north, running mostly parallel with the watercourse. Just after the N11 road crossing the non-perennial watercourse changes direction and flows in a south-easterly direction for approximately 6.13 km, after which the watercourse converges with another non-perennial watercourse (just south of the crossing of the R602 road). The converged non-perennial watercourses flow in an easterly direction for approximately 3.9 km to finally terminate into the Sundays River.

These non-perennial watercourses are highly seasonal and will contain surface water, for mostly short periods of time, during the rainy season with small, isolated pools remaining for some time. Water flow, feeding in from the catchment area as well as within the non-perennial watercourse, is mainly in the form of natural-surface flow with subsoil water flow contributing much less to the water budget. Transformations and other disturbances within the catchment area (especially within the higher lying areas around Matiwane including the smaller tributaries found in this area) have caused alterations in flow volumes, velocity and patterns resulting in a higher volume of water flowing at higher velocities for short periods of time. This in turn has resulted in the alteration of the morphology of this non-perennial watercourse creating for example; localised, deep erosion channels and areas with transformed vegetation structures, subsequently rendering this non-perennial watercourse incapable to slow down and retain some water for longer (more natural) periods of time.

Only one small farm (gravel) dam is located within the non-perennial watercourse itself with four farm dams located within the catchment area especially within smaller tributaries and drainage lines located towards the eastern half of the watercourse. These relatively small farm dams rarely exceed 300 000 m³. Such a small farm dam is located just west of the focus area. Natural channels within this watercourse are normally moderate to shallow in depth and narrow in width and are locally accompanied by overspill or flooding sections adjacent to these channels comprising of typical wetland vegetation adapted to seasonal and temporary periods of soil saturation.

The wetland area delineated by the specialist covered an area of approximately 367.72 ha and consisted of two HGM (Hydrogeopmorphic) units; Channelled Valley Bottom Wetland (~365ha) and a Hillslope Seepage (~2.72ha). The wetland area comprises approximately 27% of the catchment area (~1329 ha). The catchment area is characterised by an average slope of 5.478%, generally in a north to south direction (N to S average slope: 6.75%). The upper parts (western portion) of the catchment area tend to be steeper and more rugged with an average slope (mostly in a west to

east direction) of 7.175% whilst to latter part, including the wetland area is much more gradual with a gentle west to east slope of ~1.775%.

The stream/watercourse flowing through the channelled valley bottom wetland is regarded as non-perennial as it does not flow continuously throughout the year, although pools may persist. The non-perennial stream can furthermore be described as intermittent as water flows for a relatively short time of less than one season's duration (i.e., less than approximately 3 months), at intervals varying from less than a year to several years.

This Channelled Valley Bottom Wetland is never/rarely inundated except for isolated areas within the channel where pools of water are artificially retained for relative short periods of time. The bulk of the wetland is temporary saturated with some area, mostly fringing the channel, indicating signs of permanent saturation. Water inputs are mainly from surface flow resulting from flooding (over bank flow and lateral flow) as well as runoff from the surrounding valley slopes (including from the Hillslope Seep). Sub-surface flow contributes to a lesser extent to the total water input and output of the wetland. Water output is mainly through drainage, especially along the main channel. Effects such as residential development, severe overgrazing and ineffective cultivation technique within the upper parts of the catchment area resulted in a transformation of the Channelled Valley Bottom wetland through bank & bed erosion of the 'natural' channel, the formation of new 'artificial channels (north-western portion), rill erosion, a change in the hydrological regime (small farm dam located in the north-western portion and channel obstruction such as culverts and crossing points has also contributed to this) and within the vegetation composition.

The Hillslope Seepage is never/rarely inundated with surface water. The largest portion of this wetland is temporary saturated with only a small portion being seasonally saturated. This HGM unit is connected to the channelled valley bottom wetland, however outflow is not contained within a channel but rather occur as diffuse surface flow. Due to this HGM unit's association with specific geological formations and due to its topographical position, this unit is fed by rain-derived water, surface runoff seeping down-slope (as subsurface flows) as well as, although to a small extent, groundwater discharge. This hillslope seepage is not as much affected by the greater catchment area of the delineated wetland, but rather by the more immediate surroundings especially the dolerite koppie's south facing midslope and crest as well as in situ impacts. Hydrological inputs have been slightly affected by the presence of the quarry (probably resulted in a slight/unnoticeable decrease). Furthermore, a slight change in the hydrological character of the hill slope seepage is a result of a decrease in roughage (change in vegetation due to overgrazing and trampling) and low to

moderate levels of sheet erosion (have been stabilised by vegetation). A small and very shallow gully (still in initiating phase) have been noted just below the seasonal saturated zone and is probably also the result of roughage removal due to overgrazing. Two power lines also traverse the wetland near this eroded area and the disturbance around these pylon areas may also be responsible for the formation of this feature. These alterations have most likely caused the wetland to retain moisture for shorter periods of time releasing more water at faster rates into the valley bottom wetland.

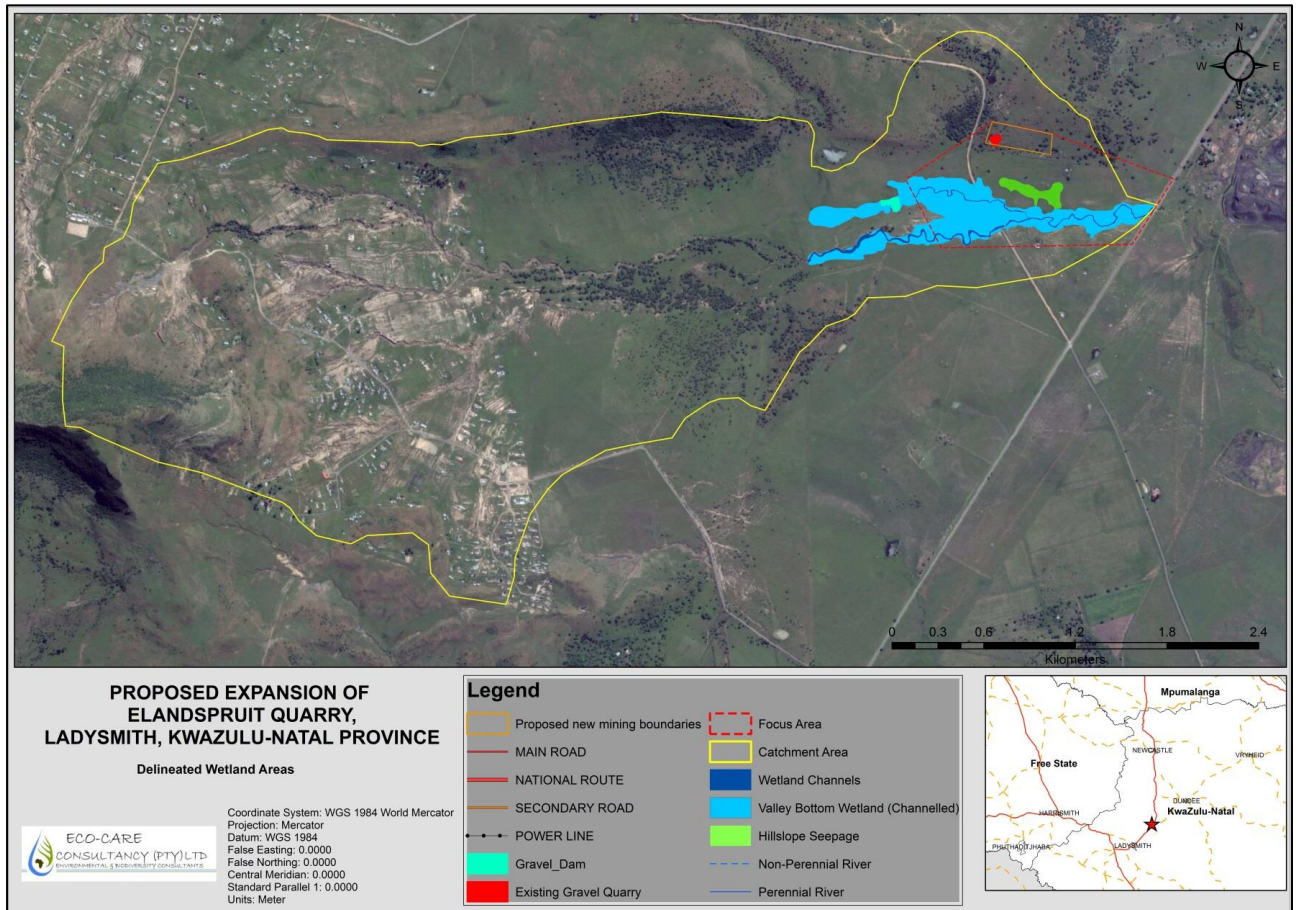


Figure 26: Map showing the delineated wetland relative to the catchment area (image obtained from the Wetland Assessment Report, 2017)

The wetland specialist used the 'Preliminary Guideline for the Determination of Buffer Zones for Rivers, Wetlands and Estuaries' (Macfarlane et al., 2014) to determine buffer areas for the wetland units. The results from this tool suggest that a 50 m buffer may be used on the wetland system. It is however recommended that this buffer area is increased to 70 m as the tool does not take into consideration the condition of the terrestrial vegetation comprising the buffer area. The following figure shows the wetland system with the proposed 70 m buffer area in relation to the mining permit area that was submitted by RBX-KZN in 2017.

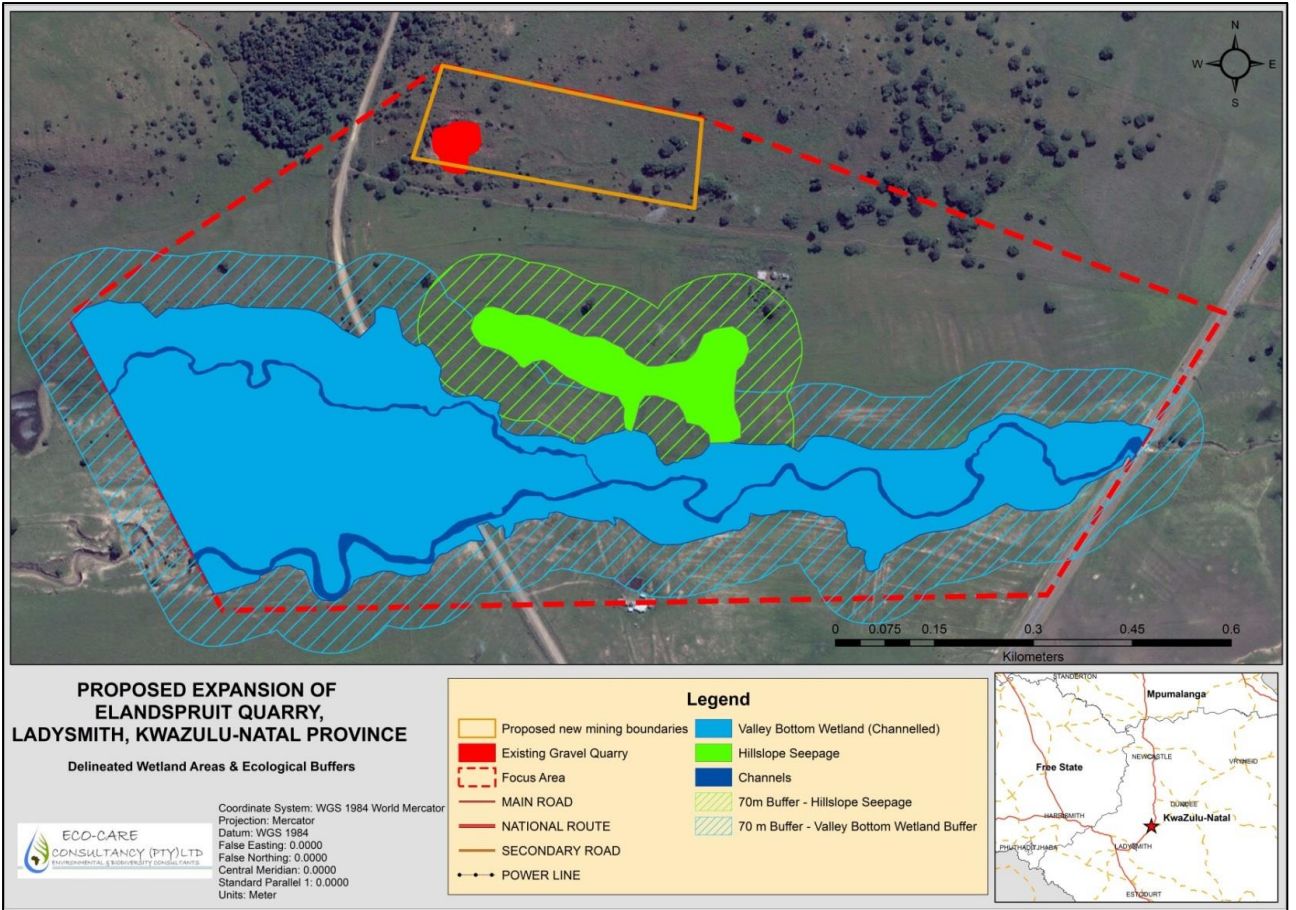


Figure 27: Map showing the applied 70 m ecological buffers around the HGM units (image obtained from the Wetland Assessment Report, 2017).

If the 70 m buffer is compared to the proposed stockpile area, the earmarked site also falls outside the proposed buffer as shown in the following figure.

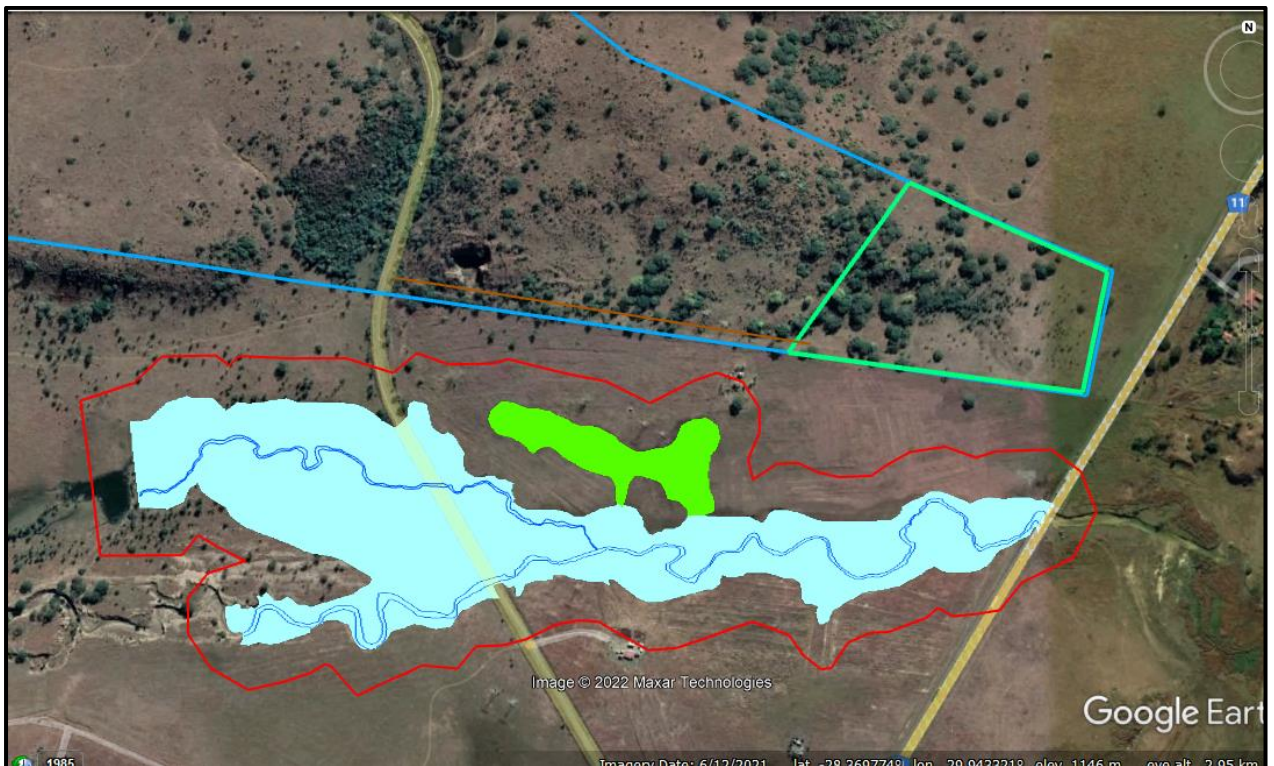


Figure 28: Map showing the applied 70 m ecological buffer (red polygon) around the HGM units in relation to the proposed stockpile area (image obtained from Google Earth).

The footprint of the proposed stockpile area is more than 160 m from the outer boundary of the Hillslope Seepage. As illustrated in the previous figure, the stockpile area will not extent over the identified HGM units even if the 70 m buffer area is implemented. The impact of the proposed stockpiling activities on the hydrology/geohydrology of the surrounding area and specifically the hillslope- and valley bottom wetlands is believed to be of low significance should the mitigation measures proposed in this document be implemented on site.

An application will be submitted to the DWS to allow the activities within 500 m of the wetland.

SITE SPECIFIC TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER

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

The Terrestrial Biodiversity Impact Assessment (TBIA) notes that the study area mainly consists of open grassland with a patch of woody trees. No species of conservation concern (SCC) were observed by the specialist. Few alien invasive species were recorded during the field surveys within the actual study site but there were more species in the surrounding area.

Sensitivity Scale:

The TBIA notes that of the four sensitive plant species that were obtained from SANBI, none were observed within the site. Therefore, the site was observed to be of Medium Ecological Function with Medium Conservation Importance when looking at the sensitivity scale and the conservation status of the vegetation of the area. See following definitions that defines the specialist's findings:

- ❖ **Medium Ecological Function:** Relatively important ecosystems at gradients of intermediate disturbances. An area may be considered of medium ecological function if it is directly adjacent to sensitive/pristine ecosystem.
- ❖ **Medium Conservation Importance:** Ecosystems with intermediate levels of species diversity without any threatened species. Low-density development may be accommodated, provided the current species diversity is conserved.

Results:

The TBIA notes that the vegetation of the study area has been exposed to a very low disturbance. However, of the species recorded on site (see following table) none are protected.

Table 9: List of plants recorded during the site inspection (table obtained from the TBIA).

Species	Common Name	Growth Form	IUCN Conservation Status
<i>Vachellia sieberiana</i>	Paperbark Thom Tree	Tree	Least Concern
<i>Vachellia karoo</i>	Sweet Thom Tree	Tree	Least Concern
* <i>Melia azedarach</i>	Syringa	Tree	Least Concern
* <i>Lantana camara</i>	Tick berry	Shrub	Least Concern
* <i>Solanum mauritianum</i>	Bugweed	Shrub	Least Concern
<i>Hyparrhenia hirta</i>	Common Thatching Grass	Grass	Least Concern
<i>Themeda triandra</i>	Red Grass	Grass	Least Concern
<i>Aridistida congesta</i>	Tassel Three Awn Grass	Grass	Least Concern
<i>Cynodon dactylon</i>	Couch Grass	Grass	Least Concern

Sensitivity Analysis:

The specialist found that the sensitivity within the study area was predominantly low-medium due to the minimal disturbance within the proposed stockpile area and surroundings.

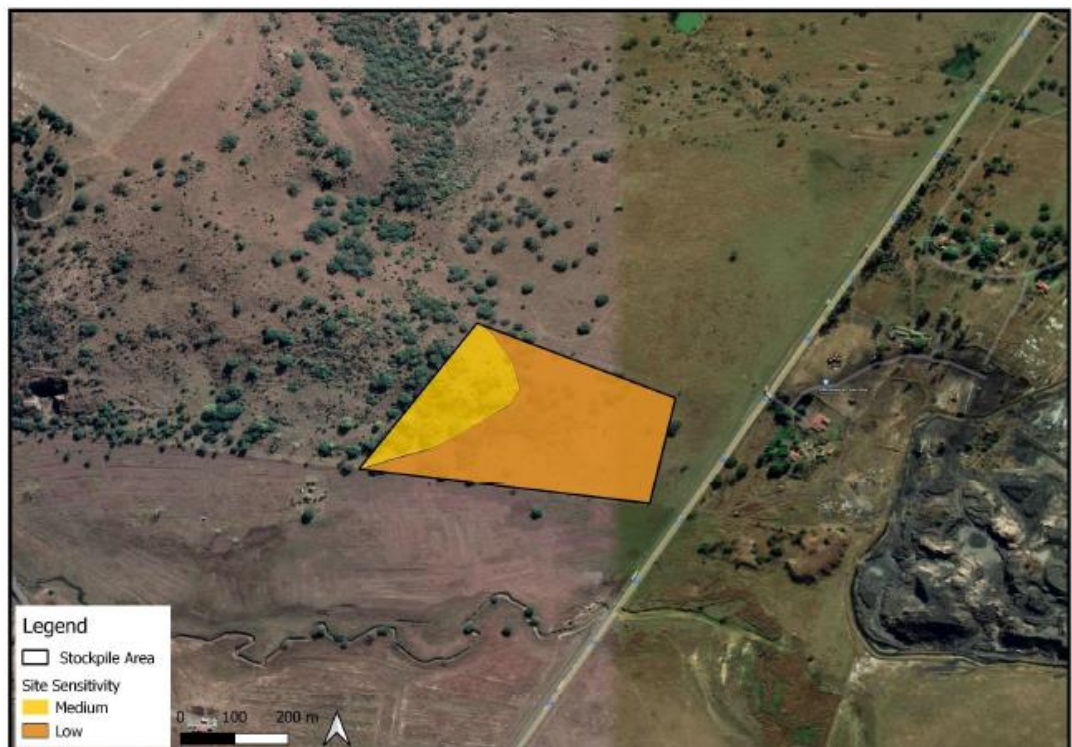


Figure 29: Site sensitivity of the study site (image obtained from the TBIA).

Conclusion and Recommendations:

The TBIA concludes that the proposed stockpile area will be located on a previously natural grassland site of good ecosystem health. The site shows medium sensitivity, but disturbance should be limited strictly to the specified activities associated with the proposed stockpile development. From the survey conducted, there are no evident fatal flaws that would prevent the development from being authorised, nor being conducted in a sustainable manner.

SITE SPECIFIC FAUNA

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

Birds are regarded as one of the most useful bioindicators, and they have been used extensively as models to determine ecosystem function (see review Koskimies 1989; Potts et al. 2014; Bregman et al. 2016). High levels of human disturbance as well as habitat transformation and degradation on adjacent areas would result in the disappearance of the more elusive bird species. The TBIA notes that of all the sensitive avifauna and faunal species obtained from SANBI, none were observed on site. Although no mammal and reptile species were observed during the survey, observations were made of five bird species (following table) which were recorded, and these were generalist species.

Table 10: List of birds recorded during the site inspection (table obtained from the TBIA).

Species	Common Name	IUCN Conservation Status
<i>Bostrychia hagedash</i>	Hadada Ibis	Not Evaluated
<i>Corvus albus</i>	Pied Crow	Not Evaluated
<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	Note Evaluated
<i>Myrmecocichla formicivora</i>	Ant-eating Chat	Not Evaluated
<i>Oenanthe familiaris</i>	Familiar Chat	Not Evaluated

The report concludes that from the direct survey conducted, no species of Conservation Concern were observed. From the survey conducted, there are no evident fatal flaws that would prevent this development from being authorised, nor being conducted in a sustainable manner.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Heritage Impact Assessment for the Proposed Elands Spruit Quarry, Ladysmith, Kwa Zulu Natal Province, 2017 and the Palaeontological Desktop Study of a proposed new quarry extension on the Remaining extent of the farm Elands Spruit 5523 near Ladysmith, KZN Province, 2017)

During the EIA for the RBX-KZN mining permit, HCAC – Heritage Contracts and Archaeological Consulting was appointed to do a Heritage Impact Assessment of the study area. The HCAC report (2017) concluded that:

- ❖ No standing structures older than 60 years occur in the study area;

- ❖ No archaeological sites or material was recorded during the survey. No Stone walls attributed to the Iron Age were noted and no Stone Age artefacts of significance were noted;
- ❖ An independent paleontological study was conducted by Rossouw (2017) who found that *“The proposed development footprint is located within the outcrop area of palaeontologically significant Eccca Group sediments, and on palaeontologically insignificant dolerite intrusions in close proximity to a contact metamorphic zone with very low probability of fossil preservation. Given the position of the study area, the likelihood of impact on potential Quaternary fossil exposures is considered unlikely. The overall significance rating of the superficial component (Quaternary overburden) is regarded as low”*.
- ❖ In terms of Section 36 of the Act no burial sites were recorded;
- ❖ Long term impact on the cultural landscape is negligible as study area has previously been subjected to mining and earth moving activities. Visual impacts to scenic routes and sense of place are also considered to be low due to the existing developments in the area;
- ❖ There are no battlefields or concentration camp sites in the development footprint. Known battlefield sites occur in the greater area but will not be impacted on by this development.

A Needs and Desirability Application Form was submitted to AMAFA in August 2022 to inform them of the proposed stockpiling project and obtain their comments. The project was presented at the AMAFA HOC meeting on 17 August 2022. Following this meeting, AMAFA supports the project if the development stays within the limits of the general stipulated conditions and mitigation measures as listed below:

1. The KwaZulu-Natal Amafa and Research Institute should be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice.
2. No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute.
3. Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist.
4. Should any remains, that could potentially be human remains be found on-site, the South African Police Service (SAPS) should be contacted and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu-Natal Amafa and Research Institute.

5. No activities are allowed within 50 m of a site that contains rock art.
6. Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage and environmental (NEMA) legislation.
7. The committee resolved not to object to the development within the limits of the general stipulated conditions and mitigation measures.

Due to the nature of the project and the fact that it will not disturb any bedrock the potential impact of the proposed project on archaeological and/or palaeontological remains is deemed insignificant. The above conditions and mitigation measures proposed by AMAFA was incorporated into the EMPR that accompanies this document.

SITE SPECIFIC INFRASTRUCTURE

No infrastructure exists in the proposed 10.5 ha footprint. Infrastructure in proximity to the proposed footprint include Collings Pass Road, the farm tracks to be used by the contractor, the Eskom power line, and the farm fences. A (empty) hut is within 80 m to the earmarked footprint on the bordering property, the Elandslaagte Truck Stop is ± 230 m away (opposite the N11) and the coal mine ± 390 m. Should the mitigation measures proposed in this document be implemented the existing infrastructure on the farm/neighbouring properties will not be impaired.

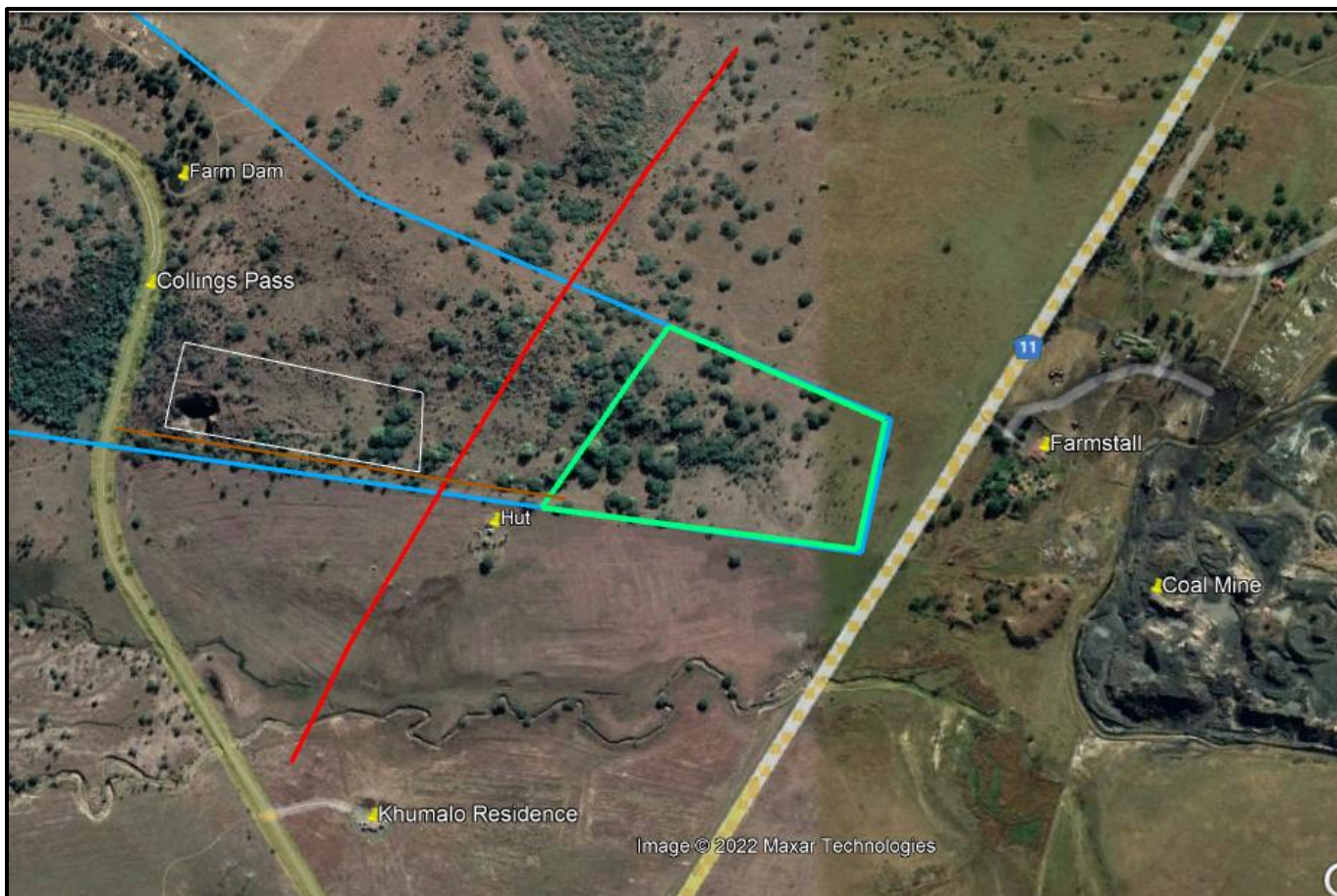


Figure 30: Satellite view showing the structures near the stockpile area (green polygon) where the white block indicates the mining permit area, the light yellow line shows Collings Pass Road, the brown line the farm track, red line the Eskom power line, the hut, Khumalo residence, Elandslaagte Truck Stop, and coal mine are indicated by the yellow markers (image obtained from Google Earth).

(d) Environmental and current land use map.

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

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 for duration of the project

Severity	Duration	Extent	Consequence			Likelihood	Significance
			Probability	Frequency			
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: None	
3	4	1	2.6	5	5	5	13

Visual intrusion because of site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
3	4	2	3	5	5	5	15

Potential impact on vegetation and/or protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	4	4	4	3	2	2.5	10

Potential impact on fauna within the footprint

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium					Degree of Mitigation: Full		
4	4	2	3.3	3	4	3.5	11.5

New job opportunities because of the operations (Positive Impact)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			Alternatives: S1 & T1 & T2		Degree of Mitigation: N/A		
4	4	5	4.3	5	5	5	22

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion caused by activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
3	4	2	3	5	5	5	15

Loss of stockpiled topsoil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	4	1	2.6	4	2	3	7.8

Dust nuisance because of the disturbance of soil

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
2	1	2	1.6	5	5	5	8

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
2	1	1	1.3	4	5	4.5	5.9

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	4	2	3	5	2	3.5	10.5

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	4	2	3.3	3	4	3.5	11.5

Potential erosion of denuded areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	4	1	2.6	5	2	3.5	9.1

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	4	2	3.3	4	4	4	13.2

Potential impact on the wetland system

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	5	2	3.6	2	1	1.5	5.4

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	4	2	3	5	5	5	15

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
2	4	2	2.7	4	5	4.5	12.2

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	1	2.6	4	4	4	10.4

Infestation of the area with invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	5	4	4	5	4.5	18

Potential damage to Eskom power line

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
4	4	4	4	3	1	2	8

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	5	4	4	5	4.5	18

Degradation of the access road

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	2	3	4	5	4.5	13.5

CUMULATIVE IMPACTS:

Cumulative dust nuisance when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
4	4	2	3.3	5	5	5	16.5

Cumulative noise nuisance when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
3	4	3	3.3	5	5	5	16.5

Cumulative visual impact when quarry and stockpile area are developed

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
4	4	2	3.3	5	5	5	16.5

Cumulative impact on vegetation cover when quarry and stockpile area are developed

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Partial		
4	4	4	4	5	2	3.5	14

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	4	4	4	5	5	5	20

Cumulative impact on fauna when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
4	4	2	3.3	4	4	4	13.2

Cumulative impact on job opportunities when quarry and stockpile area operate

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			Alternatives: S1 & T1 & T2		Degree of Mitigation: N/A		
5	4	5	4.6	5	5	5	23

REPLACING THE TOPSOIL AND VEGETATING THE DISTURBED AREA:

Decommissioning and removal of the site infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1		Degree of Mitigation: Full		
1	3	1	1.6	5	5	5	8
Rating: Medium-High			Alternatives: S1 & T2		Degree of Mitigation: Full		
3	5	1	3	5	5	5	15

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	5	3	3.6	5	5	5	18

Potential impact associated with litter/waste left at the area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2		Degree of Mitigation: Full		
3	5	1	3	4	5	4.5	10.5

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

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			Alternatives: S1 & T1		Degree of Mitigation: N/A		
3	5	1	3	5	5	5	15

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

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 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 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 each 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:

$$\text{Environmental Significance} = \text{Overall Consequence} \times \text{Overall Likelihood}$$

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information, and the outcome can be positive or negative. Several factors can be used to determine consequence.

For determining the environmental significance in terms of consequence, the following factors were chosen **Severity/Intensity, Duration and Extent/Spatial Scale**. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects 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 11: 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 12: 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 13: 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 14: Example of calculating overall consequence.

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

Determination of Likelihood:

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

Determination of Frequency

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

Table 15: 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 16: 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

Rating	Description
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 17: 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 18: 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 19: 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	Implement monitoring. Investigate mitigation measures and improve	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Significance	Low	Low-Medium	Medium	Medium-High	High
		determine potential increase in risk. Where possible improve	management measures to reduce risk, where possible.		

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 or 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 several 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.

Refer to Part A(1)(h)(i) *Details of the development footprint alternatives considered*, for an explanation on the development alternatives that were considered. The proposed project will result in the following positive impacts:

POSITIVE IMPACTS ASSOCIATED WITH PROJECT PROPSAL (S1 & T):

- ❖ The Applicant will be able to stockpile the material mined from the quarry on a relatively level part of the property, in proximity to the pit.
- ❖ No species of conservation concern needs to be disturbed to allow for the activity.
- ❖ Project related traffic will travel the smallest possible distance between the quarry, stockpile area and clients. With internal transport of the material contained to the farm (away from the public roads).
- ❖ The stockpile area will not have an impact on the wetland system on the bordering property.
- ❖ The project will create at least eight job opportunities.
- ❖ The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers.
- ❖ The landowner will receive compensation for the use of the land, and thereby diversity the income from the property.
- ❖ Temporary infrastructure will be used on site that will have a lesser impact than permanent structures.
- ❖ Upon closure the area will be returned to the landowner for agricultural purposes.

POTENTIAL NEGATIVE IMPACTS ASSOCIATED WITH THE PREFERRED PROJECT PROPOSAL (S1 & T1):

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

Table 20: 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.	❖ Visual intrusion because of site establishment.	❖ Medium-High ❖ Medium-High	❖ Low-Medium ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Visual intrusion caused by activities. ❖ Cumulative visual impact when quarry and stockpile area are developed. 	<ul style="list-style-type: none"> ❖ Medium-High 	<ul style="list-style-type: none"> ❖ Medium
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative Impacts 	<ul style="list-style-type: none"> ❖ Potential impact on vegetation and/or protected plant species. ❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed. 	<ul style="list-style-type: none"> ❖ Medium ❖ Medium 	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative Impacts 	<ul style="list-style-type: none"> ❖ Potential impact on fauna within the footprint. ❖ Potential impact on local fauna due to disturbance and loss of available habitat. ❖ Cumulative impact on fauna when quarry and stockpile area operate. 	<ul style="list-style-type: none"> ❖ Medium ❖ Medium ❖ Medium 	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Loss of stockpiled topsoil. ❖ Potential erosion of denuded areas. ❖ Erosion of returned topsoil after rehabilitation. 	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Low-Medium ❖ Medium 	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling and transporting of material. ❖ Cumulative Impact 	<ul style="list-style-type: none"> ❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate. 	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Medium-High ❖ Medium-High 	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling and transporting of material. ❖ Cumulative Impact 	<ul style="list-style-type: none"> ❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate. 	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Medium ❖ Medium-High 	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium ❖ Medium
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling and transporting of material. 	<ul style="list-style-type: none"> ❖ Infestation of the topsoil heaps and stockpile area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. 	<ul style="list-style-type: none"> ❖ Medium ❖ Medium-High ❖ High 	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
<ul style="list-style-type: none"> ❖ Cumulative Impact ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Cumulative impact of invader plants in both the quarry and stockpile footprints. ❖ Infestation of the reinstated areas by weeds and invader plant species. 	<ul style="list-style-type: none"> ❖ Medium-High 	<ul style="list-style-type: none"> ❖ Low
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling and transporting of material. ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the area. 	<ul style="list-style-type: none"> ❖ Medium ❖ Medium ❖ Medium 	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. 	<ul style="list-style-type: none"> ❖ Potential impact on the wetland system. 	<ul style="list-style-type: none"> ❖ Low-Medium 	<ul style="list-style-type: none"> ❖ Low
<ul style="list-style-type: none"> ❖ Processing, stockpiling and transporting of material. 	<ul style="list-style-type: none"> ❖ Potential damage to Eskom power line. 	<ul style="list-style-type: none"> ❖ Low-Medium 	<ul style="list-style-type: none"> ❖ Low
<ul style="list-style-type: none"> ❖ Processing, stockpiling and transporting of material. 	<ul style="list-style-type: none"> ❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road. 	<ul style="list-style-type: none"> ❖ Medium-High ❖ Medium 	<ul style="list-style-type: none"> ❖ Low ❖ Low
<ul style="list-style-type: none"> ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Decommissioning and removal of the site infrastructure. 	<ul style="list-style-type: none"> ❖ Low-Medium (S1, T1) ❖ Medium-High (S1, T2) 	<ul style="list-style-type: none"> ❖ Low (S1, T1) ❖ Low-Medium (S1, T2)

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

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

TOPOGRAPHY

Rehabilitating/Landscaping of the Stockpile Area:

- ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the quarry as part of the rehabilitation of the excavation.
- ❖ 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 on the farm.

- ❖ 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.
- ❖ On completion of operations, all structures or objects shall be removed from the site.
- ❖ On completion of 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. Topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation:

- ❖ The site must have a neat appearance and at all times kept in good condition.
- ❖ All equipment must be stored neatly in dedicated areas when not in use.
- ❖ The EA holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the use of a specific area.
- ❖ All activities must be contained within the approved footprint 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 ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- ❖ Speed on the roads must be limited to 40 km/h to prevent the generation of excess dust.
- ❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to use.
- ❖ 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).

Noise Handling:

- ❖ The EA holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- ❖ No loud music may be permitted at the site.
- ❖ All 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).
- ❖ 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 use.
- ❖ 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 project plan must be such that topsoil is stockpiled for the minimum possible time.
- ❖ The topsoil must be placed on a levelled area, within the earmarked 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- ❖ Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- ❖ The temporary topsoil stockpiles must be kept free of invasive plant species.

- ❖ Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- ❖ Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- ❖ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- ❖ The EA holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- ❖ A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.
- ❖ Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- ❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

- ❖ A storm water management plan must be developed and implemented for the duration of the activities.
- ❖ Clearing of vegetation must be limited to the proposed stockpile footprint. No clearing outside of the minimum required footprint to take place.
- ❖ Stormwater must be diverted around the topsoil heaps and work areas to prevent erosion.
- ❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- ❖ The outflow of run-off water from the stockpile area 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 from the stockpile area may occur.
- ❖ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.

- ❖ Any erosion problems because of the proposed 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.
- ❖ The operation 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 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.

Potential Impact on the wetland system:

- ❖ A 70 m buffer must be maintained around the hillslope- as well as the valley bottom wetland areas throughout the lifespan of the activities.
- ❖ The clearing of natural and semi-natural grasslands must be kept to a minimum.
- ❖ 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:
 - The contractor must notify the 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.

TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER

Management of Vegetation Removal:

- ❖ The site boundaries must be clearly demarcated, and all operations must be contained to the approved area. The area outside the approved boundaries must be declared a no-go area, and all staff must be educated accordingly.
- ❖ 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.
- ❖ 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 wood can be donated to the landowner and/or community.
- ❖ 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.

Management of Invasive Plant Species:

- ❖ An invasive plant species management plan (Appendix J) 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 activities.
- ❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- ❖ All stockpiles must be kept free of invasive plant species.
- ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
 - The plants can be uprooted, felled, or cut off and can be destroyed completely.
 - The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

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.
- ❖ 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 (40 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.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

- ❖ All activities 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.
- ❖ The KwaZulu-Natal Amafa and Research Institute must be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice.
- ❖ No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute.
- ❖ Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist.
- ❖ Should any remain, that could potentially be human remains be found on-site, the South African Police Service (SAPS) must be contacted, and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu-Natal Amafa and Research Institute.
- ❖ No activities are allowed within 50 m of a site that contains rock art.
- ❖ Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage and environmental (NEMA) legislation.

LAND USE

Loss of agricultural land for duration of the project:

- ❖ The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the operational phase. If needed, unused/rehabilitated areas could revert to agricultural use once the cover crop stabilised.

EXISTING INFRASTRUCTURE

Managing the Power Line:

- ❖ An adequate no-go buffer (minimum 20 m) must be maintained around the power line as per Eskom standard that may only be traversed by the access road.
- ❖ Should the line be damaged, Eskom must immediately (within the first hour of occurrence) be informed.

Management of the Access Road:

- ❖ Access to and from the stockpile area shall not be permitted from the N11, unless authorised by SANRAL.
- ❖ 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 proposed activities must be repaired by the EA 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 equipment/vehicles must be restricted to 40 km/h on the access 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 the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively

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

- ❖ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- ❖ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- ❖ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a registered facility. Proof of safe disposal must be filed for auditing purposes.
- ❖ An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- ❖ Spills must be cleaned up immediately, within two hours of occurrence, by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. Proof must be filed.
- ❖ Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste.
- ❖ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a registered landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the stockpile 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 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 EA holder.
- ❖ When small volumes of wastewater are generated during the life of the site 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 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 stockpile area.

Storage/Handling of Hazardous Substances/Chemicals:

- ❖ Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- ❖ The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- ❖ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- ❖ The storage area must be out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest.
- ❖ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- ❖ Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.
- ❖ The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- ❖ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- ❖ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and not stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump.

Management of health and safety risks:

- ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law.
- ❖ Sanitary facilities must be located within 100 m from any point of work.

ix) Motivation where no alternative sites were considered.

Refer to Part A(1)(h)(i) *Details on the development footprint alternative considered* for an explanation why the proposed stockpile area cannot be moved from the current position.

x) Statement motivating the alternative development location within the overall site.

The proposed site (Table 3) was identified as the preferred alternative deemed to be the most practical and only viable site based on the following:

- ❖ The proposed stockpile area was identified over the most level and low-lying portion of the farm that was historically used for storage of material during previous road construction projects (vegetation cover re-established through succession).
- ❖ Due to the Eskom power line crossing through the property, the stockpile area cannot be moved to the west as it will encroach into the power line servitude.
- ❖ The Applicant already entered into a land use agreement with the landowner and prefers to keep the stockpile area near the quarry from where the material will be mined to reduce transport costs. Therefore, moving the stockpile area from the Remainder of the farm Elands Spruit No 5523, isn't deemed a viable or cost effective option.
- ❖ Should the stockpile area be moved to the south (onto the neighbouring property) it will move even closer to the wetland system that passes the area. The wetland report proposed that an ecological buffer of 70 m be maintained around the wetland system. Therefore the stockpile area shouldn't move (south) in the direction of the wetland. The proposed stockpile area (S1) is >70 m from the wetland system and therefore outside the ecological buffer.
- ❖ Fencing of the proposed stockpile area (S1) from the rest of the agricultural activities on the farm will be relatively easy when the impact is contained in the most eastern corner of the camp.
- ❖ The TBIA concluded that there are no fatal flaws that would prevent the development of the stockpile area (S1) from being authorised.

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, S1 and T1 showed a lesser impact on the receiving environment and were therefore identified as the preferred options.

(APPENDIX 1 SECTION 3(1)(i))

- 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.**

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 activity may have on the surrounding environment.

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

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Loss of agricultural land for duration of the project

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium				Alternatives: S1 & T1 & T2			
3	4	1	2.6	5	5	5	13

Visual intrusion because of site establishment

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium				Alternatives: S1 & T1 & T2			
2	4	2	2.6	2	5	3.5	9.1

Potential impact on vegetation and/or protected plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low				Alternatives: S1 & T1 & T2			
2	4	1	2.6	1	2	1.5	3.9

Potential impact on fauna within the footprint

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low				Alternatives: S1 & T1 & T2			
2	3	1	2.3	2	2	2	4.6

New job opportunities because of the operations (Positive Impact)

Severity (+)	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance (+)
Rating: High (+)			Alternatives: S1 & T1 & T2			Degree of Mitigation: N/A	
4	4	5	4.6	5	5	5	23

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion caused by activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
2	4	2	2.7	2	5	3.5	9.5

Loss of stockpiled topsoil

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	4	1	2.3	2	2	2	4.6

Dust nuisance because of the disturbance of soil

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	1	2	1.6	3	2	2.5	4

Noise nuisance generated by earthmoving machinery

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
2	1	1	1.3	3	2	2.5	3.3

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	4	1	2.3	2	2	2	4.6

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
1	4	1	2	2	2	2	4

Potential erosion of denuded areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	3	1	2	2	2	2	4

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	3	1	2	2	2	2	4

Potential impact on the wetland system

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
4	5	2	3.6	1	1	1	3.6

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	4	1	2.3	3	3	3	6.9

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
2	4	2	2.6	3	4	3.5	9.1

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	4	1	2.3	2	2	2	4.6

Infestation of the area with invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	3	5	3.3	2	1	1.5	4.9

Potential damage to Eskom power line

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
4	4	4	4	1	1	1	4

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	3	5	3.3	2	1	1.5	4.9

Degradation of the access road

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	4	2	2.6	2	2	2	4.6

CUMULATIVE IMPACTS:

Cumulative dust nuisance when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	2	3	3	3	3	9

Cumulative noise nuisance when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
3	4	3	3.3	4	5	4.5	14.8

Cumulative visual impact when quarry and stockpile area are developed

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
3	4	2	3	4	5	4.5	13.5

Cumulative impact on vegetation cover when quarry and stockpile area are developed

			Consequence			Likelihood	Significance
Severity	Duration	Extent	Probability		Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
3	4	1	2.6	4	2	3	7.8

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

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	3	5	3.3	2	2	2	6.6

Cumulative impact on fauna when quarry and stockpile area operate

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			Alternatives: S1 & T1 & T2			Degree of Mitigation: Partial	
3	4	1	2.6	3	3	3	7.8

Cumulative impact on job opportunities when quarry and stockpile area operate

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			Alternatives: S1 & T1 & T2			Degree of Mitigation: N/A	
5	4	5	4.6	5	5	5	23

SLOPING AND LANDSCAPING DURING REHABILITATION:

Decommissioning and removal of the site infrastructure

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1			Degree of Mitigation: Full	
1	2	1	1.3	5	1	3	3.9
Rating: Low-Medium			Alternatives: S1 & T2			Degree of Mitigation: Full	
3	3	1	2.3	5	1	3	6.9

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	5	1	2.6	2	1	1.5	3.9

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	5	1	2.6	2	1	1.5	3.9

Potential impact associated with litter/waste left at the area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			Alternatives: S1 & T1 & T2			Degree of Mitigation: Full	
2	5	1	2.6	2	1	1.5	3.9

Return of the area to agricultural use upon closure (+)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High (+)			Alternatives: S1 & T1			Degree of Mitigation: N/A	
3	5	1	3	5	5	5	15

(APPENDIX 1 SECTION 3(1)(j))

j) Assessment of each identified potentially significant impact and risk

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

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved 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 the project.	The impact may affect the agricultural opportunities of the property.	Site Establishment & Operational Phase	❖ Medium	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 site. The impact could be controlled through progressive rehabilitation.	❖ Medium
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by 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	<ul style="list-style-type: none"> ❖ Medium-High ❖ Medium-High ❖ Medium-High 	<u>Control:</u> Implementing proper housekeeping.	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Low-Medium ❖ Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Potential impact on vegetation and/or protected plant species. ❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed. 	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	<ul style="list-style-type: none"> ❖ Medium ❖ Medium 	<u>Control & Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Potential impact on fauna within the footprint. ❖ Potential impact on local fauna due to disturbance and loss of available habitat. ❖ Cumulative impact on fauna when quarry and stockpile area operate. 	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<ul style="list-style-type: none"> ❖ Medium ❖ Medium ❖ Medium 	<u>Control & Stop:</u> Implementing good management practices.	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ New job opportunities because of the operations (+) ❖ Cumulative impact on job opportunities when quarry and stockpile area operate (+). 	Contribution to the socio-economic status of the area.	Site Establishment, & Operational Phase.	<ul style="list-style-type: none"> ❖ High+ ❖ High+ 	N/A	<ul style="list-style-type: none"> ❖ High+ ❖ High+
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Loss of stockpiled topsoil. ❖ Potential erosion of denuded areas. ❖ Erosion of returned topsoil after rehabilitation. 	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of	Site Establishment-, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Low-Medium ❖ Medium 	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		the area upon closure of the site.				
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Dust nuisance because of the disturbance of soil. ❖ 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	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Medium-High ❖ Medium-High 	<u>Control:</u> Dust suppression methods and proper housekeeping.	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium ❖ Low-Medium
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Noise nuisance generated by earthmoving machinery. ❖ 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	<ul style="list-style-type: none"> ❖ Low-Medium ❖ Medium ❖ Medium-High 	<u>Control:</u> Noise suppression methods and proper housekeeping.	<ul style="list-style-type: none"> ❖ Low ❖ Low-Medium ❖ Medium
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Infestation of the topsoil heaps and stockpile area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Infestation of the reinstated areas by weeds and invader plant species. ❖ Cumulative impact of invader plants in both the 	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, Operational, and Decommissioning Phase	<ul style="list-style-type: none"> ❖ Medium ❖ Medium-High ❖ Medium-High ❖ High 	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low ❖ Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	quarry and stockpile footprints.					
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. 	<ul style="list-style-type: none"> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the 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 EA holder.	Site Establishment-, Operational-, and Decommissioning Phase	<ul style="list-style-type: none"> ❖ Medium ❖ Medium ❖ Medium 	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	<ul style="list-style-type: none"> ❖ Low ❖ Low ❖ Low
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. 	<ul style="list-style-type: none"> ❖ Potential impact on the wetland system. 	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	<ul style="list-style-type: none"> ❖ Low-Medium 	<u>Control:</u> Implementing a SWMP.	<ul style="list-style-type: none"> ❖ Low
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	<ul style="list-style-type: none"> ❖ Potential damage to Eskom power line. 	Damage to the power line will have a detrimental effect on the electricity supply of the community.	Operational Phase	<ul style="list-style-type: none"> ❖ Low-Medium 	<u>Stop & Control:</u> Adherence to the rules and regulations, and Eskom specifications.	<ul style="list-style-type: none"> ❖ Low
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	<ul style="list-style-type: none"> ❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road. 	Collapse of the internal road infrastructure will affect the landowner negatively. If the project negatively	Operational phase	<ul style="list-style-type: none"> ❖ 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 before.	<ul style="list-style-type: none"> ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		affects public traffic, it may incur additional costs and complaints from the public.				
❖ Sloping and landscaping during rehabilitation.	❖ Decommissioning and removal of the site infrastructure.	Any infrastructure that remains on site will have to be managed by either the Applicant or landowner.	Decommissioning Phase	<ul style="list-style-type: none"> ❖ Low-Medium (S1, T1) ❖ Medium-High (S1, T2) 	<u>Modify & Control:</u> Implement T1 instead of T2 to simplify rehabilitation and prevent any structures remaining on site.	<ul style="list-style-type: none"> ❖ Low (S1, T1) ❖ Low-Medium (S1, T2)
❖ Sloping and landscaping during rehabilitation	❖ Return of the area to agricultural use upon closure (+)	The area will be returned to the landowner for future use.	Decommissioning Phase	❖ Medium-High+	N/A	❖ Medium-High+

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

(APPENDIX 1 SECTION 3(1)(k))

k) Summary of specialist reports.

Table 22: Summary of specialist reports.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p><u>Terrestrial Biodiversity Impact Assessment</u></p> <p>For the proposed stockpile on Portion of the farm Elands Spruit No 5523, within uThukela District Municipality in the KwaZulu-Natal Province.</p> <p>August 2022</p> <p><i>(See Appendix H for a full copy of the report)</i></p>	<p align="center"><u>Mitigation Measures:</u></p> <ul style="list-style-type: none"> ❖ All natural vegetation not required to be removed should be protected against damage. ❖ Any cleared areas that are no longer or not required for stockpiling activities should be re-seeded with locally sourced seed of suitable species. Bare areas can also be packed with brush removed from other parts of the site to encourage natural vegetation regeneration and limit erosion. ❖ Maintenance vehicles must not veer from dedicated access road and activities should be restricted to the previously disturbed footprint. ❖ No animal may be hunted, trapped, snared, or captured for any purpose whatsoever. ❖ Speed of vehicles should be limited to allow for sufficient safety margins. ❖ Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary of the stockpiling area. ❖ Workers may not remove flora, and neither may anyone collect seed from the plants without permission from the local authority. 	<p>All the mitigation measures proposed by the specialist were included in this report.</p>	<p>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</p>

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
	<p style="text-align: center;"><u>Conclusion and Recommendations:</u></p> <p>The proposed stockpile will be located on a previously natural grassland site of good ecosystem health. The site shows medium sensitivity, but disturbance should be limited strictly to the specified activities associated with the proposed stockpile development. From the survey conducted, there are no evident fatal flaws that would prevent this development from being authorised, nor being conducted in a sustainable manner.</p>		
<p><u>Wetland Assessment Report</u></p> <p>Proposed expansion of the Elandspruit quarry near Ladysmith, KwaZulu-Natal Province.</p> <p>February 2017</p> <p><i>(See Appendix G for a full copy of the report)</i></p>	<p style="text-align: center;"><u>Recommendations & Mitigation Measures:</u></p> <ul style="list-style-type: none"> ❖ The specialist recommended that a buffer of 70 m be maintained around the identified wetland systems. ❖ Keep the clearing of natural and semi-natural grasslands to a minimum ❖ When topsoil is being stored, the topsoil heaps need to be continuously protected against loss of soil due to wind and water erosion, ❖ Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with and indigenous grass seed mix. ❖ Reinforce portions of existing access routes that are prone to erosion, create structures or low banks to drain the access road rapidly during rainfall events, yet preventing erosion of the track and surrounding areas ❖ Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated 	<p>All the mitigation measures proposed by the specialist were included in this report.</p>	<p>Part A (1) (h)(iv)(c) Description of specific environmental features and infrastructure on the site – Site Specific Hydrology.</p> <p>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</p>

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
	<ul style="list-style-type: none"> ❖ Ensure adequate drainage ❖ Where it is necessary to remove surface water from the quarry site; water must be 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 (an 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, <ul style="list-style-type: none"> ▪ Ensure that an approved storm water plant 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 should be moderated. ❖ Ensure that the vegetation cover (roughage) located outside of the mining area (down-slope) is maintained in a good condition, especially within the allocated wetland buffers. ❖ To prevent the contamination of the aquatic environment <ul style="list-style-type: none"> ▪ The contractor must notify the ECO immediately of any pollution incidents on site 		

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
	<ul style="list-style-type: none"> ▪ Wash areas must be placed and constructed in such a manner to ensure that the surrounding areas, which include groundwater are not polluted ▪ A Method of Statement is required for all wash areas where hydrocarbon, hazardous materials and pollutants are expected to be used. This includes, but is not limited to, vehicle washing, workshop wash bays, paint wash and cleaning ▪ The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source ▪ Runoff from fuel depots/workshops/truck washing areas and concrete swills must be directed into a conservancy tank and disposed of at a site approved by the CM. ▪ The contaminated water, contaminated runoff, or effluent may also require analysis prior to disposal. ❖ To prevent an increase in solid waste: <ul style="list-style-type: none"> ▪ All solid waste must be adequately stored and disposed of ▪ Ensure that structures like berms are built to prevent soil from entering wetlands as this can result in sedimentation. 		

(APPENDIX 1 SECTION 3(1)(I))

I) 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 development of a 10.5 ha stockpile area on the Remaining Extent of the farm Elands Spruit 5523 GS, Ladysmith District, KwaZulu-Natal Province. The infrastructure will be of temporary and mobile nature. During the site establishment phase the Applicant will strip the topsoil and stockpile it along the boundaries of the area to be used during the rehabilitation phase. The material will then be transported from the quarry into the stockpile area where it will be screened/crushed (when needed) and stockpiled until removed from site. It is anticipated that the material will be used as fill at a SANRAL road rehabilitation project of the N11 national road. When no longer needed, the stockpile area will be rehabilitated and returned to the landowner for continued agricultural use.

Topography:

- ❖ The use of the earmarked area for the stockpiling of materials will not have an impact on the topography of the farm as no areas need to be excavated. If the proposed closure actions are implemented the project will have no residual impact on the topography.

Visual Characteristics:

- ❖ The viewshed analysis shows that the upper part of the stockpile area will have a medium visual impact as the area will mainly be visible from higher laying areas towards the north, east and south. The lower part of the area will have a low visual impact as it will only be visible from a few areas mainly towards the south. The cumulative visual impact is deemed to be of medium 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 significance.

However, should the quarry and the stockpile area be operational the cumulative air quality impact 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 will only be of temporary nature. The nuisance value of noise generated by heavy earthmoving equipment, to residence in the near vicinity is deemed to be of low-medium significance. Should the quarry and the stockpile area be operational the cumulative noise impact is deemed to be of medium significance.

Hydrology:

- ❖ The proposed stockpile area falls within 500 m from a wetland and requires Water Use Authorisation in terms of section 39 of the NWA, 1998 (Act No 36 of 1998) for water uses as defined in section 21.
- ❖ The stockpile area is more than 160 m from the outer boundary of the Hillslope Seepage, and therefore outside the 70 m buffer proposed by the wetland specialist.

Terrestrial Biodiversity, Conservation Areas, and Groundcover:

- ❖ The project area does not extend across a CBA, nor are there any SCC (fauna or flora).
- ❖ The DFFE screening tool shows the animal- and plant themes as being of medium sensitivity. However, the overall site is highly sensitivity in terms of terrestrial biodiversity due to the area being within a Strategic Water Source Area.
- ❖ The study area is located within the Northern KwaZulu-Natal Moist Grassland that is Least Threatened.
- ❖ The TBIA concludes that there are no evident fatal flaws that would prevent the development from being authorised, nor being conducted in a sustainable manner.

Cultural and Heritage Environment:

- ❖ No sites of archaeological, palaeontological, or cultural importance exist at the study area, and AMAFA approved the project (with conditions) in August 2022.

Existing Infrastructure:

- ❖ No infrastructure exists in the 10.5 ha footprint.
- ❖ 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

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 Applicant will be able to stockpile the material mined from the quarry on a relatively level part of the property, in proximity to the pit.
- ❖ No species of conservation concern needs to be disturbed to allow for the activity.
- ❖ Project related traffic will travel the smallest possible distance between the quarry, stockpile area and clients. With internal transport of the material contained to the farm (away from the public roads).
- ❖ The stockpile area will not have an impact on the wetland system on the bordering property.
- ❖ The project will create at least eight job opportunities.
- ❖ The presence of the proposed operation will contribute (directly & indirectly) to the local economy with preference give to HDSA & women owned local suppliers.
- ❖ The landowner will receive compensation for the use of the land, and thereby diversity the income from the property.
- ❖ Temporary infrastructure will be used on site that will have a lesser impact than permanent structures.
- ❖ Upon closure the area will be returned to the landowner for agricultural purposes.

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 23: 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.	❖ Visual intrusion because of site establishment.	❖ Medium-High	❖ Low-Medium
❖ Stripping and stockpiling of topsoil.	❖ Visual intrusion caused by activities.	❖ Medium-High	❖ Low-Medium
		❖ Medium-High	❖ Medium

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ Cumulative impact.	❖ Cumulative visual impact when quarry and stockpile area are developed.		
❖ Cumulative Impacts	❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed.	❖ Medium	❖ Low-Medium
❖ Cumulative Impacts	❖ Cumulative impact on fauna when quarry and stockpile area operate.	❖ Medium	❖ Low-Medium
❖ Processing, stockpiling and transporting material. ❖ Cumulative Impact	❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate.	❖ Medium-High ❖ Medium-High	❖ Low-Medium ❖ Low-Medium
❖ Processing, stockpiling and transporting material. ❖ Cumulative Impact	❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate.	❖ Medium ❖ Medium-High	❖ Low-Medium ❖ Medium
❖ Cumulative Impact	❖ Cumulative impact of invader plants in both the quarry and stockpile footprints.	❖ High	❖ Low-Medium
❖ Sloping and landscaping during rehabilitation.	❖ Decommissioning and removal of the site infrastructure.	❖ Medium-High (S1, T2)	❖ Low-Medium (S1, T2)

(APPENDIX 1 SECTION 3(1)(m))

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

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

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p>TOPOGRAPHY</p> <p>Landscaping of the Stockpile Area</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Remove and dump coarse natural material used for the construction of ramps into the quarry as part of the rehabilitation of the excavation. ❖ 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 on the farm. ❖ Fertilize the area if necessary 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. ❖ On completion of operations, remove all structures or objects from site. ❖ On completion of 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 200 mm and graded it to an even surface condition. Return the topsoil to its original depth over the area. 	<ul style="list-style-type: none"> ❖ Effectively restoring the stockpile area to allow the return of land use to agricultural purposes.
<p>VISUAL CHARACTERISTICS</p> <p>Visual mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Ensure that the site have a neat appearance and is always kept in good condition. ❖ Store equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the use of a specific area. ❖ Contain activities to the approved area. ❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum. 	<ul style="list-style-type: none"> ❖ Minimise the impact of the operations on the visual characteristics of the receiving environment during the operational phase and minimise the residual impact after closure.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p>AIR AND NOISE QUALITY</p> <p>Dust Mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ❖ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ❖ Limit speed on the roads to 40 km/h to prevent the generation of excess dust. ❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to use. ❖ 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. ❖ 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). 	<ul style="list-style-type: none"> ❖ Dust prevention measures are applied to minimise the impact.
<p>AIR AND NOISE QUALITY</p> <p>Noise Mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the site. ❖ 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. ❖ Minimise the noise caused by generators. Maintain and equip all generators with sound mufflers, and if possible, point the generators 	<ul style="list-style-type: none"> ❖ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>away from the neighbouring land users. Place all generators on a level area/footing to minimise vibration noise.</p> <ul style="list-style-type: none"> ❖ 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. 	
<p>GEOLOGY AND SOIL</p> <p>Topsoil Handling</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Strip and stockpile the upper 300 mm of the soil before using the area. ❖ 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 the project in such a way that topsoil is stockpiled for the minimum possible time. ❖ Place the topsoil on a levelled area, within the earmarked 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the stockpile area to prevent erosion. ❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of 	<ul style="list-style-type: none"> ❖ Adequate fertile topsoil is available to rehabilitate the stockpile area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>returned topsoil is minimized. The best time of year is at the end of the rainy season.</p> <ul style="list-style-type: none"> ❖ Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement. 	
<p>HYDROLOGY</p> <p>Erosion Control and Storm Water Management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Develop and implement a storm water management plan for the duration of the activities. ❖ Limit clearing of vegetation to the proposed stockpile footprint. Ensure no clearing takes place outside the minimum required footprint. ❖ Divert stormwater around the topsoil heaps and stockpile areas to prevent erosion. ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Control the outflow of run-off water from the stockpile area 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 from the stockpile area may occur. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems because of the proposed 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 	<ul style="list-style-type: none"> ❖ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas.</p> <ul style="list-style-type: none"> ❖ 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. 	
<p>HYDROLOGY</p> <p>Potential impact on the wetland system.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Maintain a 70 m buffer around the hillslope- as well as the valley bottom wetland areas throughout the lifespan of the activities. ❖ Keep the clearing of natural and semi-natural grasslands to a minimum. ❖ 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: <ul style="list-style-type: none"> ▪ 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: 	<ul style="list-style-type: none"> ❖ The proposed activities have no impact on the nearby wetland system.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> ▪ Notify the 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. 	
<p>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUND COVER</p> <p>Management of vegetation removal.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Clearly demarcate the site boundaries and contain all operations to the approved area. Declare the area outside the approved boundaries a no-go area and educate all staff accordingly. ❖ 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. ❖ Do not burn cleared vegetation, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. Donate the wood to the landowner and/or community. ❖ 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. 	<ul style="list-style-type: none"> ❖ Vegetation clearing is restricted to the authorised development footprint.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER</p> <p>Management of invasive plant species.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ 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 activities. ❖ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose. ❖ Keep all stockpiles free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. 	<ul style="list-style-type: none"> ❖ Stockpile area is kept free of invasive plant species.
<p>FAUNA</p> <p>Protection of fauna</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ 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 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 (40 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. 	<ul style="list-style-type: none"> ❖ Disturbance to fauna is minimised.
<p>CULTURAL AND HERITAGE ENVIRONMENT</p> <p>Archaeological, heritage and palaeontological aspects.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p>	<ul style="list-style-type: none"> ❖ Confine all activities to the development footprint. ❖ Implement the following change find procedure when discoveries are made on site: <ul style="list-style-type: none"> ▪ 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, 	<ul style="list-style-type: none"> ❖ Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	Compliance to be monitored by the Environmental Control Officer.	<p>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.</p> <ul style="list-style-type: none"> ▪ 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. ▪ The KwaZulu-Natal Amafa and Research Institute must be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice. ▪ No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. ▪ Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist. ▪ Should any remain, that could potentially be human remains be found on-site, the South African Police Service (SAPS) must be contacted, and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu-Natal Amafa and Research Institute. ▪ No activities are allowed within 50 m of a site that contains rock art. ▪ Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a 	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		sustainable manner and in compliance with the heritage and environmental (NEMA) legislation.	
LAND USE Loss of agricultural land for duration of the project.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> ❖ If needed, sign rehabilitated areas back to agricultural use once the cover crop stabilised. 	<ul style="list-style-type: none"> ❖ Project has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Managing the Power Line	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	<ul style="list-style-type: none"> ❖ Maintain a no-go buffer (minimum 20 m) around the power line as per Eskom standard that may only be traversed by the access road. ❖ Should the line be damaged, immediately (within the first hour of occurrence) inform Eskom. 	<ul style="list-style-type: none"> ❖ Project has no impact on the power line.
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.	<ul style="list-style-type: none"> ❖ Prevent access from the N11 to and from the stockpile area, unless authorised 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 proposed activities. ❖ Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. ❖ Restrict the speed of all equipment/vehicles to 40 km/h on the access road. ❖ Keep the intersection of the Collings Pass Road and the N11 clear of any loose quarry material emanating from the source. 	<ul style="list-style-type: none"> ❖ 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.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p>GENERAL</p> <p>Waste management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. ❖ If a diesel bowser is used on site, always equip it with a drip tray. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a registered facility. File proof. ❖ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Clean spills immediately, within two hours of occurrence, by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof. ❖ Ensure suitable covered receptacles are 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 	<ul style="list-style-type: none"> ❖ Wastes are appropriately handled and safely disposed of at registered waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the stockpile area. File proof of disposal.</p> <ul style="list-style-type: none"> ❖ 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 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 activities to the DWS and other relevant authorities. ❖ Implement the use of waste registers to keep record of the waste generated and removed from the stockpile area. 	
<p>GENERAL</p> <p>Storage/handling of hazardous substances/chemicals.</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Place chemical storage areas on level ground to prevent offsite migration of any spilled product. ❖ Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. ❖ Control access to the chemicals/substances and implement a notification system of an appropriate staff member. ❖ Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. 	<ul style="list-style-type: none"> ❖ The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> ❖ Maintain a Hazardous Substances Register and keep Safety Data Sheets (SDS) current for all chemicals used on site. ❖ Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. ❖ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. ❖ Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. ❖ Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump. 	
<p>GENERAL</p> <p>Management of health and safety risks</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ❖ Ensure that workers have access to the correct PPE as required by law. ❖ Locate sanitary facilities within 100 m from any point of work. 	<ul style="list-style-type: none"> ❖ Employees work in a healthy and safe environment.

(APPENDIX 1 SECTION 3(1)(n))

n) Aspects for inclusion as conditions of 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:

- ❖ The proposed area falls within 500 m of a wetland area and requires Water Use Authorization in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for water uses as defined in section.

(APPENDIX 1 SECTION 3(1)(o))

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

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.

(APPENDIX 1 SECTION 3(1)(p))

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

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.

(APPENDIX 1 SECTION 3(1)(q))

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for at least a six-year period to correspond with the validity of the mining permit on the property and allow for successful rehabilitation of the site upon closure.

(APPENDIX 1 SECTION 3(1)(r))

r) Undertaking

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.

(APPENDIX 1 SECTION 3(1)(s))

s) Financial Provision

Not applicable to this project.

(APPENDIX 1 SECTION 3(1)(t))

t) Specific Information required by the competent Authority

Not applicable to this project, as the competent authority did not request any specific information.

(APPENDIX 1 SECTION 3(1)(u))

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

None identified.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. ENVIRONMENTAL MANAGEMENT PROGRAMME

(APPENDIX 4 SECTION 1(1)(a))

a) Details and Expertise of the EAP,

The details and expertise of Christine Fouché 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 L as required.

(APPENDIX 4 SECTION 1(1)(b))

b) Description of the Aspects of the Activity

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

(APPENDIX 4 SECTION 1(1)(c))

c) Composite Map

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

(APPENDIX 4 SECTION 1(1)(d))

d) Description of impact management objectives including management statements

i) Determination of closure objectives.

The primary objective, at the end of the project's life, will be to successfully reinstate the altered footprint. To realise this, the following main objectives must be achieved:

- ❖ Remove all temporary infrastructure and waste from the site.
- ❖ Shape and contour disturbed areas in compliance with the EMPR.
- ❖ 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/invaser plant species by intensive management of the area.

The decommissioning phase will entail the reinstatement of the stockpile area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints.

The decommissioning activities will therefore consist of the following:

- ❖ Removing all stockpiled material;
- ❖ Removing all infrastructure, 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. Upon replacement of the topsoil, the area will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The Applicant will implement the following:

- ❖ Rehabilitation of plant, office, and service areas:

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

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 the following:

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

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

On completion of operations, the surface 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.

❖ 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 equipment, and other items used during the operational phase must be removed from the site.

Waste material of any description, including receptacles, scrap, rubble, and tyres, must be removed entirely from the stockpile area, and disposed of at a registered 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 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.

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

Any water required for the implementation of the project will be bought and transported to the stockpile 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?

The proposed stockpile area falls within 500 m of a wetland area and requires Water Use Authorization in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for water uses as defined in section 21 of the Act. An application for water use approval will be submitted to the DWS in due course.

iv) Impacts to be mitigated in their respective phases

Table 25: Impact to be mitigated in their respective phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ Demarcation of site with visible beacons.	Site Establishment phase	10.5 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the stockpile area, and that work stay within the approved footprint.	Operations are only allowed within the boundaries of the approved area. ❖ NEMA, 1998	Beacons need to be in place throughout the life of the activity.
❖ Site establishment and infrastructure development.	Site Establishment & Operational Phase	10.5 ha	<u>Loss of agricultural land for duration of the project:</u> ❖ The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the operational phase. If needed, rehabilitated areas could revert to agricultural use once the cover crop stabilised.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983	Throughout the site establishment-, and operational phases.
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impacts.	Site Establishment & Operational Phase	10.5 ha	<u>Visual Mitigation:</u> ❖ The site must have a neat appearance and always kept in good condition. ❖ All equipment must be stored neatly in dedicated areas when not in use. ❖ The EA holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the use of a specific area. ❖ All activities must be contained within the approved footprint area. ❖ Upon closure the site must be rehabilitated to ensure that the visual	Management of the activities must be in accordance with the: ❖ 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
			<p>impact on the aesthetic value of the area is reduced to the minimum.</p>		
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative Impacts 	<p>Site Establishment phase</p>	<p>10.5 ha</p>	<p><u>Management of vegetation removal:</u></p> <ul style="list-style-type: none"> ❖ The site boundaries must be clearly demarcated, and all operations must be contained to the approved area. The area outside the boundaries must be declared a no-go area, and all staff must be educated accordingly. ❖ 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. ❖ 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 wood can be donated to the landowner and/or community. ❖ 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 	<p>Natural vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NEM:BA, 2004 	<p>Throughout the site establishment- and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>phase, when most of the vegetation clearing is taking place.</p> <ul style="list-style-type: none"> ❖ 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. 		
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impacts. 	Site Establishment & Operational Phase	10.5 ha	<p>Protection of Fauna:</p> <ul style="list-style-type: none"> ❖ 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. ❖ 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. 	<p>Site specific fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ No snares may be set, or nests raided for eggs or young. ❖ All vehicles must adhere to a low speed limit (40 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. 		
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Processing, stockpiling, and transporting of material. 	Site Establishment, & Operational Phase.	10.5 ha	<p><u>Archaeological, Heritage and Palaeontological Aspects:</u></p> <ul style="list-style-type: none"> ❖ All activities 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. 	<p>Cultural/heritage aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA. ❖ The KwaZulu-Natal Amafa and Research Institute must be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice. ❖ No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. ❖ Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist. ❖ Should any remain, that could potentially be human remains be found on-site, the South African Police Service (SAPS) must be contacted, and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>without the necessary permission from the KwaZulu-Natal Amafa and Research Institute.</p> <ul style="list-style-type: none"> ❖ No activities are allowed within 50 m of a site that contains rock art. ❖ Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage and environmental (NEMA) legislation. 		
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<p>Site Establishment-, Operational and Decommissioning Phase</p>	<p>10.5 ha</p>	<p><u>Topsoil Management</u></p> <ul style="list-style-type: none"> ❖ The upper 300 mm of the soil must be stripped and stockpiled before use. ❖ 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 project plan must be such that topsoil is stockpiled for the minimum possible time. ❖ The topsoil must be placed on a levelled area, within the earmarked 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 	<p>Topsoil stripping must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ CARA, 1983 ❖ NEM:BA, 2004 	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.</p> <ul style="list-style-type: none"> ❖ Topsoil heaps may not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ The temporary topsoil stockpiles must be kept free of invasive plant species. ❖ Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Storm- and runoff water must be diverted around the stockpile area to prevent erosion. ❖ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ❖ The EA 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 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>the risk of heavy rainfall events is minimal.</p> <ul style="list-style-type: none"> ❖ A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. ❖ Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion. ❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement. 		
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts. 	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p>10.5 ha</p>	<p><u>Fugitive Dust Emission Mitigation Measures:</u></p> <ul style="list-style-type: none"> ❖ 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 ensure continuous assessment of all dust 	<p>Dust generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012) 	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>suppression equipment to confirm its effectiveness in addressing dust suppression.</p> <ul style="list-style-type: none"> ❖ Speed on the roads must be limited to 40 km/h to prevent the generation of excess dust. ❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to use. ❖ 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). 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impacts. 	Site Establishment-, Operational-, and Decommissioning Phase	10.5 ha	<p><u>Noise Handling:</u></p> <ul style="list-style-type: none"> ❖ The EA holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the site. ❖ All 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). ❖ 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. 	<p>Noise generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996 	Throughout the site establishment-, operational and decommissioning phases.
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. 	Site Establishment-, Operational, and Decommissioning Phase	10.5 ha	<p><u>Management of Invasive Plant Species:</u></p> <ul style="list-style-type: none"> ❖ An invasive plant species management plan must be implemented at the site to 	Weeds and invader plants on site must be managed in accordance with the:	Throughout the site establishment-, operational, and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. ❖ Cumulative impacts. 	Decommissioning Phase		<p>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 activities.</p> <ul style="list-style-type: none"> ❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ❖ All stockpiles must be kept free of invasive plant species. ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ❖ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: <ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix J) 	

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	Site Establishment-, Operational and Decommissioning Phase	10.5 ha	<p><u>Erosion Control and Storm Water Management:</u></p> <ul style="list-style-type: none"> ❖ A stormwater management plan must be developed and implemented for the duration of the activities. ❖ Clearing of vegetation must be limited to the proposed stockpile footprint. No clearing outside of the minimum required footprint to take place. ❖ Stormwater must be diverted around the topsoil heaps and work areas to prevent erosion. ❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. ❖ The outflow of run-off water from the stockpile area 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 from the stockpile area may occur. ❖ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. ❖ Any erosion problems because of the proposed activities observed must be 	Erosion and storm water must be managed in accordance with the: <ul style="list-style-type: none"> ❖ 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
			<p>rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</p> <ul style="list-style-type: none"> ❖ 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. ❖ The operation 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: <ul style="list-style-type: none"> ▪ 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
			<ul style="list-style-type: none"> ▪ A storm water management plan must apply for the entire life cycle of the 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. 		
❖ Stripping and stockpiling of topsoil.	Site Establishment-, Operational-, and Decommissioning Phase	10.5 ha	<p><u>Waste Management:</u></p> <ul style="list-style-type: none"> ❖ Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If 	<p>Project related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ 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
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. 			<p>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.</p> <ul style="list-style-type: none"> ❖ If a diesel bowser is used on site, it must always be equipped with a drip tray. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ❖ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>registered facility. Proof of safe disposal must be filed for auditing purposes.</p> <ul style="list-style-type: none"> ❖ An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Spills must be cleaned up immediately, within two hours of occurrence, by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. Proof must be filed. ❖ Suitable covered receptacles must be always available and conveniently placed for the disposal of general waste. ❖ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a registered landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the stockpile 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. 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> ❖ 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 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 EA holder. ❖ When small volumes of wastewater are generated during the life of the project the following is applicable: <ul style="list-style-type: none"> ▪ 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 activities is reported 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>to the DWS and other relevant authorities.</p> <ul style="list-style-type: none"> ❖ Site management must implement the use of waste registers to keep record of the waste generated and removed from the stockpile area. 		
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting, of material. 	<p>Site Establishment, & Operational Phase.</p>	<p>±500 m²</p>	<p><u>Storage/Handling of Hazardous Substances/Chemicals:</u></p> <ul style="list-style-type: none"> ❖ Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product. ❖ The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water. ❖ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member. ❖ The storage area must be out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. ❖ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site. ❖ Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of 	<p>Chemicals/hazardous substances must be stored in accordance with the:</p> <ul style="list-style-type: none"> ❖ HSA,1973 ❖ NWA, 1998 ❖ NEM:WA, 2008 	<p>Throughout the site establishment-, and operational phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</p> <ul style="list-style-type: none"> ❖ The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly, and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely. ❖ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. ❖ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and not stored on bare soil. The wastewater originating from the cleaning of drip trays must be discarded into the oil sump. 		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. 	Site Establishment, & Operational Phase.	N/A	<p><u>Potential impact on the wetland system:</u></p> <ul style="list-style-type: none"> ❖ A 70 m buffer must be maintained around the hillslope- as well as the valley bottom wetland areas throughout the lifespan of the activities. ❖ The clearing of natural and semi-natural grasslands must be kept to a minimum. ❖ 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: <ul style="list-style-type: none"> ▪ 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. 	All water related matters must be managed in terms of the: <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ▪ The flow of storm water onto the buffer and wetland features must be moderated. ❖ To prevent the contamination of the aquatic environment: <ul style="list-style-type: none"> ▪ The contractor must notify the 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. 		
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	Operational-, and Decommissioning Phase	10.5 ha	<p><u>Management of health and safety risks:</u></p> <ul style="list-style-type: none"> ❖ 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. 	<p>Health and safety aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ OHSA, 1993 ❖ OHSAS 18001 	Throughout the site establishment-,operational and decommissioning phases.
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	Operational Phase	N/A	<p><u>Managing the power line:</u></p> <ul style="list-style-type: none"> ❖ An adequate no-go buffer (minimum 20 m) should be maintained around the power line as per Eskom standard that may only be traversed by the access road. ❖ Should the line be damaged, Eskom must immediately (within the first hour of occurrence) be informed. 	The power line must be protected in accordance with all Eskom specifications.	Throughout the site and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	Operational phase	±1 km	<p><u>Access road Management:</u></p> <ul style="list-style-type: none"> ❖ Access to and from the stockpile area shall not be permitted from the N11, unless authorised by SANRAL. ❖ 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 activities must be repaired by the EA 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 equipment/vehicles must be restricted to 40 km/h on the access road. ❖ The intersection of the Collings Pass Road and the N11 shall be kept clear of any loose quarry material emanating from the source. 	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NRTA, 1996 	Throughout the site establishment-, and operational phases.
<ul style="list-style-type: none"> ❖ Sloping and landscaping during rehabilitation phase. 	Decommissioning Phase	4.9 ha	<p><u>Rehabilitation/landscaping of the area:</u></p> <ul style="list-style-type: none"> ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the quarry as part of the rehabilitation of the excavation. ❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its 	<p>Rehabilitation of the area must be in accordance with the:</p> <ul style="list-style-type: none"> ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ NEMA, 1998 	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>original depth to provide a growth medium.</p> <ul style="list-style-type: none"> ❖ No waste may be permitted to be deposited on the farm. ❖ 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. ❖ On completion of operations, all structures or objects shall be removed from the site. ❖ On completion of 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. Topsoil needs to be returned to its original depth over the area. 		

(APPENDIX 4 SECTION 1(1)(e) & (f))

e) Impact Management Outcomes

f) Impact Management Actions

Table 26: Impact Management Actions and Outcomes.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	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 area.	N/A	Site Establishment phase	Control through management and monitoring.	Operations are only allowed within the boundaries of the approved area. ❖ NEMA, 1998
❖ Site establishment and infrastructure development.	❖ Loss of agricultural land for duration of the project.	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 site. The impact could be controlled through progressive rehabilitation.	Use of agricultural land must be managed in accordance with the: ❖ CARA, 1983
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impacts.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion caused by 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 activities must be in accordance with the: ❖ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Potential impact on vegetation and/or protected plant species. ❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed. 	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	<u>Control & Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	Natural vegetated areas must be managed in accordance with the: <ul style="list-style-type: none"> ❖ NEM:BA, 2004
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Potential impact on fauna within the footprint. ❖ Potential impact on local fauna due to disturbance and loss of available habitat. ❖ Cumulative impact on fauna when quarry and stockpile area operate. 	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<u>Control & Stop:</u> Implementing good management practices.	Site specific fauna must be managed in accordance with the: <ul style="list-style-type: none"> ❖ NEM:BA, 2004
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<ul style="list-style-type: none"> ❖ Loss of stockpiled topsoil. ❖ Potential erosion of denuded areas. ❖ Erosion of returned topsoil after rehabilitation. 	The loss/contamination of topsoil and erosion of the footprint will affect the rehabilitation of the area upon closure of the site.	Site Establishment-, Operational and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	Topsoil stripping must be managed in accordance with the: <ul style="list-style-type: none"> ❖ CARA, 1983 ❖ NEM:BA, 2004
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Dust nuisance because of the disturbance of soil. ❖ 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: <ul style="list-style-type: none"> ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate. 	<p>Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.</p>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p><u>Control:</u> Noise suppression methods and proper housekeeping.</p>	<p>Noise generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Infestation of the topsoil heaps and stockpile area with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Infestation of the reinstated areas by weeds and invader plant species. ❖ Cumulative impact of invader plants in both the quarry and the stockpile footprints. 	<p>Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.</p>	<p>Site Establishment-, Operational, and Decommissioning Phase</p>	<p><u>Control & Remedy:</u> Implementation of an invasive plant species management plan.</p>	<p>Weeds and invader plants on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ Invader Plants Species Management Plan (Appendix J)
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. 	<ul style="list-style-type: none"> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the area. 	<p>Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the EA holder.</p>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p><u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.</p>	<p>Project related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> ❖ NWA, 1998 ❖ NEM:WA, 2008

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ Site establishment and infrastructure development.	❖ Potential impact on the wetland system.	This could impact the hydrology of the receiving environment.	Site Establishment, & Operational Phase.	<u>Control:</u> Implementing a SWMP.	Any water related matters must be managed in accordance with the: ❖ NWA, 1998
❖ Processing, stockpiling, and transporting of material.	❖ Potential damage to Eskom power line.	Damage to the power line will have a detrimental effect on the electricity supply of the community.	Operational Phase	<u>Stop & Control:</u> Adherence to the rules and regulations, and Eskom specifications.	The power line must be protected in accordance with all Eskom specifications.
❖ 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 project negatively affects public traffic, it may incur additional costs and complaints from the public.	Operational phase	<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 before.	The access road must be managed in accordance with the: ❖ NRTA, 1996
❖ Sloping and landscaping when quarry and stockpile area operate.	❖ Decommissioning and removal of the site infrastructure.	Any infrastructure that remains on site will have to be managed by either the Applicant or landowner.	Decommissioning Phase	<u>Modify & Control:</u> Implement T1 instead of T2 to simplify rehabilitation and prevent any structures remaining on site.	Infrastructure must be managed in accordance with the: ❖ NEMA, 1998

(APPENDIX 4 SECTION 1(1)(g) – (k))

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 27: 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 approved area.	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Ensure beacons are in place throughout the life of the site. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment and	<u>Land Use:</u>	❖ Project Plan	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p>

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
infrastructure development.	❖ Loss of agricultural land for duration of the project.		❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ If needed, sign rehabilitated areas back to agricultural use once the cover crop stabilised.	❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impact.	<u>Visual Characteristics:</u> ❖ Visual intrusion because of site establishment. ❖ Visual intrusion caused by 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.	<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 the site have a neat appearance and is always kept in good condition. ❖ Store 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 activities to the approved area. ❖ Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	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
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Cumulative Impacts 	<p><u>Terrestrial Biodiversity, Conservation Areas and Groundcover:</u></p> <ul style="list-style-type: none"> ❖ Potential impact on vegetation and/or protected plant species. ❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed. 	<ul style="list-style-type: none"> ❖ Visible beacons indicating the boundary of the stockpile area. ❖ Cover crop to seed reinstated areas upon closure. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Clearly demarcate the site boundaries and contain all operations to the approved area. Declare the area outside the boundaries a no-go area and educate all staff accordingly. ❖ 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. ❖ Do not burn cleared vegetation, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. Donate the wood to the landowner and/or community. ❖ 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 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ 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
			<p>establishment phase, when most of the vegetation clearing is taking place.</p> <ul style="list-style-type: none"> ❖ 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. 	
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. ❖ Cumulative impacts. 	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> ❖ Potential impact on fauna within the footprint. ❖ Cumulative impact on fauna when quarry and stockpile area operate. 	<ul style="list-style-type: none"> ❖ Toolbox talks to educate employees how to handle fauna that enter the work areas. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ 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 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 	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> ❖ 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
			<p>persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area.</p> <ul style="list-style-type: none"> ❖ Ensure no snares are set or nests raided for eggs or young. ❖ Ensure all vehicles adhere to a low speed limit (40 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. 	
<ul style="list-style-type: none"> ❖ Site establishment and infrastructure development. ❖ Stripping and stockpiling of topsoil. 	<p><u>Cultural and Heritage Environment.</u></p>	<ul style="list-style-type: none"> ❖ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Confine all activities to the development footprint. ❖ Implement the following change find procedure when discoveries are made on site: <ul style="list-style-type: none"> ▪ 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 	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> ❖ 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
			<p>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.</p> <ul style="list-style-type: none"> ▪ 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. ▪ The KwaZulu-Natal Amafa and Research Institute must be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice. ▪ No structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. ▪ Under no circumstances may any heritage material be destroyed, inundated, collected, or removed from the site unless 	

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
			<p>under the direction of the KwaZulu-Natal and Amafa Research Institute and a heritage specialist.</p> <ul style="list-style-type: none"> ▪ Should any remain, that could potentially be human remains be found on-site, the South African Police Service (SAPS) must be contacted, and the KwaZulu-Natal Amafa and Research Institute must be notified immediately. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu-Natal Amafa and Research Institute. ▪ No activities are allowed within 50 m of a site that contains rock art. ▪ Sources of all-natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage and environmental (NEMA) legislation. 	
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<p><u>Geology and Soil:</u></p> <ul style="list-style-type: none"> ❖ Loss of stockpiled topsoil. 	<ul style="list-style-type: none"> ❖ Earthmoving equipment to strip and stockpile topsoil. ❖ Cover crop to be established on topsoil heaps. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ 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
		<ul style="list-style-type: none"> ❖ Erosion control infrastructure (when needed). 	<p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ 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 the project in such a way that topsoil is stockpiled for the minimum possible time. ❖ Place the topsoil on a levelled area, within the earmarked 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 (weeds or a cover crop) on the stockpiles will help to prevent erosion. ❖ Ensure that topsoil heaps do not exceed 2 m to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ Keep temporary topsoil stockpiles free of invasive plant species. ❖ Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Divert storm- and runoff water around the stockpile area to prevent erosion. 	<ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ 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 cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement. 	
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Cumulative impact. 	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> ❖ Dust nuisance because of the disturbance of soil. ❖ Dust nuisance generated at the processing plant. ❖ Cumulative dust nuisance when quarry and stockpile area operate. 	<ul style="list-style-type: none"> ❖ 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 road. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. 	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ❖ Limit speed on the roads to 40 km/h to prevent the generation of excess dust. ❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to use. ❖ 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. ❖ 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). 	
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and 	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> ❖ Noise nuisance generated by earthmoving machinery. 	<ul style="list-style-type: none"> ❖ Signage indicating noise zones. ❖ Silencers fitted to all project related vehicles, and the 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. 	<p>Applicable throughout site establishment-, and operational phases.</p>

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
<ul style="list-style-type: none"> ❖ transporting of material. ❖ Cumulative impact. 	<ul style="list-style-type: none"> ❖ Noise nuisance stemming from operation of the processing plant. ❖ Cumulative noise nuisance when quarry and stockpile area operate. 	<ul style="list-style-type: none"> use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996. ❖ Noise mufflers fitted to generators. 	<ul style="list-style-type: none"> ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the site. ❖ 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. ❖ 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. 	<ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and 	<p><u>Terrestrial biodiversity, conservation areas and groundcover:</u></p> <ul style="list-style-type: none"> ❖ Infestation of the topsoil heaps and stockpile area 	<ul style="list-style-type: none"> ❖ Designated team to cut or pull out invasive plant species that germinated on site. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p>

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
<ul style="list-style-type: none"> ❖ transporting of material. ❖ Sloping and landscaping during rehabilitation phase. ❖ Cumulative impact. 	<ul style="list-style-type: none"> with weeds or invader plant species. ❖ Infestation of the area with invader plant species. ❖ Infestation of the reinstated areas by weeds and invader plant species. ❖ Cumulative impact of invader plants in both the quarry and stockpile footprints. 	<ul style="list-style-type: none"> ❖ Herbicide application equipment. 	<p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ 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 activities. ❖ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose. ❖ Keep all stockpiles free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas. 	<ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Sloping and landscaping during rehabilitation. 	<p><u>Hydrology:</u></p> <ul style="list-style-type: none"> ❖ Potential erosion of denuded areas. ❖ Erosion of returned topsoil after rehabilitation. 	<ul style="list-style-type: none"> ❖ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Develop and implement a stormwater management plan for the duration of the activities. ❖ Limit clearing of vegetation to the proposed stockpile footprint. Ensure no clearing takes place outside the minimum required footprint. ❖ Divert stormwater around the topsoil heaps and stockpile areas to prevent erosion. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible. ❖ Control the outflow of run-off water from the stockpile area 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 from the stockpile area may occur. ❖ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ❖ Rectify erosion problems because of the proposed 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 	

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			<p>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.</p>	
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. ❖ Processing, stockpiling, and transporting of material. ❖ Sloping and landscaping during rehabilitation phase. 	<p><u>General:</u></p> <ul style="list-style-type: none"> ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Potential contamination of environment due to improper waste management. ❖ Potential impact associated with litter/waste left at the area. 	<ul style="list-style-type: none"> ❖ Oil spill kit. ❖ Sealed drip trays. ❖ Formal waste disposal system with waste registers. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. 	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ 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
			<ul style="list-style-type: none"> ❖ 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 drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ❖ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a registered facility. File proof. ❖ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ❖ Clean spills immediately, within two hours of occurrence, by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof. ❖ Ensure suitable covered receptacles are 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 	

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			<p>disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the stockpile area. File proof of disposal.</p> <ul style="list-style-type: none"> ❖ 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 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 activities to the DWS and other relevant authorities. 	

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			<ul style="list-style-type: none"> ❖ Implement the use of waste registers to keep record of the waste generated and removed from the stockpile area. 	
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting, of material. 	<p><u>General:</u></p> <ul style="list-style-type: none"> ❖ Storage/handling of hazardous substance/chemicals. 	<ul style="list-style-type: none"> ❖ Storage areas with impermeable surfaces and bund walls that can hold 110% of the product amount stored in it. ❖ Hazardous Substances Register and Safety Data Sheets. ❖ Drip trays. ❖ Inspection programme. ❖ Operational oil sump. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Place chemical storage areas on level ground to prevent offsite migration of any spilled product. ❖ Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. ❖ Control access to the chemicals/substances and implement a notification system of an appropriate staff member. ❖ Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. ❖ Maintain a Hazardous Substances Register and keep Safety Data Sheets (SDS) current for all chemicals used on site. ❖ Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sit, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of 	<p>Applicable throughout site establishment-, and operational phases</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			<p>the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.</p> <ul style="list-style-type: none"> ❖ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. ❖ Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. ❖ Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the wastewater originating from the cleaning of drip trays into the oil sump. 	
<ul style="list-style-type: none"> ❖ Stripping and stockpiling of topsoil. 	<p><u>Hydrology:</u></p> <ul style="list-style-type: none"> ❖ Potential impact on the wetland system. 	<ul style="list-style-type: none"> ❖ Stormwater Management Plan. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. 	<p>Applicable throughout site establishment-, and operational phases.</p>

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			<ul style="list-style-type: none"> ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Maintain a 70 m buffer around the hillslope- as well as the valley bottom wetland areas throughout the lifespan of the activities. ❖ Keep the clearing of natural and semi-natural grasslands to a minimum. ❖ 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: <ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			<ul style="list-style-type: none"> ❖ To prevent the contamination of the aquatic environment: <ul style="list-style-type: none"> ▪ Notify the 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. 	
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	<p><u>Health and Safety</u></p>	<ul style="list-style-type: none"> ❖ Stocked first aid box. ❖ Level 1 certified first aider. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Ensure that workers have access to the correct PPE as required by law. ❖ Locate sanitary facilities within 100 m from any point of work. 	<p>Applicable throughout operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
<ul style="list-style-type: none"> ❖ Processing, stockpiling, and transporting of material. 	<p><u>Existing Infrastructure:</u></p> <ul style="list-style-type: none"> ❖ Potential damage to Eskom power line. 	<ul style="list-style-type: none"> ❖ Contact number of an Eskom representative. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. 	<p>Applicable throughout operational phase.</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management.

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			<p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Maintain a no-go buffer (minimum 20 m) around the power line as per Eskom standard that may only be traversed by the access road. ❖ Should the line be damaged, immediately (within the first hour of occurrence) inform Eskom. 	<ul style="list-style-type: none"> ❖ Annual compliance monitoring of site by an Environmental Control Officer.
<ul style="list-style-type: none"> ❖ Processing, stockpiling and transporting of material. 	<p><u>Existing Infrastructure:</u></p> <ul style="list-style-type: none"> ❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road. 	<ul style="list-style-type: none"> ❖ Grader to restore the road surface when needed. 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Prevent access from the N11 to and from the stockpile area, unless authorised 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 proposed activities. ❖ Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. 	<p>Applicable throughout operational phase.</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			<ul style="list-style-type: none"> ❖ Restrict the speed of all equipment/vehicles to 40 km/h on the access road. ❖ Keep the intersection of the Collings Pass Road and the N11 clear of any loose quarry material emanating from the source. 	
<ul style="list-style-type: none"> ❖ Sloping and landscaping during rehabilitation. 	<p><u>Topography:</u></p> <ul style="list-style-type: none"> ❖ Landscaping of stockpile area. ❖ Decommissioning and removal of the site infrastructure. 	<ul style="list-style-type: none"> ❖ Earthmoving equipment to reinstate areas that are no longer needed. ❖ Cover crop to be established on reinstated area. ❖ Erosion control infrastructure (when needed). 	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> ❖ 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. <p><u>Role:</u></p> <ul style="list-style-type: none"> ❖ Remove and dump coarse natural material used for the construction of ramps into the quarry as part of the rehabilitation of the excavation. ❖ 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 on the farm. ❖ Fertilize the area if necessary 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. ❖ On completion of operations, remove all structures or objects from site. ❖ On completion of operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if 	<p>Applicable throughout decommissioning phase.</p> <ul style="list-style-type: none"> ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

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			compacted due to hauling and dumping operations, to a depth of at least 200 mm and graded it to an even surface condition. Return the topsoil to its original depth over the area.	

(APPENDIX 4 SECTION 1(1)(l))

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 DEDTEA for compliance monitoring purposes or in accordance with the period stipulated by the Environmental Authorisation.

(APPENDIX 4 SECTION 1(1)(m))

m) Environmental Awareness Plan

i) Way the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Once the Applicant received the EA 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 boundaries, fire principals and hazardous waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct regarding the environment.

ii) Way risk will be dealt with 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 activities take place. An Environmental Control Officer needs to check compliance of the activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

❖ **Site Management:**

- Stay within boundaries of site – do not enter adjacent properties.
- Keep tools and material properly stored.
- Smoke only in designated areas.
- Use toilets provided – report full or leaking toilets.

❖ **Water Management and Erosion:**

- Check that rainwater flows around work areas and are not contaminated.
- Report any erosion.

- Check that dirty water is kept from clean water.
- Do not swim in or drink from 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 road.

- 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.

(APPENDIX 4 SECTION 1(1)(n))

n) Specific information required by the Competent Authority

Not applicable to this project, as the competent authority did not request any specific information.

2. UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&AP's
- c) the inclusion of inputs and recommendations from the specialist reports where relevant, a
- 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



Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

26 September 2022

Date:

-END-

APPENDIX A

PROJECT PLAN



APPENDIX B

LOCALITY MAP



APPENDIX C

SITE ACTIVITIES PLAN



APPENDIX D

SURROUNDING LAND USE MAP



APPENDIX E

REHABILITATION MAP



APPENDIX F1 & F2
COMMENTS AND RESPONSE REPORT
&
PROOF OF PUBLIC PARTICIPATION



APPENDIX G

WETLAND ASSESSMENT REPORT



APPENDIX H

TERRESTRIAL BIODIVERSITY IMPACT

ASSESSMENT REPORT



APPENDIX I

SUPPORTING IMPACT ASSESSMENT



ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been considered, with specific reference to types of impact, duration of impacts, likelihood of potential impacts occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT			
SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT			
<u>TYPE OF IMPACT</u>	<u>DURATION</u>	<u>LIKELIHOOD</u>	<u>SIGNIFICANCE</u>
<ul style="list-style-type: none"> ❖ Loss of agricultural land for duration of the project. ❖ Visual intrusion because of site establishment. ❖ Potential impact on vegetation and/or protected plant species. ❖ Potential impact on fauna within the footprint area. ❖ New job opportunities because of the operation (Positive Impact) 	<p>Duration of site establishment phase (±1 month)</p>	<p>Definite</p> <p>Definite</p> <p>Possible</p> <p>Low Possibility</p> <p>Definite (+)</p>	<p>Medium Concern</p> <p>Low-Medium Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>High (+)</p>
STRIPPING AND STOCKPILING OF TOPSOIL			
<ul style="list-style-type: none"> ❖ Visual intrusion caused by activities. ❖ Loss of stockpiled topsoil. ❖ Dust nuisance because of the disturbance of soil. ❖ Noise nuisance generated by earthmoving machinery. ❖ Infestation of the topsoil heaps and area with weeds or invader plant species. ❖ Potential impact on local fauna due to disturbance and loss of available habitat. ❖ Potential erosion of denuded areas. ❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages. ❖ Potential impact on the wetland system 	<p>Duration of site establishment phase (±1 month)</p>	<p><u>LIKELIHOOD</u></p> <p>Definite</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p> <p>Low Possibility</p>	<p><u>SIGNIFICANCE</u></p> <p>Low-Medium Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p> <p>Low Concern</p>

ENVIRONMENTAL IMPACT STATEMENT

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL

		<u>LIKELIHOOD</u>	<u>SIGNIFICANCE</u>
<ul style="list-style-type: none"> ❖ Dust nuisance generated at the processing plant. ❖ Noise nuisance stemming from operation of the processing plant. ❖ Potential contamination of environment due to improper waste management. ❖ Infestation of the area with invader plant species. ❖ Potential damage to Eskom power line. ❖ Overloading of trucks impacting road infrastructure. ❖ Degradation of the access road. 	<p align="center">Duration of operational phase (±5 years)</p>	Possible	Low-Medium Concern
		Low Possibility	Low-Medium Concern
		Low Possibility	Low Concern
		Low Possibility	Low Concern
		Low Possibility	Low Concern
		Low Possibility	Low Concern
		Low Possibility	Low Concern

CUMULATIVE IMPACTS

		<u>LIKELIHOOD</u>	<u>SIGNIFICANCE</u>
<ul style="list-style-type: none"> ❖ Cumulative dust nuisance when quarry and stockpile area operate. ❖ Cumulative noise nuisance when quarry and stockpile area operate. ❖ Cumulative visual impact when quarry and stockpile area are developed. ❖ Cumulative impact on vegetation cover when quarry and stockpile area are developed. ❖ Cumulative impact of invader plants in both the quarry and stockpile footprints. ❖ Cumulative impact on fauna when quarry and stockpile area operate. ❖ Cumulative impact on job opportunities when quarry and stockpile area operate. 	<p align="center">Duration of operational phase (±5 years)</p>	Possible	Low-Medium Concern
		Possible	Medium Concern
		Definite	Medium Concern
		Definite	Low-Medium Concern
		Possible	Low-Medium Concern
		Low Possibility	Low-Medium Concern
		Definite	High (+)

SLOPING AND LANDSCAPING DURING REHABILITATION

		<u>LIKELIHOOD</u>	<u>SIGNIFICANCE</u>
<ul style="list-style-type: none"> ❖ Decommissioning and removal of the site infrastructure (S1 & T1) ❖ Decommissioning and removal of the site infrastructure (S1 & T2) ❖ Erosion of returned topsoil after rehabilitation. 	<p align="center">Duration of decommissioning phase (±1 month)</p>	Definite	Low Concern
		Possible	Low-Medium Concern
		Low Possibility	Low Concern

ENVIRONMENTAL IMPACT STATEMENT

❖ Infestation of the reinstated areas by weeds and invader plant species.		Low Possibility	Low Concern
❖ Potential impact associated with litter/waste left at the area.		Low Possibility	Low Concern
❖ Return of the area to agricultural use upon closure (Positive Impact)		Definite (+)	Medium-High (+)

APPENDIX J
INVADER PLANT SPECIES MANAGEMENT
PLAN



APPENDIX K

PHOTOGRAPHS OF THE SITE



PHOTOGRAPH OF THE EXISTING QUARRY ON THE PROPERTY



PHOTOGRAPH OF THE AREA SOUTHWEST OF THE STOCKPILE AREA



PHOTOGRAPH OF THE STOCKPILE AREA AND SURROUNDINGS TOWARDS THE WEST



PHOTOGRAPH OF THE STOCKPILE AREA



PHOTOGRAPH OF THE APPLICATION AREA (EASTERN VIEW)



APPENDIX L
CV AND EXPERIENCE RECORD OF EAP

