

**TRANSKEI QUARRIES (PTY) LTD  
A PORTION OF ERF RE/153 AND ERF RE/725,  
MNQUMA MAGISTERIAL DISTRICT,  
EASTERN CAPE PROVINCE**

**SECTION 102 APPLICATION  
FINAL BASIC ASSESSMENT REPORT – EXPANSION OF MINING AREA**

**AUGUST 2024**

**REFERENCE NUMBER: EC 30/5/1/2/2/0183 MR – EC-00033-MR/102**



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## EXECUTIVE SUMMARY

Butterworth Quarry entails the mining of a hard rock quarry on municipal land that extends over a portion of Erf RE/153 and Erf RE/725, approximately 3 km east of the CBD of Butterworth. The quarry has seen its inception in 1971. Raumix Aggregates (Pty) Ltd procured the quarry in April 2018 and a Section 11 application was granted (by DMRE) in April 2021 ceding the mining right to Transkei Quarries (Pty) Ltd (hereinafter referred to as the “Right Holder”).

In 2023, the Right Holder applied for consent of the Minister to:

- ❖ align the mining documentation with the Section 11 approval,
  - ❖ update the EMPR; and
  - ❖ expand the mining footprint with 13.9402 ha;
- , in terms of Section 102 of the MPRDA, 2002.

The proposed expansion of the mine’s footprint necessitates an application for a Part 2 amendment of the mine’s EMPR in terms of GNR 326 Section 31 (NEMA). The application further constitute listed/specified activities in terms of the NEMA: EIA Regulations, 2014 (as amended) and therefore requires an environmental impact assessment (basic assessment process).

***This document, the final Basic Assessment Report (FBAR) and draft environmental management programme (EMPR), combine the aspects related to the proposed expansion activities applied for by Transkei Quarries (Pty) Ltd in terms of section 102 the MPRDA, 2002 with the operational aspects of the mine and update the 2009 EMPR of the mine to include both operational and expansion activities.***

### **Need and Desirability:**

Butterworth Quarry produces aggregates and road pavement layering products for the construction and building industry of mainly the Eastern Cape. Mining at Butterworth Quarry (since 1971) brought about the development of the pit to its ultimate extent. Considering this, the Right Holder identified the need to expand the mining footprint as this will allow the development of the quarry pit in a southern/south-eastern direction. The earmarked expansion footprint was used as waste dump by the municipality in the past, and therefore does not constitute an undeveloped natural and/or pristine area. Although the proposed expansion area is no longer used as waste dump and has been reinstated in the meantime, the vegetation cover is still representative of disturbed land with no fauna and/or floral species of conservation concern present. The proposed expansion of the mining area will furthermore move the mining activities (such as blasting) away from the nearby community houses that borders the Quarry opposite Kentani Road and include the part of the excavation that historically extended across the mine boundary.

### **Alternatives Considered:**

During the EIA phase the following alternatives were considered:

*(a) The property on which or location where it is proposed to undertake the activity:*

Expansion of the current mining footprint from  $\pm 16.16$  ha to  $\pm 30.1$  ha over a previously altered area within the coordinates as presented in this document (Table 4).

*(b) The type of activity to be undertaken:*

Mining of the proposed expansion area in the same way as the current quarry is being mined through benched open pit excavations. Hard rock breaking is done by drilling and blasting. The broken rock is sorted and loaded onto articulated dump trucks, that haul it to the existing primary crushing plant of the mine, where various products are conveyed to secondary-, tertiary- and quaternary crushing and screening processes to result in the desired products.

*(c) The design or layout of the activity:*

Mining of the area without the need to establish permanent infrastructure and/or buildings in the expansion area. The specific design of the quarry pit will be developed in consultation with a qualified mine planner/engineer and will be dictated by the 1:100 year floodline of the Gcuwa River to be determined should the S102 application be successful.

*(d) The technology to be used in the activity:*

Mining of the expansion area through drilling, blasting, and excavation with earthmoving machinery. No complex technology is required.

*(e) The operational aspects of the activity:*

Incorporation of the proposed activity into the ongoing operations of Butterworth Quarry. The Right Holder already extract water from the quarry pit, no electricity is needed to allow the continuation of the proposed activity, no servicing of mining equipment will be required within the expansion area, Kentani Road and the existing internal roads will provide access to the quarry. The project does consider mitigating impacts such as dust generation, noise handling, waste management, and rehabilitation.

*(f) The option of not implementing the activity:*

This alternative will prevent the Right Holder from expanding the quarry pit and the opportunity of mining in a southern direction, away from the surrounding residents, will be lost. The expansion of the pit will directly affect the lifespan of the Quarry, as the life of mine is presently calculated

at ±24 years should the expansion be approved. An increased life of mine will provide the employees with peace of mind regarding downscaling and retrenchments linked to mine closure, as well as socio-economic benefits and growth development opportunities. Given the high levels of unemployment and poverty in the Mquma District the loss of such opportunities is considered significant. Mining the earmarked area will benefit the Mquma Municipality (MLM) financially as their undeveloped land will generate surface use income. Therefore, the no-go option is not supported.

### **Public Participation Process**

During the public participation process of this S102 application the relevant stakeholders and I&AP's were informed of the project through an advertisement in the Daily Dispatch, and on-site notices that were placed at the entrance to the Quarry and the Butterworth Library. A notification letter/flyer inviting comments on the DBAR over a 30-days commenting period (ending 26 August 2024) was also send/distributed to the landowner, neighbouring landowners, stakeholders, and any other I&AP that may be interested in the project. The comments received on the DBAR were incorporated into this report, the final Basic Assessment Report (FBAR), to be submitted to the DMRE for decision making.

### **Basic Assessment Report**

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

#### **Topography:**

- ❖ Should the mining of the expansion area be allowed, the remaining landscape (between the current quarry excavation and the river) will gradually be changed through the removal of the material. Mining of the area will have a permanent impact on the topography of the area that can only be mitigated to a certain extent through bench mining and rehabilitation. Upon closure, the excavation will be made safe but will remain as a landscape feature as backfilling the excavation is not possible/practical. The activity will therefore have a residual impact on the topography of the area.

#### **Visual Characteristics:**

- ❖ The viewshed analysis shows that the potential visual impact of the proposed activity will be of very low concern, and therefore the visual impact is deemed to be of low-medium significance.

*Air and Noise Quality:*

- ❖ Night shift work may have a medium negative impact on the receiving environment, and therefore the management and mitigation measures proposed in this document must be implemented for the duration of the operational phase.
- ❖ The proposed activity is not expected to have a cumulative impact on the air quality and/or noise ambiance of the receiving environment as mining will gradually move into the expansion area as the current footprint becomes depleted. Mining the excavation in a southern direction will take the operations further away from the residents (opposite Kentani Road) towards the undeveloped rural land where there are no resident human receptors. Considering this, the proposed air and noise emissions of the expansion area will be comparable to the current emissions of the Quarry, if not better due to the proposed southern direction away from the residents.

*Hydrology:*

- ❖ The SANBI BGIS Map Viewer shows the study area to be within a Fish Sanctuary Classed CDEFZ confirming the highly modified ecological status of the Gcuwa River and it is therefore deemed a Fish Support Area instead of a FEPA.
- ❖ Mining the proposed expansion area will not impact the fish support status of the area as the proposed activities will remain outside the 1:100 year floodline and riparian vegetation layer of the Gcuwa River. The earmarked footprint has been disturbed on numerous occasions during the past 10 years, and therefore no longer contribute to the wetland cluster that was previously identified by SANBI.
- ❖ The proposed footprint of the expansion area was chosen to stay >32 m from the banks of the river.
- ❖ Should the mitigation measures and management plans proposed in this document, be implemented, the potential impact on the hydrology will be of low significance.

*Terrestrial Biodiversity, Conservation Areas, Groundcover and Fauna:*

- ❖ No protected and/or sensitive plant species occur within the proposed expansion area, and should the right holder keep excavations out of the riparian fringe along the Gcuwa River, the proposed development will have a low-medium significance on the receiving environment.
- ❖ Given the relatively *status quo* of the project development area and the existing land use of the area (disturbed and encroached grasslands used for grazing) impacts to faunal movement is unlikely to be of significant concern.

### Cultural and Heritage Environment:

- ❖ Beyond Heritage (Pty) Ltd concluded that the extensive surface disturbances of the project area would have impacted heritage resources had any previously been present and therefore an application for exemption from a Phase 1 HIA was supported. However, due to the subsurface nature of heritage finds including graves, a Chance Find Procedure must be implemented for the Project.
- ❖ Due to the historic disturbed nature of the area, the potential of the proposed expansion area affecting any archaeological and/or palaeontological artefacts or environments is deemed to be of very low possibility.

### Existing Infrastructure:

- ❖ No infrastructure exists in the proposed expansion area that could be affected by the proposed activity. If approved, the additional mining area will be fenced off to control access and prevent sprawling.

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

### **Environmental Management Programme (EMPR)**

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

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 7 229 820.00. Transkei Quarries (Pty) Ltd has a financial guarantee to the value of R 4 386 642.62 lodged with the DMRE that will have to be increased to provide for the shortfall should the above calculation be approved by the DMRE and the S102 application be successful.

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## LIST OF ABBREVIATIONS

ADM	Amathole District Municipality
ASTM	American Standard Test Method
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CBD	Central Business District
DBAR	Draft Basic Assessment Report
DD	Data Deficient
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DEFF	Department of Environment, Forestry and Fisheries
DMRE	Department of Mineral and Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioner Association of South Africa
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECO	Environmental Control Officer
ECNEO	Eastern Cape Nature and Environmental Ordinance 19 of 1974 (as amended)
ECPHRA	Eastern Cape Provincial Heritage Resources Authority
EIA	Environmental Impact Assessment

EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended)
EMPR	Environmental Management Programme
EN	Endangered
ESA	Environmental Support Area
ESG	Environmental and Social Governance
FBAR	Final Basic Assessment Report
FEPA	Freshwater Ecosystem Priority Area
GDP	Gross Domestic Product
GNR	Government Notice
GPS	Global Positioning System
HDSA	Historically Disadvantaged South Africans
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
IUCN	International Union for Conservation of Nature
LC	Least Concern
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MLM	Mnquma Local Municipality
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MR	Mining Right
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NT	Near Threatened
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
S102	Section 102 Amendment Application in terms of the MPRDA, 2002
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
SANS	South African National Standards
SLP	Social and Labour Plan
VU	Vulnerable
WMA	Water Management Area



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

**BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

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

<b>NAME OF APPLICANT:</b>	Transkei Quarries (Pty) Ltd
<b>TEL NO:</b>	087 086 4509
<b>FAX NO:</b>	-
<b>POSTAL ADDRESS:</b>	Transkei Quarries, Kentani Road, Butterworth, 4960
<b>PHYSICAL ADDRESS:</b>	Same as above
<b>FILE REFERENCE NUMBER SAMRAD:</b>	EC 30/5/1/2/2/0183 MR – EC-00033-MR/102

## **IMPORTANT NOTICE**

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

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

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

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

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



## **OBJECTIVE OF THE BASIC ASSESSMENT PROCESS**

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

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
  - (21) 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 –
  - (21) 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.

***NOTE: This document combine the aspects related to the proposed expansion activities applied for by Transkei Quarries (Pty) Ltd in terms of section 102 the MPRDA, 2002 with the operational aspects of the mine and update the 2009 EMPR of the mine to include both operational and expansion activities.***

## **PART A**

### **SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT**

#### **1. CONTACT PERSON AND CORRESPONDENCE ADDRESS**

##### **a) Details of: Greenmined Environmental (Pty) Ltd**

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

##### **i) Details of the EAP**

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

##### **ii) Expertise of the EAP.**

###### **(1) The qualifications of the EAP**

(with evidence).

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

###### **(2) Summary of the EAP's experience.**

(In carrying out the Environmental Impact Assessment Procedure)

Ms Fouché has nineteen years' experience in doing Environmental Impact Assessments and Mining Applications in South Africa. Ms. Fouche is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA

(Environmental Assessment Practitioners Association of South Africa) since 2019.  
 See a list of past projects attached as Appendix K.

**b) Location of the overall Activity.**

*Table 1: Location of the operational and proposed expansion activities.*

<b>Farm Name:</b>	<ul style="list-style-type: none"> <li>❖ Erf Re/153</li> <li>❖ Erf Re/725</li> </ul>
<b>Application area (Ha)</b>	<p>Once the expansion (S102) application is approved the mining area will be 30.1036 ha</p> <ul style="list-style-type: none"> <li>◆ Approved Mining Footprint = 16.1634 ha</li> <li>◆ S102 Expansion Area = 13.9402 ha</li> <li>◆ Total Expanded Footprint = 30.1036 ha</li> </ul>
<b>Magisterial district:</b>	Mnquma Magisterial District
<b>Distance and direction from the nearest town</b>	Butterworth Quarry is situated ±3 km east of Butterworth central along Kentani Road.
<b>21 digit Surveyor General Code for each farm portion</b>	<ul style="list-style-type: none"> <li>❖ C08700010000015300000</li> <li>❖ C08700010000072500000</li> </ul>

**c) Locality map**

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

The requested map is attached as Appendix B.



Figure 1: Satellite view showing the mining right area (green polygon) and the S102 application area (red polygon) in relation to the surroundings where the orange polygons indicates the boundaries of Erf RE/153 and Erf RE/725 (image obtained from Google Earth).

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

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

**SECTION 102 APPLICATION IN TERMS OF THE MPRDA, 2002, AND EA APPLICATION IN TERMS OF THE NEMA EIA REGULATIONS, 2014 (AS AMENDED):**

Transkei Quarries (Pty) Ltd, applied for a Section 102 (S102) amendment in terms of the MPRDA, 2002 to:

- ❖ align the mining documentation with the Section 11 approval,
- ❖ update the EMPR, and
- ❖ expand the mining footprint. The current mining right was approved over 16.1634 ha, and the Right Holder now desires to extent the mining area to 30.1036 ha.

**SCOPE OF THE OVERALL ACTIVITY:**

Mining at Butterworth Quarry (since 1971) brought about the development of the pit to its ultimate extent. Considering this, the Right Holder identified the need to expand the mining footprint as this will allow development of the quarry pit in a southern/south-eastern direction.

The proposed expansion of the mining area will further move the mining activities (such as blasting) away from the nearby community houses that borders the Quarry opposite Kentani Road.

The mining method will remain unchanged, and no additional infrastructure needs to be established in the expansion area, as the motivation for the proposed extension is to expand the quarry pit perimeter. The Right Holder will therefore continue to use the existing offices, workshops, storerooms, plant etc. of the Quarry.

The proposed expansion of the mine’s footprint necessitates an application for a Part 2 amendment of the mine’s EMPR in terms of GNR 326 Section 31 (NEMA). The application further constitute listed/specified activities in terms of the NEMA: EIA Regulations, 2014 (as amended) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy (DMRE)) when considering the environmental authorisation.

See attached as Appendix C a copy of the site activities map of the operation.

**i) Listed and specified activities**

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

<b>NAME OF ACTIVITY</b>	<b>Aerial extent of the activity</b>	<b>LISTED ACTIVITY</b>	<b>APPLICABLE NOTICE</b>	<b>LISTING</b>
(E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc  E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Ha or m <sup>2</sup>	Mark with an X where applicable or affected	(GNR 324, GNR 325, GNR 326 OR GNR 327)	
Application for a Section 102 MPRDA, 2002 amendment of the mining right, as well as a Part 2 amendment of the EMPR in terms of GNR 326 Section 31.	13.9402 ha (Expansion Area)	X	GNR 983 of 2014 (as amended) Activity 21D	

NAME OF ACTIVITY	Aerial extent of the activity	LISTED ACTIVITY	APPLICABLE NOTICE	LISTING
<p><u>EIA Regulations GNR 983 of 2014 (as amended) Activity 21D:</u></p> <p><i>Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.</i></p>				
Demarcation of the expansion area with visible beacons.	13.9402 ha	N/A	-	
Stripping and stockpiling of topsoil and/or overburden from the expansion area.	±12 ha	X	GNR 983 of 2014 (as amended) Activity 21D	
Drilling and blasting of hard rock in the expansion area.	±12 ha			
Excavation, loading and hauling of rock from the expansion area to processing area.	±12 ha			
Sloping, landscaping, and rehabilitation the affected areas (operational- and expansion area) upon closure of the mine.	30.1036 ha			

**ii) Description of the activities to be undertaken**

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

*(Information obtained from the Environmental Management Programme compiled by GES, May 2009)*

**1. BACKGROUND INFORMATION**

Butterworth Quarry entails the mining of a hard rock quarry on municipal land that extends over a portion of Erf RE/153 and Erf RE/725, approximately 3 km east of the CBD of Butterworth. The quarry has seen its inception in 1971. Sunshine Enterprises (Pty) Ltd applied for a right to mine dolerite bedrock from this quarry in November 2006. The Department of Mineral Resources and Energy (DMRE) approved the application, and the mining right (MR) commenced on 03 November 2009 and is valid until 03 November 2039.

Raumix Aggregates (Pty) Ltd procured the quarry in April 2018 and a Section 11 application was submitted to the DMRE that was granted in April 2021 ceding the mining right to Transkei Quarries (Pty) Ltd.

## 2. APPROVED OPERATIONAL ACTIVITIES

*Also refer to Part B(1)(b) Description of the Aspects of the Activity.*

As mentioned earlier the approved mining area is 16.1634 ha. The table below lists the GPS coordinates of the approved mining footprint.

*Table 3: GPS Coordinates of the approved mining right area.*

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32°19'46.98"	28°10'49.94"	-32.329717°	28.180539°
B	32°19'45.97"	28°10'52.78"	-32.329436°	28.181328°
C	32°19'49.08"	28°10'59.12"	-32.330300°	28.183089°
D	32°19'50.83"	28°11'04.13"	-32.330786°	28.184481°
E	32°19'55.95"	28°11'01.66"	-32.332208°	28.183794°
F	32°20'00.75"	28°10'57.30"	-32.333542°	28.182583°
G	32°20'00.92"	28°10'46.82"	-32.333589°	28.179672°
H	32°20'01.39"	28°10'43.09"	-32.333719°	28.178636°



*Figure 2: Satellite view of the approved footprint of Butterworth Quarry where the orange polygon shows the layout of Erf RE/725 and the blue polygon shows Erf RE/153 (image obtained from Google Earth)*

The quarry footprint and land surrounding the quarry between Ketani Road, and the Gcuwa River is municipal commonage owned by the Mnquma Local Municipality. In 2006 rural land use included grazing and the establishment of a few informal residential

dwelling. The town's wastewater treatment works is located to the east of the quarry and a poorly managed soil waste refuse site developed to the south of the quarry. The Gcuwa River meanders around the western boundary of the quarry footprint and deflects eastwards around the southern limits of the previous waste site and the wastewater treatment works before deflecting southwards again *en route* to the coast. This drainage system, therefore, encloses the mining footprint, the previously used waste site, and wastewater treatment works between the drainage channel to the south and Kentani Road to the north.

Residual dolerite of the Drakensberg Group is mined at Butterworth Quarry, where the cooled dolerite formed massive, sub-horizontal sheets. The 2006 mining application proposed the winning of the rock north and east of the then mining scar. Mining is undertaken in a benched open pit at elevations. The pit excavations are limited by the mine boundaries that stand in relation to the adjacent Gcuwa River and to the north by the processing plant and office buildings. The current depth of the quarry is approximately 50 m from the immediate ground level. Rock breaking is done initially by drilling and blasting using crawler mounted rigs and emulsion type bulk explosives. Oversized boulders are placed aside in the pit and large boulders are broken with explosives utilizing secondary blasting. The broken rock is sorted and loaded onto articulated dump trucks that is hauled to the primary crushing plant, where various products are further conveyed to secondary-, tertiary- and quaternary crushing and screening processes to result in the desired products. Butterworth Quarry produces aggregates and road pavement layering products for the construction and building industry of mainly the Eastern Cape.

## **2.1 SITE INFRASTRUCTURE**

Butterworth Quarry has well established buildings and infrastructure on site. The following main areas are defined at the mine:

1. Truck parking area (outside gate) & secured entrance gate;
2. Weighbridge and supporting infrastructure;
3. Office buildings;
4. Workshop, wash bay and stores;
5. Processing area with crushing and screening plant;
6. Various stockpile areas;
7. Area where remnants of the old processing plant (being decommissioned); and
8. Quarry pit.





Figure 3: Satellite view of the various developed areas at Butterworth Quarry (image obtained from Google Earth)

The Quarry is connected to the Eskom grid and access is gained directly from the surfaced Kentani Road to the north. There are no servitudes registered within the mine footprint, nor railways passing the Quarry.

**2.2 WATER USE**

The potable water of the Quarry is obtained from the municipality, while process water is extracted from the sump in the quarry pit.

The dolerite is fractured between the Gcuwa River and the western boundary of the mine and the open fractures in the bedrock therefor act as a conduit for sub-surface water seepage. Surface water from the adjacent river system seeps through these open fractures into the quarry excavation. The resultant quarry pit

continuously fills with water seeping through the fractured bedrock, and the pit must continuously be pumped to afford personnel and opportunity to work in the floor of the excavation.

### 2.3 WASTE MANAGEMENT

The mine generates limited amounts of general- and hazardous waste. The Right Holder has an integrated waste management policy, and the company strives to recycle where possible.

Presently, waste is separated into waste that can be re-used, recycled, and those that must be removed from the site. General waste (that cannot be reused on site) is removed to the Mnyama municipal landfill site. Hazardous waste is removed from site by qualified hazardous waste handling contractors.

## 3. SECTION 102 APPLICATION

### 3.1 S102 PROJECT PROPOSAL – EXPANSION OF THE MINING FOOTPRINT

As mentioned earlier, the Right Holder applied for consent of the Minister to:

- ❖ align the mining documentation with the Section 11 approval,
  - ❖ update the EMPR; and
  - ❖ expand the mining footprint;
- , in terms of Section 102 of the MPRDA, 2002.

Should the S102 application (including EA) be approved, the Right Holder intends to expand the mining footprint with 13.9402 ha within the GPS coordinates as listed in the following table and depicted in the subsequent figure.

*Table 4: GPS Coordinates of the proposed expansion area.*

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A1	32°19'51.305"	28°11'05.984"	-32.330918°	28.184996°
A2	32°19'54.291"	28°11'04.447"	-32.331748°	28.184569°
A3	32°20'07.326"	28°11'01.991"	-32.335369°	28.183886°
A4	32°20'07.811"	28°10'58.562"	-32.335503°	28.182934°
A5	32°20'08.635"	28°10'56.388"	-32.335732°	28.182330°
A6	32°20'09.182"	28°10'54.468"	-32.335884°	28.181797°
A7	32°20'09.157"	28°10'51.770"	-32.335877°	28.181047°
A8	32°20'08.753"	28°10'48.012"	-32.335765°	28.180003°
A9	32°20'07.855"	28°10'46.021"	-32.335515°	28.179450°
A10	32°20'05.954"	28°10'43.812"	-32.334987°	28.178837°

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A11	32°20'04.171"	28°10'42.936"	-32.334492°	28.178593°
A12	32°20'01.391"	28°10'43.089"	-32.333720°	28.178636°
A13	32°20'00.925"	28°10'46.817"	-32.333590°	28.179672°
A14	32°20'00.750"	28°10'57.303"	-32.333542°	28.182584°
A15	32°19'55.947"	28°11'01.659"	-32.332208°	28.183794°
A16	32°19'50.834"	28°11'04.129"	-32.330787°	28.184480°



Figure 4: Satellite view of the proposed expansion area (red polygon) in relation to the mining footprint (green polygon) and the property boundaries (blue and orange lines) (image obtained from Google Earth).

### 3.2 CONSTRUCTION PHASE / SITE ESTABLISHMENT

Should the expansion application be approved the mining method will remain unchanged. No additional infrastructure needs to be established in the expansion area as the motivation for the proposed extension is to expand only the quarry pit

perimeter. The Right Holder will continue to use the existing offices, workshops, storerooms, plant etc. of the Quarry and therefore no construction/site establishment phase is applicable.

### **3.3 OPERATIONAL PHASE**

The southern boundary of the quarry pit was historically (before 2007) extended beyond the authorised mine boundary. Should this S102 application be approved the Right Holder will continue with the expansion of the quarry pit in a southern/south-eastern direction. The mining method of the quarry will remain the same and bench mining will also be applicable in the expansion area.

If the expansion is approved, the southernmost boundary of the quarry pit will extend up to the 1:100 year floodline of the Gcuwa River but stay more than 32 m from the bank of the river. No excavations will enter the floodline, and the Quarry will approach the Department of Water and Sanitation (DWS) regarding the need for a possible amendment of the current water use authorization of the mine.

Mining related equipment/machinery that will operate within this area will consist of at least the following:

- ❖ Dumper trucks;
- ❖ Earthmoving machinery;
- ❖ Excavation equipment; and
- ❖ Water cart/s.

The Quarry will operate 24-hours, 7-days a week. Blasting will take place on weekdays between 08:00 and 17:00. The day time shift will entail the following main activities:

- ❖ Drilling and blasting;
- ❖ Excavations, loading and hauling material from the quarry to the processing area;
- ❖ Crushing, screening and stockpiling of material; and
- ❖ Dispatch.

During the night shift activities will be limited to the following:

- ❖ Excavations, loading and hauling of material from the quarry to the processing area; and
- ❖ Crushing, screening and stockpiling of material.
- ❖ Maintenance and cleaning of the plant.

### **3.3.1 Demarcation of Mining Boundaries**

Pursuant to receipt of the Environmental Authorisation (EA) and amended Mining Right (MR) the boundaries of the expansion area will be demarcated with visible beacons. The 1:100 year floodline of the river will also be indicated and managed as a no-go area.

### **3.3.2 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, Groundcover and Fauna))*

Although the proposed expansion footprint extends over a historic waste dump, the area was reinstated by ±2014, and the vegetation cover did re-establish albeit dominated by pioneer grasses, *Vachellia* (previously known as *Acacia*) trees, and invasive species.

Expansion of the quarry pit will therefore still require the removal of indigenous vegetation. The vegetation type of the earmarked footprint is classified as Bisho Thornveld (SVs7), and mainly consists of grassland with *Vachellia* trees. Thickets are found along the river fringe where the vegetation cover can be very dense in places. The Right Holder will restrict mining outside the riparian area and strive to conserve as much vegetation within the expansion area as possible. Vegetation will only be stripped immediately prior to the mining of a specific area. Blanket clearing will not be allowed. No species of conservation concern were identified within the earmarked footprint.

### **3.3.3 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 mining boundary to be replaced during the rehabilitation of the area. It will be part of the

obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 2 m in height.

### **3.4 DECOMMISSIONING PHASE**

Due to the impracticality of importing large volumes of fill to restore the quarry pit to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix H for the Closure Plan).

The decommissioning activities will therefore consist of the following:

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

Upon rehabilitation, the area around the excavation will be levelled and landscaped to return to municipal use. The buildings and roads at the property will most likely be retained for future use by the landowner and will therefore not be demolished unless required by the municipality. The Right Holder will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

❖ **Rehabilitation of the Excavated Area:**

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

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

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

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

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

❖ **Final rehabilitation:**

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

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

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

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental

Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

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

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

### e) Policy and Legislative Context

Table 5: Policy and Legislative Context.

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b>  (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Amathole District Municipality Integrated Development Plan 2021/2022 (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.
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 –	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.
	<i>Management of invader plant species.</i>	
Eastern Cape Nature and Environmental Ordinance 19 of 1974 (as amended).	Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity - <i>Biological Environment</i>  Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Terrestrial Biodiversity, Conservation Areas and Groundcover.</i>	The mitigation measures proposed for the site includes specifications of the ECNEO, 1974.
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.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – <i>Management of Health and Safety Risks.</i>	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto.  ❖ Section 102 amendment application	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a S102 amendment of the mining right submitted to DMRE-EC. Ref No: EC 30/5/1/2/2/0183 MR
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended)  ❖ GNR 517 Listing Notice 1 Activity 21D	Part A(1)(d)(i) Listed and specified activities.	Application for a Part 2 amendment of the EMPR as well as an EA submitted to DMRE-EC. Ref No: EC 30/5/1/2/2/0183 MR
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 R893	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	The mitigation measures proposed for the site consider the NEM:AQA, 2004 and the National Dust Control Regulations.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
	be applied on the level of risk – <i>Fugitive Dust Emission Mitigation Measures.</i>	
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 Removal &amp; Management of invader plant species.</i>	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto.	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 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 archaeologist did not identify any aspects that may trigger the NHRA, 1999.  The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.  Department of Water Affairs and Forestry Best Practice Guideline Series (2007).	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>Erosion Control and Storm Water Management.</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.  Should the S102 application be approved, the Right Holder will contact the DWS regarding the need for a possible amendment of the current water use authorisation of the Quarry.

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.

**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)

Butterworth Quarry produces aggregates and road pavement layering products for the construction and building industry of mainly the Eastern Cape. Customers include, amongst others, the following:

- ❖ WBHO Construction (Pty) Ltd;
- ❖ Mpumalanga Construction (Pty) Ltd;
- ❖ Dintwa Trading;
- ❖ Tshawe Blocks;
- ❖ Lovely Goods Trading;
- ❖ African Hardware;
- ❖ B and B Concrete Product (Pty) Ltd;
- ❖ Scribante Concrete (Pty) Ltd;
- ❖ Block City;
- ❖ Alif General Trading;
- ❖ Kwa Nincedile;
- ❖ Raja Pep;
- ❖ Tiki Business Interprice;
- ❖ Hassan AL/FAJAR Trading;
- ❖ Mqura Trading Enterprise.

Mining at Butterworth Quarry (since 1971) brought about the development of the pit to its ultimate extent. Considering this, the Right Holder identified the need to expand the mining footprint as this will allow the development of the quarry pit in a southern/south-eastern direction.

The earmarked expansion footprint was used as waste dump by the municipality in the past, and therefore does not constitute an undeveloped natural and/or pristine area. Although the proposed footprint is no longer used as waste dump and has been reinstated

in the meantime, the vegetation cover is still representative of disturbed land with no fauna and/or floral species of conservation concern present.

The proposed expansion of the mining area will furthermore move the mining activities (such as blasting) away from the nearby community houses that borders the Quarry opposite Kentani Road and include the part of the excavation that historically extended across the mine boundary.

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 6: Need and desirability determination.

<b>1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES</b>		
<u>How will this development impact on the ecological integrity of the area?</u>		
<b>Question</b>	<b>Response</b>	<b>Level of Desirability</b>
<p>How were ecological integrity considerations taken into account?</p>	<p>As discussed under Part A(1)(g)(iv)(1)(a) <i>Type of environment affected by the proposed activity</i>, according to the broadscale GIS data, the proposed expansion area lays within an Upstream River FEPA, wetland cluster, and fish support area. The Mining and Biodiversity Map shows the south/south-western part of the expansion area extends across an area of highest biodiversity importance with a corresponding rating of highest risk for mining. According to the 2019 Eastern Cape Biodiversity Conservation Plan there is a Terrestrial ESA defined along the western, southern, and eastern parts of the study area, with the river indicated as an Aquatic Critical Biodiversity Area (CBA).</p> <p>When these results are however ground truthed, the actual status of the proposed expansion footprint is of very low sensitivity. The proposed expansion area has very little to no connectivity to other natural areas, as the river forms a migration barrier to the south and west, the wastewater treatment works is operational to the east, and to the north the rural areas has been transformed into residential areas. The vegetation of the proposed expansion area has been disturbed on numerous occasions in the past (less than 10 years) and established over the reinstated waste dump. No fauna or flora species of conservation concern occurs on the site that will be impacted on and should mining be kept outside the 1:100 year floodline and out of the riparian vegetation that line the riverbanks, the proposed expansion will not have a significant impact on the ecological integrity, ecosystems, and/or biological diversity of the area.</p>	Desirable
<p>How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?</p>		

**1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES**

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

Question	Response	Level of Desirability
How will this development pollute and/or degrade the biophysical environment?	This application is for the expansion of the quarry excavation at Butterworth Quarry and will entail the same mining method that has been ongoing since inception of the mine. The expansion of the excavation will not generate additional and/or other waste products than those already managed on site.	Highly Desirable
What waste will be generated by this development?	<p>As mentioned earlier, the mining activities generate very little general- and/or hazardous waste. The Right Holder has an integrated waste management policy, and the company strives to recycle where possible. The general waste mainly consist of paper, plastic, tin, and/or glass from the daily operations of the employees. A registered contractor services the septic tank on site.</p> <p>Hazardous waste result mainly from services, and accidental spillages/breakdowns. Contaminated areas are immediately (within two hours of occurrence) cleaned, and the contaminated soil is contained in a designated bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor or cleaned through bioremediation. Other hazardous waste such as oils, filters, rags etc. are removed from site by an appropriately qualified contractor.</p>	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	The proposed development footprint does not constitute areas of cultural and/or heritage concern and the proposed activity will therefore not affect such.	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	If the expansion of the footprint is approved the Right Holder will continue mining the resource and expand the quarry pit towards the south/southeast. Presently (2024), the probable mining reserves were conservatively	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?	calculated to be 3.6 million m <sup>3</sup> . The Right Holder intends to mine ±164 000 m <sup>3</sup> material per year depending on market demand and sales and the life of mine is therefore expected to be ±24 years. Considering this, the right holder will responsibly consume the resource on the property.	
How were a risk-averse and cautious approach applied in terms of ecological impacts?	No mining will take place within the 1:100 year flood line of the river or within the riparian vegetation along the riverbanks.	Highly Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	The area earmarked for the proposed expansion is municipal land that is wedged between the wastewater treatment works, the existing mining footprint, and the Gcuwa River. Although the area is occasionally grazed by community members, these people, and animals trespass onto the property as no formal surface use agreement exists with the municipality. Considering this, the proposed activity will not affect people's environmental rights should it be authorised.	Highly Desirable
Describe the linkages and dependencies between human wellbeing, livelihoods, and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If the S102 application is approved, the mine will be able to expand the quarry excavation to the south and south-east onto land that is effectively isolated from other natural areas. As mentioned earlier, noisy activities such as blasting will gradually move away from the residential areas in the north, and the municipality will receive compensation for the use of the land. The betterment of the Quarry directly contributes to a prolonged lifespan of the operation and job security to the employees. The mine will also continue to meet the commitments of the SLP regarding Human Resources Development, and Local Economic Development, amongst others.	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>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>If the mitigation measures proposed in this document are adhered to, the proposed project could operate without influencing the status of the ecosystem type, red data species or the conservation targets set out for an Aquatic: CBA.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> <li>❖ Part A(1)(d)(ii) Description of the activities to be undertaken;</li> <li>❖ Part A(1)(h)(i) Details of the development footprint alternatives considered;</li> <li>❖ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity;</li> <li>❖ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site.</li> </ul>	<p align="center">Highly Desirable</p>



**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 the S102 application is approved, the mine will continue to generate income from the selling of aggregates. The betterment of the Quarry directly contributes to a prolonged lifespan of the operation and job security to employees. The continued management of the mining area enhances the socio-economic value of the area compared to the area being dormant, and as mentioned earlier, the continued existence of the mine ensures contributions to the community in terms of the SLP commitments.	Highly Desirable
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The municipality also receives compensation for the use of their land that can be spend elsewhere in the community. The Quarry directly contributes to the needs of the community in terms of employment, aggregate sales, and social upliftment, while also indirectly contributing to infrastructure development in mainly the Eastern Cape.	Highly Desirable
Will the development result in equitable impact distribution, in the short- and long-term?	The proposed activity will be operated in a socially and economically sustainable manner during both the short- and long term. Transkei Quarries (Pty) Ltd is focused on Historically Disadvantaged South Africans, especially women, empowerment. The procurement progression plan of the Right Holder entails the support of local enterprises, of which preference is given to HDSA & women owned local suppliers (where possible). Transkei Quarries' employment equity is also in line with the provisions of the Employment Equity Act, 1998 (as amended).	Highly Desirable

**2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT**

What is the socio-economic context of the area?

Question	Response	Level of Desirability
In terms of location, describe how the placement of the proposed development will contribute to the area.	Expanding the quarry and thereby mining the resource on the property will contribute to the surrounding area in that the municipality will receive compensation, the project will prolong employment opportunities, and the use 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
How will the socio-economic impacts resulting from this development impact on people's environmental right?	If the mitigation measures and monitoring programs, proposed in this document, are implemented it is believed that no environmental rights of the surrounding residents/public will be affected by potential socio-economic impacts associated with the proposed activity.	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	If the S102 application is approved, the mine will be able to expand the quarry excavation to the south and south-east onto land that is effectively isolated from any natural areas. As mentioned earlier, noisy activities such as blasting will gradually move away from the residential areas in the north, and the municipality will receive compensation for the use of the land. The betterment of the Quarry directly contributes to a prolonged lifespan of the operation and job security to employees. The mine will also continue to meet the commitments of the SLP regarding Human Resources Development, and Local Economic Development, amongst others.	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 pursue the selection of the “best practicable environmental option” in terms of socio-economic considerations?</p>	<p>The responsible use of the remaining land between the quarry, wastewater treatment works, and the river was considered by the project team. If the mitigation measures proposed in this document are adhered to, the proposed project can continue without influencing the status of the ecosystem type, red data species or the conservation targets set out for an Aquatic CBA. Should the S102 application be approved, the project will directly contribute to the socio-economic status of the receiving environment as discussed earlier.</p>	<p>Highly Desirable</p>
<p>What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?</p>	<p>Also refer to:</p> <ul style="list-style-type: none"> <li>❖ 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.</li> </ul>	
<p>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>	<p>The mine operates in accordance with, amongst others, the following:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983 – to ensure agriculture related compliance;</li> <li>❖ Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation;</li> <li>❖ Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety;</li> <li>❖ MPRDA, 2002 (as amended) – to ensure mining related compliance;</li> <li>❖ NEM:AQA, 2004 – to ensure air quality related compliance;</li> <li>❖ NEM:BA, 2004 – to ensure biodiversity related compliance;</li> <li>❖ NEM:WA, 2008 – to ensure waste related compliance;</li> </ul>	<p>Highly Desirable</p>

**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 responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?</p>	<ul style="list-style-type: none"> <li>❖ NEMA, 1998 (as amended) – to ensure environmental related compliance;</li> <li>❖ NWA, 1998 (as amended) – to ensure water use compliance.</li> </ul> <p>As mentioned earlier, the procurement progression plan of the Right Holder entails the support of local enterprises, of which preference is given to HDSA &amp; women owned local suppliers (where possible).</p>	
<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>	<ul style="list-style-type: none"> <li>❖ The aggregate will be sold to building- and road contractors in and around the mine.</li> <li>❖ Expansion of the mining area will prolong the lifespan of the operation, thereby safeguarding employees against downscaling and retrenchment.</li> <li>❖ The noisy activities such as blasting will gradually move further away from the residents in the north.</li> <li>❖ The municipality will receive compensation for the use of the land.</li> <li>❖ The vacant land, presently trespassed upon, will be managed by the Quarry for the duration of the mining right.</li> </ul>	<p>Highly Desirable</p>
<p>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</p>	<p>The mine operates in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management holds regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work takes place. Grievances/concerns can be lodged during these toolbox sessions and site meetings.</p>	<p>Highly Desirable</p>

**2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT**

What is the socio-economic context of the area?

Question	Response	Level of Desirability
that the right of workers to refuse such work will be respected and protected.		
Describe how the development will impact on job creation in terms of, amongst other aspects?	As this is a S102 amendment application for an existing operation the project itself will not generate additional work opportunities. It will however contribute to the lifespan of the operation providing the existing employees with prolonged job security.	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 mine operates under a valid mining right and in accordance with an approved EMPR. Should the S102 application be approved, compliance of the site with the approved EA and EMPR 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 are realistic and can be implemented (when applicable) by the mine. As mentioned earlier, due to the impracticality of importing large volumes of fill to restore the quarry pit to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature that will be rendered safe upon final site closure. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix and the area will be returned to municipal use. 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>In terms of Section 41 of the MPRDA, 2002 a mining right holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity. The Right Holder already has a financial guarantee lodged with the DMRE that is deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. This guarantee may have to increase to cover the expansion area proposed by this application. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.</p>	<p align="center">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 proposed activity can take place without influencing the status of the ecosystem type, red data species or the conservation targets set out for an Aquatic CBA.</p> <p>Also refer to:</p> <ul style="list-style-type: none"> <li>❖ 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.</li> </ul>	<p align="center">Highly Desirable</p>

**2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT**

What is the socio-economic context of the area?

Question	Response	Level of Desirability
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	Refer to Part A(1)(t)(i)(1) <i>Impact on the socio-economic conditions of any directly affected person.</i>	Highly Desirable

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

The preferred site-, activities- and technology alternative regarding this application entails the:

- A. expansion of the current mining footprint from  $\pm 16.16$  ha to  $\pm 30.1$  ha over a previously altered area within the coordinates as presented in this document (Table 4);
- B. mining of the proposed expansion area in the same way as the current quarry is being mined through benched open pit excavations. Hard rock breaking will be done by drilling and blasting. The broken rock will be sorted and loaded onto articulated dump trucks, that will haul it to the existing primary crushing plant of the mine, where various products will be conveyed to secondary-, tertiary- and quaternary crushing and screening processes to result in the desired products;
- C. mining of the area without the need to establish permanent infrastructure and/or buildings in the expansion area. The specific design of the quarry pit will be in consultation with a qualified mine planner/engineer and will be dictated by the 1:100 year floodline of the Gcuwa River to be determined should the S102 application be successful;
- D. mining of the expansion area through drilling, blasting, and excavation with earthmoving machinery. No complex technology is required;
- E. incorporation of the proposed activity into the ongoing operations of Butterworth Quarry. The Right Holder already extract water from the quarry pit, no electricity is needed to allow the continuation of the proposed activity, no servicing of mining equipment will be required within the expansion area, Kentani Road and the existing internal roads will provide access to the quarry. The project does consider mitigating impacts such as dust generation, noise handling, waste management, and rehabilitation.
- F. The no-go alternative was not deemed a viable option as:
  - ❖ this alternative will prevent the Right Holder from expanding the quarry pit and the opportunity of mining in a southern direction away from the surrounding residents will be lost;



- ❖ the expansion of the pit will directly affect the lifespan of the Quarry, as the life of mine is calculated at  $\pm 24$  years should the expansion be approved. An increased life of mine will provide the employees with peace of mind regarding downscaling and retrenchments linked to mine closure, as well as socio-economic benefits and growth development opportunities. Given the high levels of unemployment and poverty in the Mquma District the loss of such opportunities is considered significant.
- ❖ mining the earmarked area will benefit the Mquma Municipality (MLM) financially as their undeveloped land will generate surface use income.

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

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

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

#### **i) Details of the development footprint alternatives considered.**

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

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

### **1. SECTION 102 APPLICATION**

#### **A) THE PROPERTY ON WHICH, OR LOCATION WHERE, IT IS PROPOSED TO UNDERTAKE THE ACTIVITY**

The S102 project proposal entails the expansion of the existing mining right of  $\pm 16.16$  ha over Erf Re/153 and Erf RE/725 to  $\pm 30.1$  ha, within the boundaries of the GPS coordinates listed in Table 4 and depicted in Figure 4.

Expansion of the quarry pit will entail removal of disturbed indigenous and exotic vegetation that mainly consists of grassland with *Vachellia* trees. Thickets are found along the river fringe where the vegetation cover can be very dense in places. The Right Holder will keep mining outside the 1:100 year floodline and the riparian vegetation along the riverbanks. The proposed footprint extends over the total area left between the current Butterworth mining area, the Gcuwa River (south) and the wastewater works in the east.

The proposed footprint of the MR application was based on the position of the current mining footprint, the available geological data, the position of the Gcuwa River and the municipal wastewater treatment plant. No further location/site alternatives are considered in the Basic Assessment Report (BAR) and EIA process.

## **B) TYPE OF ACTIVITY TO BE UNDERTAKEN**

The Right Holder intends to mine the earmarked area in the same way as the current pit is being mined. Mining will therefore entail benched open pit excavations at elevations. Hard rock breaking will be done by drilling and blasting. The broken rock will be sorted and loaded onto articulated dump trucks, that will haul it to the existing primary crushing plant of the mine, where various products will be conveyed to secondary-, tertiary- and quaternary crushing and screening processes to result in the desired products.

The nature of the operation does not allow alternative activities. Considering the existing mining method of Butterworth Quarry and the available infrastructure on site there is no alternative other than to excavate, load and haul the dolerite material to the processing plant of the mine.

## **C) DESIGN AND LAYOUT OF THE ACTIVITY**

The Right Holder will not establish any permanent infrastructure and/or buildings within the expansion area. Haul roads will be developed as mining progress.

As mentioned earlier, the current layout of the mine dictated the proposed locality of the expansion area. Similarly, the design and layout of the proposed footprint were based on the *status quo*. The specific design of the quarry pit will be done in consultation with a qualified mine planner/engineer. The design

will be based on the most profitable extraction of the available dolerite from the approved footprint in accordance with the requirements of all relevant legislation such as (but not limited to) the Mine Health and Safety Act. In addition thereto, the layout of the proposed expansion area will be dictated by the 1:100 year floodline of the Gcuwa River to be determined should the S102 application be successful.

No further design/layout alternatives are considered in the BAR.

#### **D) TECHNOLOGY TO BE USED IN THE ACTIVITY.**

The proposed expansion area will be mined through drilling, blasting, and excavation with earthmoving machinery. Rock breaking is done initially by drilling and blasting using crawler mounted rigs and emulsion type bulk explosives. Oversized boulders are placed aside in the pit and large boulders are broken with explosives utilizing secondary blasting.

This project does not require other complex technology to allow the expansion of the quarry pit, and therefore no further technology alternatives are considered in the BAR.

#### **E) OPERATIONAL ASPECTS OF THE ACTIVITY**

The operational aspect of the activity is based on the current activities of the mine. Since the proposed expansion area will be incorporated into the current operations of Butterworth Quarry the operational requirement of the mine is lenient. The Right Holder already extract water from the quarry pit, no electricity is needed to allow the continuation of the proposed activity (expansion of the pit), no servicing of mining equipment will be required on site (within the expansion area), Kentani Road and the existing internal roads will provide access to the quarry.

The project does however consider mitigating impacts such as dust generation, noise handling, waste management, and rehabilitation.

#### **F) OPTION OF NOT IMPLEMENTING THE ACTIVITY (NO-GO ALTERNATIVE)**

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. If the no-go alternative is implemented

the land use of the earmarked footprint will remain undeveloped municipal land with the dolerite resource unmined.

The no-go option will prevent the Right Holder from expanding the quarry pit and the opportunity of mining in a southern direction away from the surrounding residents will be lost.

As mentioned earlier, the quarry excavation has been developed to the maximum extent possible. Should the expansion of the pit not be approved it will directly affect the lifespan of the Quarry, as the proposed expansion indicated a life of mine of  $\pm 24$  years. An increase in the life of mine will provide the employees with peace of mind regarding downscaling and retrenchments linked to mine closure, as well as socio-economic benefits and growth development opportunities. Given the high levels of unemployment and poverty in the Mquma District the loss of such opportunities is considered significant.

Should Butterworth Quarry be allowed to mine the earmarked area, the Mquma Municipality (MLM) will benefit financially from the project as their undeveloped land will generate surface use income.

The positive implications of the no-go alternative are that there will be no impact on the bio- and geophysical environment of the earmarked area.

Considering the above, the no-go option was not deemed a preferred development option.

## **ii) Details of the Public Participation Process Followed**

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

### **S102 APPLICATION**

During the public participation process of this S102 application the relevant stakeholders and I&AP's were informed of the project through an advertisement in the Daily Dispatch, and on-site notices that were placed at the entrance to the Quarry and the Butterworth Library. A notification letter inviting comments on the DBAR over a 30-days commenting period (ending 26 August 2024) was sent to the landowner, neighbouring (to the Quarry) landowners, stakeholders, and any other I&AP that may be interested in the project. isiXhosa flyers were also distributed in the Mcubakazi

residential area. The advertisement, on-site notices, and notification letter were all available in English and isiXhosa. The comments received on the DBAR were incorporated into the final Basic Assessment Report (FBAR) to be submitted to the DMRE for decision making. The following I&AP's and stakeholders were informed of the project:

*Table 7: List of the I&AP's and stakeholders that were notified of the S102 application.*

<b>SURROUNDING LANDOWNERS &amp; INTERESTED AND AFFECTED PARTIES</b>	<b>STAKEHOLDERS</b>
<p><b><u>Landowner and Surrounding Landowner:</u></b></p> <p>Mnquma Local Municipality</p> <ul style="list-style-type: none"> <li>❖ Erf Re/153</li> <li>❖ Erf Re/725</li> <li>❖ Lot 1A Farm No 44 (surrounding property)</li> </ul> <p><b><u>Surrounding landowners – neighbouring onto the Quarry:</u></b></p> <p>Mr Mxuma</p> <ul style="list-style-type: none"> <li>❖ Erf No 216</li> </ul> <p>Mcubakazi Township Residents.</p>	<ul style="list-style-type: none"> <li>❖ Department of Economic Development, Environmental Affairs and Tourism (DEDEAT);</li> <li>❖ Department of Labour;</li> <li>❖ Department of Public Works;</li> <li>❖ Department of Rural Development and Agrarian Reform;</li> <li>❖ Department of Rural Development and Land Reform;</li> <li>❖ Department of Transport;</li> <li>❖ Department of Water and Sanitation;</li> <li>❖ Eastern Cape Parks and Tourism Agency;</li> <li>❖ Eastern Cape Provincial Heritage Resources Agency;</li> <li>❖ Eskom Ltd;</li> <li>❖ Mnquma Local Municipality Ward 03 Councillor;</li> <li>❖ Amathole District Municipality; and</li> <li>❖ South African Heritage Resources Agency.</li> </ul>

Refer to the following table for an explanation on how the public participation process of this project took the methods stipulated in Regulation 41 of the NEMA Regulations into account. Proof of the public participation process that was followed is attached as Appendix E to this document.

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

<b>REQUIREMENTS IN TERMS OF NEMA REGULATION 41</b>	<b>PUBLIC PARTICIPATION PROCESS FOLLOWED</b>
<ul style="list-style-type: none"> <li>❖ Regulation 41(2)(a): <i>Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-</i> <ul style="list-style-type: none"> <li>(i) <i>The site where the activity to which the application or proposed application relates is or is to be undertaken; and</i></li> <li>(ii) <i>Any alternative site.</i></li> </ul> </li> <li>❖ Regulation 41(3): <i>A notice, notice board or advertisement referred to in subregulation (2) must—</i></li> </ul>	<p>Notice boards were fixed at the following conspicuous and public accessible areas:</p> <ul style="list-style-type: none"> <li>❖ Entrance to Butterworth Quarry; and</li> <li>❖ Butterworth Public Library</li> </ul> <p>The notice boards that were placed complied with the requirements of Regulation 41(3) as presented in Appendix E2 attached to this document.</p> <p>The notices were printed on notice boards of 60 x 42 cm in Arial font of sufficient size.</p>

<p align="center"><b>REQUIREMENTS IN TERMS OF NEMA REGULATION 41</b></p>	<p align="center"><b>PUBLIC PARTICIPATION PROCESS FOLLOWED</b></p>
<p>(a) <i>give details of the application or proposed application which is subjected to public participation; and</i></p> <p>(b) <i>state—</i></p> <p style="padding-left: 20px;">(i) <i>whether basic assessment or S&amp;EIR procedures are being applied to the application;</i></p> <p style="padding-left: 20px;">(ii) <i>the nature and location of the activity to which the application relates;</i></p> <p style="padding-left: 20px;">(iii) <i>where further information on the application or proposed application can be obtained; and</i></p> <p style="padding-left: 20px;">(iv) <i>the manner in which and the person to whom representations in respect of the application or proposed application may be made.</i></p> <p>❖ Regulation 41(4): <i>A notice board referred to in subregulation (2) must—</i></p> <p style="padding-left: 20px;">(a) <i>be of a size of at least 60cm by 42cm; and</i></p> <p style="padding-left: 20px;">(b) <i>display the required information in lettering and in a format as may be determined by the competent authority.</i></p>	<p>English and isiXhosa notice boards were fixed at both locations.</p>
<p>❖ Regulation 41(2)(b): <i>giving written notice, in any of the manners provided for in section 47D of the Act, to-</i></p> <p style="padding-left: 20px;">(i) <i>the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;</i></p> <p style="padding-left: 20px;">(ii) <i>owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;</i></p> <p style="padding-left: 20px;">(iii) <i>the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;</i></p> <p style="padding-left: 20px;">(iv) <i>the municipality which has jurisdiction in the area;</i></p> <p style="padding-left: 20px;">(v) <i>any organ of state having jurisdiction in respect of any aspect of the activity;</i></p> <p style="padding-left: 20px;">(vi) <i>any other party as required by the competent authority;</i></p>	<p>(i) The Landowner was invited to comment on the DBAR. No additional comments were received.</p> <p>(ii) The surrounding landowner were invited to comment on the project, and the DBAR, and flyers inviting comments on the project were distributed in the Mcubakazi Township.</p> <p>(iii) The Ward Councillor Wards 03 was invited to comment on the project, and the DBAR.</p> <p>(iv) Both the Mnquma Local Municipality (also landowner) and the Amathole District Municipality were invited to comment on the project, and the DBAR.</p> <p>(v) As listed in Table 6 the relevant state departments and entities were invited to comment on the project, and the DBAR.</p>

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
❖ Regulation 41(2)(c): <i>Placing an advertisement in-</i> <i>(i) One local newspaper; or</i> <i>(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.</i>	The project and availability of the DBAR was advertised in the Daily Dispatch on 23 and 24 July 2024.
❖ Regulation 41(2)(d): <i>Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken...</i>	Not applicable to this project as the proposed activity does not extend beyond the boundaries of the metropolitan or district municipality in which it will be undertaken.
❖ Regulation 41(2)(e): <i>Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—</i> <i>(i) illiteracy;</i> <i>(ii) disability; or</i> <i>(iii) any other disadvantage.</i>	Not applicable to this project as no I&AP indicated that he/she was desirous but unable to participate in the public participation process.  Whatsapp messages were used to contact I&AP's that did not answer calls.
❖ Regulation 41(5): <i>Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d)...</i>	Not applicable to this application.
❖ Regulation 41(6): <i>When complying with this regulation, the person conducting the public participation process must ensure that—</i> <i>(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and</i> <i>(b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.</i>	The DBAR was available to potential I&AP's for perusal and commenting over a 30-days commenting period. The DBAR was also available on the Greenmined website. I&AP's and stakeholders were invited to contact the EAP should additional information be required.  The FBAR will also be available on the Greenmined website.
❖ Regulation 41(7): <i>Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence</i>	Not applicable to this project.

<p align="center"><b>REQUIREMENTS IN TERMS OF NEMA REGULATION 41</b></p>	<p align="center"><b>PUBLIC PARTICIPATION PROCESS FOLLOWED</b></p>
<p><i>is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.</i></p>	



**iii) Summary of issues raised by I&APs**

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

*Table 9: Summary of issues raised by IAPs*

<b>Interested and Affected Parties</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<b>List the name of persons consulted in this column, and</b>					
<b>Mark with an X where those who must be consulted were in fact consulted</b>					
<b><u>AFFECTED PARTIES</u></b>	<b>X</b>	-	-	-	-
<b>Landowner/s</b>	-	-	-	-	-
Mnquma Local Municipality ❖ Erf No 153 ❖ Erf No 725 ❖ Lot 1A Farm No 44 (surrounding property)	X	Transkei Quarries (Pty) Ltd is in discussions with the MLM regarding the proposed expansion of the mining area. The MLM was also invited to comment on the DBAR and proof of this is attached as Appendix E2. To date no comments were received on the application.			
<b>Lawful occupier/s of the land</b>	-	-	-	-	-
N/A	-	No lawful occupiers of the land where the mine was established is applicable to this project.			
<b>Landowners or lawful occupiers on adjacent properties</b>	<b>X</b>	-			
Mr Mxuma ❖ Erf No 216	X	No comments were received on the DBAR that could be incorporated into the FBAR.			
<b>Municipal councillor</b>					
Cllr. M Kalimashe (Ward 03)	X	No comments were received on the DBAR that could be incorporated into the FBAR.			
<b>Municipality</b>					

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
Mnquma Local Municipality	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
Amathole District Municipality	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e</b>					
Department of Transport	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
Department of Water and Sanitation	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
Eskom Ltd	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
Eastern Cape Parks and Tourism Agency.	X			No comments were received on the DBAR that could be incorporated into the FBAR.	
<b>Communities</b>		No communities were identified within the study area, however flyers were distributed in the Mcubakazi Township to invite comments.			
<b>Dept. Land Affairs</b>	X			No comments were received on the DBAR that could be incorporated into the FBAR.	

Interested and Affected Parties		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.
<p>List the name of persons consulted in this column, and</p> <p>Mark with an X where those who must be consulted were in fact consulted</p>						
<b>Traditional Leaders</b>	N/A	-	-	-	-	-
<b>Dept. Environmental Affairs</b>	-	-	-	-	-	-
Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	X	No comments were received on the DBAR that could be incorporated into the FBAR.				
<b>Other Competent Authorities affected</b>	-	-	-	-	-	-
Department of Rural Development and Agrarian Reform (DRDAR)	X	No comments were received on the DBAR that could be incorporated into the FBAR.				
Department of Rural Development and Land Reform	X	No comments were received on the DBAR that could be incorporated into the FBAR.				
Department of Labour	X	No comments were received on the DBAR that could be incorporated into the FBAR.				
Department of Public Works	X	No comments were received on the DBAR that could be incorporated into the FBAR.				
South African Heritage Resources Agency (SAHRA) / Eastern Cape Provincial Heritage Resources Agency (ECPHRA).	X	12 August 2024	Mr. Mkosana commented as follows on behalf of ECPHRA following distribution of the DBAR.		Greenmined responded as listed below.	Refer to the below listed sections.

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<p>Comments received from ECPHRA on the DBAR:</p> <p>“ECPHRA (Eastern Cape Provincial Heritage Authority) comment in terms of Section 38(8) of the National Heritage Resources Act (25 of 1999).</p> <p>This matter was tabled at the Archaeology, Palaeontology and Meteorites (APM) Committee meeting held on 30 July 2024. ECPHRA acknowledges the NID submitted. The proposed development triggers Section 38(1) of the NHRA Act therefore ECPHRA requires the following:</p> <ul style="list-style-type: none"> <li>❖ A Phase 1 AIA (Archaeological Impact Assessment): We have noted that the site is already disturbed but it is situated on a sensitive zone – banks of Gcuwa River and unfortunately, ECPHRA does not have any archaeological impact assessment reports from this development site hence we request a field assessment.</li> <li>❖ Chance Finds Protocol to be submitted to ECPHRA.</li> <li>❖ Administration Proof of Payment of R1 500 to be attached to the AIA.</li> </ul> <p>Regarding the paleontological heritage resources, ECPHRA has noted that the applicant is targeting the dolerite intrusions therefore it is unlikely that a fossiliferous zone could be impacted as it is far from the proposed development area.”</p>					
<p>Greenmined’s response to the comments received from ECPHRA:</p> <p>“Attached hereto please receive a motivation for exemption from doing a Phase 1 HIA for this project as compiled by Beyond Heritage (Pty) Ltd. This document will also be loaded onto SAHRIS with the proof of payment. The comments of ECPHRA with this response will furthermore be incorporated into the final BAR to be submitted to the DMRE on/before 06 September 2024.”</p> <p>Refer to Appendix G for a copy of the Motivation for Exemption.</p>					
<p>Sections where the above matter was incorporated:</p> <ul style="list-style-type: none"> <li>❖ <i>Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Cultural and Heritage Environment.</i></li> <li>❖ <i>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.</i></li> <li>❖ <i>Part A(1)(k) Summary of specialist reports.</i></li> </ul>					

<b>Interested and Affected Parties</b>  <b>List the name of persons consulted in this column, and</b>  <b>Mark with an X where those who must be consulted were in fact consulted</b>	<b>Date Received</b>	<b>Comments</b>	<b>Issues raised</b>	<b>EAPs response to issues as mandated by the applicant</b>	<b>Section and paragraph reference in this report where the issues and or response were incorporated.</b>
<ul style="list-style-type: none"> <li>❖ <i>Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr.</i></li> <li>❖ <i>Part B(1)(d)(iv) Impacts to be mitigated in their respective phases</i></li> <li>❖ <i>Part B(1)(g)-(k) Mechanism for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including...</i></li> </ul>					
<b><u>OTHER AFFECTED PARTIES</u></b>					
N/A					
<b><u>INTERESTED PARTIES</u></b>					
N/A					

**iv) The Environmental attributes associated with the alternatives.**

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

**(1) Baseline Environment****(a) Type of environment affected by the proposed activity.**

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

This section describes the biophysical-, cultural- and socio-economic environment of the greater study area. It is important to note that the mine has been operational for many years, and through the years the Quarry developed into a landscape feature. The following discussion of the type of environment to be affected therefore includes the *status quo* associated with the activities of the mine.

**PHYSICAL ENVIRONMENT**

*(Description augmented by information of the Environment Management Programme compiled by GES, 2009)*

**CLIMATE**

The following chart shows the maximum, minimum and average temperatures ( $\pm 22^{\circ}\text{C}$  daytime,  $\pm 11^{\circ}\text{C}$  nighttime) of the Butterworth region. Butterworth experiences its highest temperatures during the summer months (December – February) with peaks of up to  $27^{\circ}\text{C}$ ; thereafter the mercury drops to lows of  $\pm 6^{\circ}\text{C}$  during July.

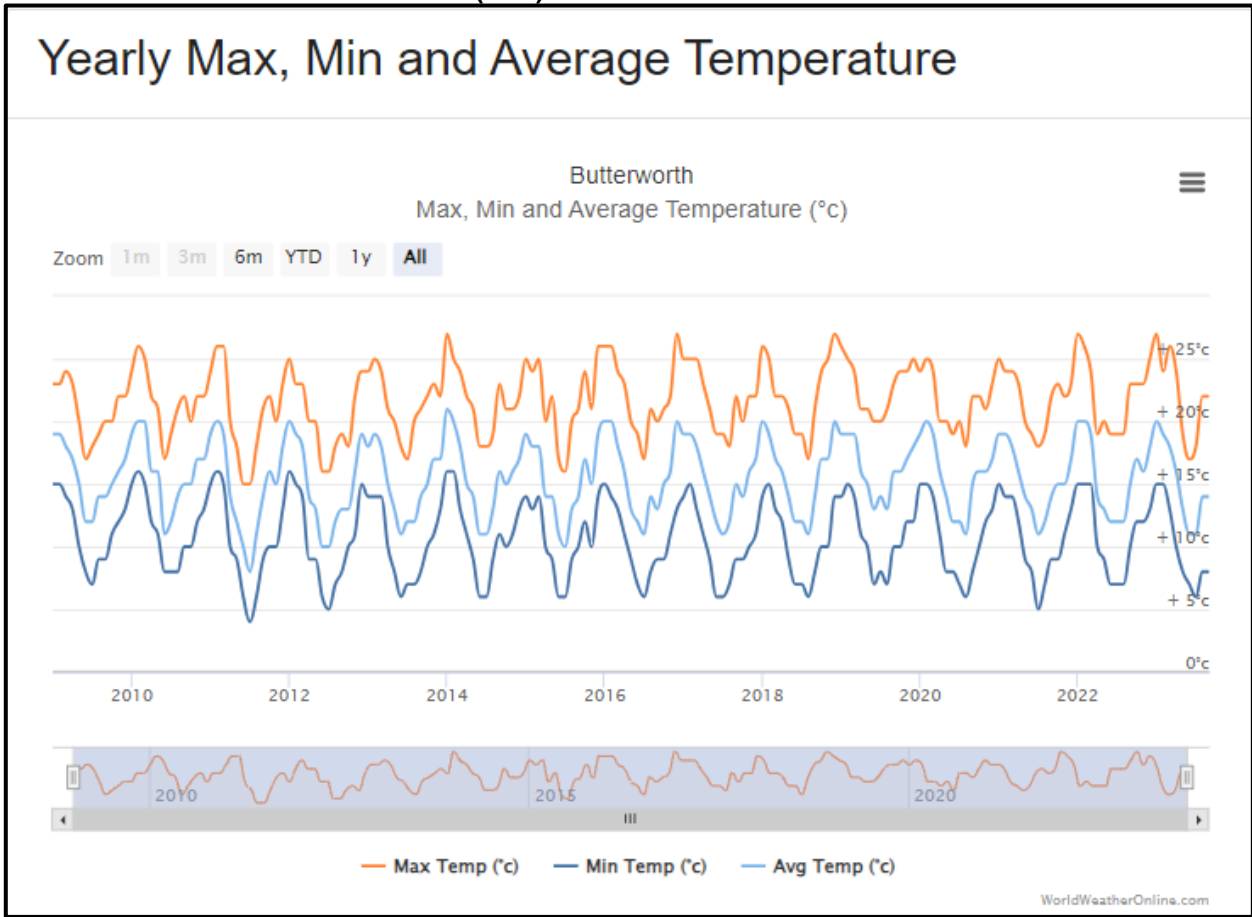


Figure 5: Chart showing the maximum, minimum, and average temperatures of the Butterworth region over a period of 12 years (chart obtained from <http://www.worldweatheronline.com>)

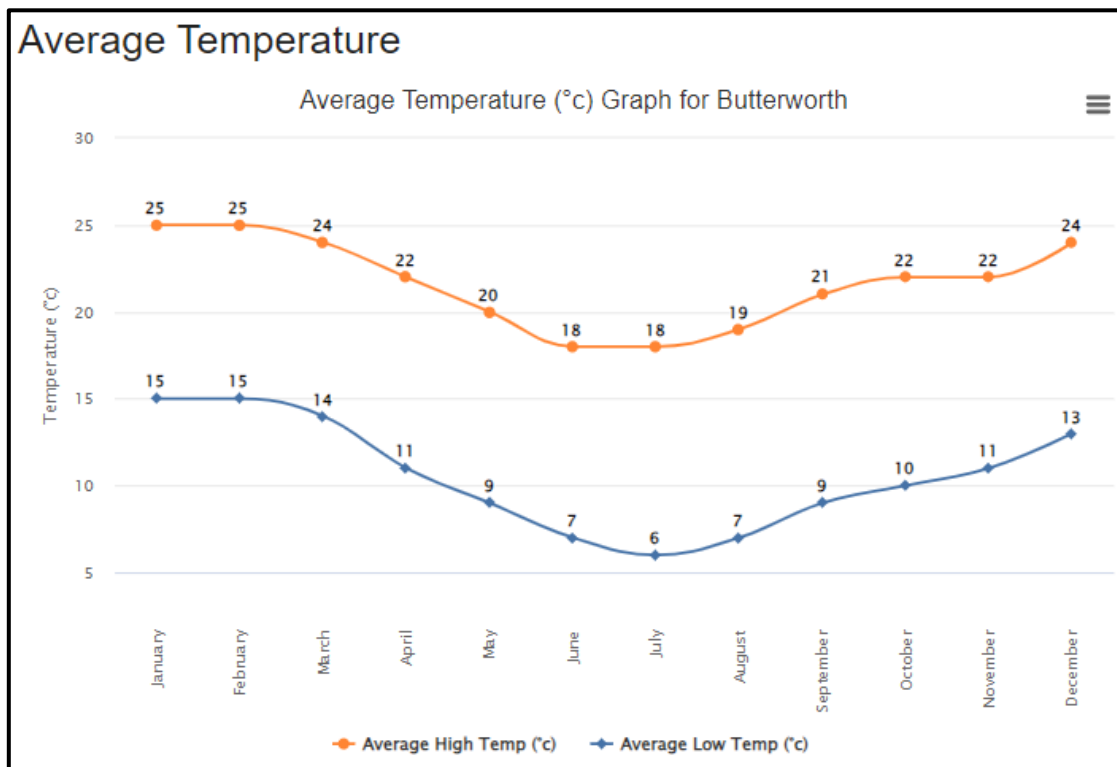


Figure 6: Chart showing the monthly average temperature of the Butterworth region (chart obtained from <http://www.worldweatheronline.com>)

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**TRANSKEI QUARRIES (PTY) LTD: EC 30/5/1/2/2/0183 MR – EC-00033MR/102**

According to the current EMPR of the Quarry the average rainfall of Butterworth ranges between 600 – 700 mm/year. The following chart, obtained from World Weather Online, shows that the measured rainfall for the period September 2022 to September 2023 was ±1 124 mm, while the area received the lowest rainfall during August 2023 and the highest in May 2022 (for the selected period).

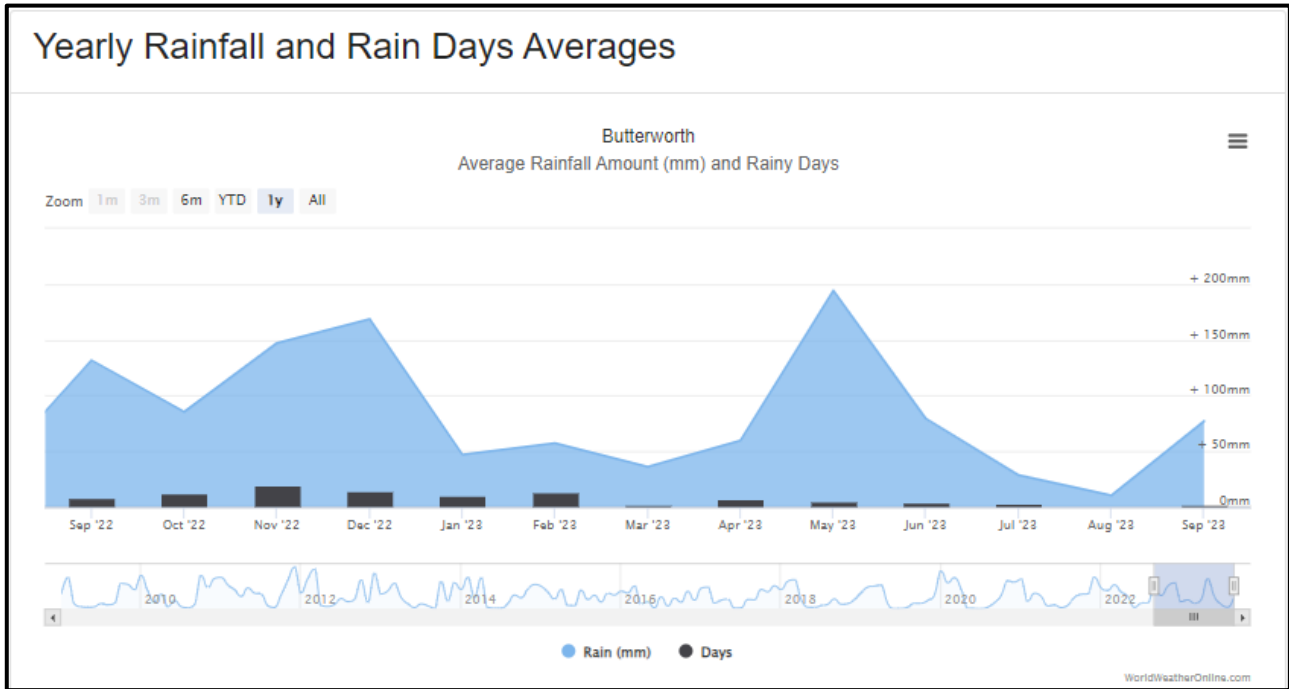


Figure 7: Chart showing the rainfall and rainy days for the Butterworth region (chart obtained from <http://www.worldweatheronline.com>)

The prevailing wind direction of the Butterworth region is from the west and south-west and equally dominant easterly and north-easterly during the summer months. The following figure indicates the annual wind speed and wind gusts averages for the period between September 2022 and September 2023.



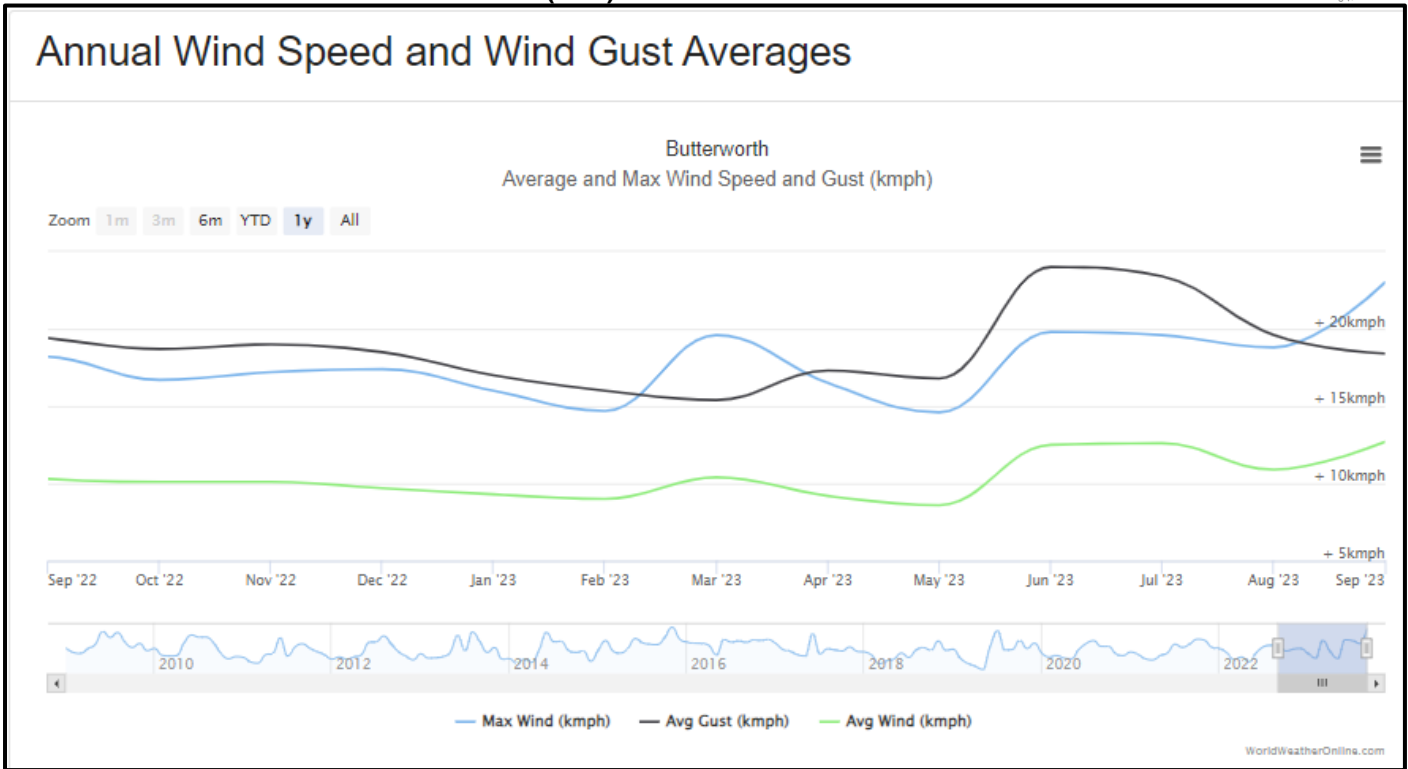


Figure 8: Annual wind speed and wind gust averages of the Butterworth region between September 2022 and September 2023 (image obtained from <http://www.worldweatheronline.com>).

**TOPOGRAPHY**

Butterworth Quarry is located at the southern foothills of a significant west to east orientated ridge that has been eroded by fluvial forces. The N2 highway from Butterworth to Mthatha was constructed on this ridge. The landscape to the south of the ridge has been lowered by fluvial erosion and encouraged by the perennial river system that flows southwards to the west of the quarry and meanders towards the east, south of the quarry.

The Quarry footprint is generally characterised by gentle south-westerly and westerly sloping gradients in the northern part of the study area, becoming moderate in the western and southern parts of the quarry footprint.

The quarry is isolated from the river channel environment to the south by stepped bedrock faces and constructed berms along the western boundary. The river channel generally occurs at a lower level to that of the quarry excavation floor, which has been excavated down to a depth of ±505 mamsl.

The following figure shows the topography of the greater study area highlighting the lowered river channel and surroundings cutting through the elevated ridges.

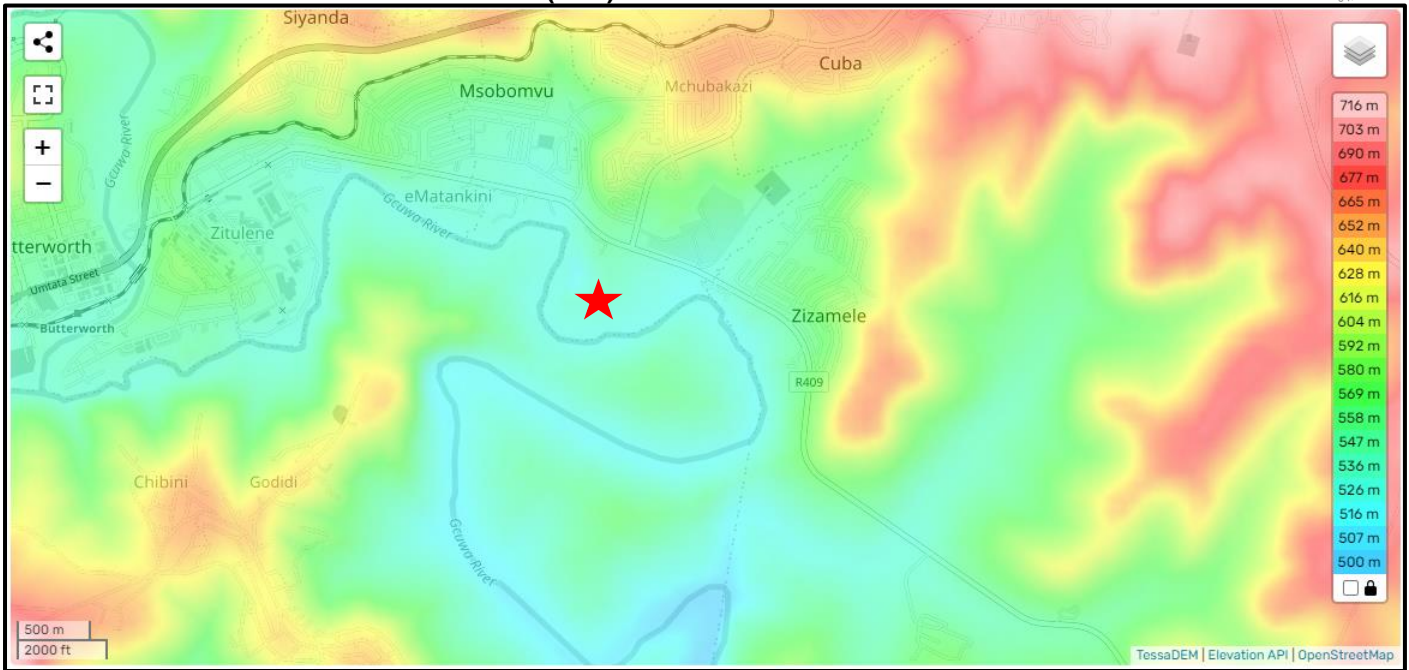


Figure 13: Map showing the topography of the greater Butterworth area where the red star indicates the Quarry (image obtained from <http://www.en-za.topographic-map.com/maps/gwpq/South-Africa/>).

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 populated residential areas to the north; east the wastewater treatment works border the quarry, and the southern and western areas are undeveloped municipal land. Kentani Road passes the Quarry to the north.

The 2009 EMPR noted that the visual impact associated with the Quarry is limited to the neighbouring local communities and rural landscape to the south-west, as well as the high-lying ridge upon which the N2 highway has been constructed to the north-west.

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 air quality and noise ambiance of the study area was historically representative of a rural environment. The surrounding area has since been transformed with the development and expansion of the nearby residential areas such as Mchubakazi and Zizamele. Traffic along Kentani Road also contribute to the air and noise quality of the

area. Butterworth Quarry has been contributing to the air and noise quality of the area through the following:

- ❖ Dust generated by wind over un-vegetated and denuded areas;
- ❖ Dust generated by vehicles and unsurfaced roads;
- ❖ Dust generated during topsoil and overburden removal and the loading of material onto trucks and tipping into the plant;
- ❖ Crushing and screening at the processing plant.

Fallout dust levels, at the Quarry, are monitored by an appropriately qualified service provider and dust suppression measures are implemented to prevent/minimise the nuisance to the nearby residents.

Noise at the Quarry is generated by blasting, loading operations, crushing, and screening and vehicular traffic. The Quarry appoints an occupation hygienist to monitor the noise levels and report on it to the DMRE.

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

## **GEOLOGY AND SOIL**

*(Information obtained from the amended Mining Work Programme, 2024)*

### **Regional Geological Setting**

The Karoo Supergroup of Permian age consists of successions of the Dwyka Formation, Eccca Groups at the bottom; followed by the overlying Beaufort Group; then the Molteno-, Elliot- and Clarens Formations and finally on top the Drakensberg - & Lebombo Groups. The Beaufort Group overlies the Eccca Group and consists of alternating mudstone (red in places) and sandstone. The Beaufort Group sub-divides into the lower Adelaide – and upper Tarkastad Subgroups. The Adelaide Subgroup further subdivides into the lower Koonap Formation; middle Middleton Formation and an upper Balfour Formation. Jurassic-age dolerite extensively intrudes the Beaufort Group as dykes and sheets.

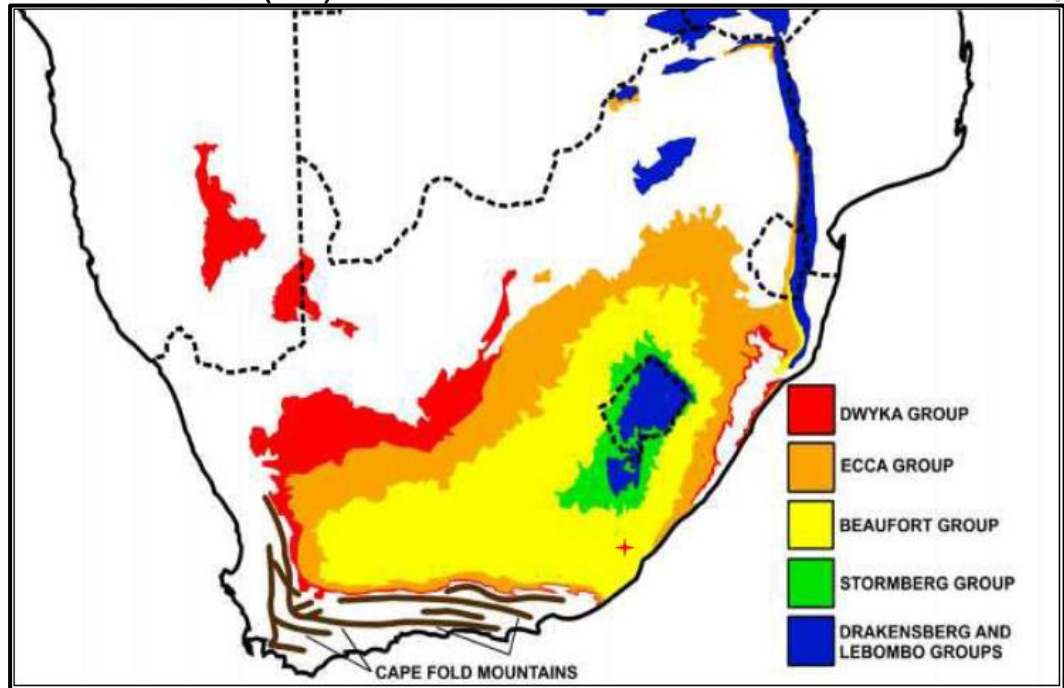


Figure 9: Map of the Eastern Cape Regional Geology where the star indicates the approximate location of Butterworth Quarry (MLB Consulting).

In undisturbed areas the soil at the Butterworth Quarry would generally be considered Mispha Form of the Myhill Series. This soil family has a non-calcareous A-horizon that is not bleached and is underlain by hard rock (residual dolerite) at shallow depth.

There is little evidence of erosion at the site, small volumes of topsoil and a thin layer of sub-soil. The thin and patchy topsoil is directly underlain by slightly to unweathered dolerite bedrock, which is frequently exposed in outcrop as residual sheetrock.

**HYDROLOGY**

*(Information extracted from the Atlas of Freshwater Ecosystem Priority Areas in South Africa, Water Research Council, 2011 & Technical Report on the National Freshwater Ecosystem Priority Areas Project, Water Research Council, 2011)*

**Historic Data**

According to the 2009 EMPR the Gcuwa River flowing along the western and southern boundaries of the quarry was ±50 m away from the quarry’s western boundary, and ±300 m from of the quarry’s southern boundary. The EMPR further noted that the river was protected from mining activities by bedrock to the south and a rock berm structure to the west. The bedrock of the quarry pit was removed to depths below that of the river channel, and the 2009 EMPR already mentions that the southern boundary of the quarry excavation extended beyond that of the authorised mine boundary.

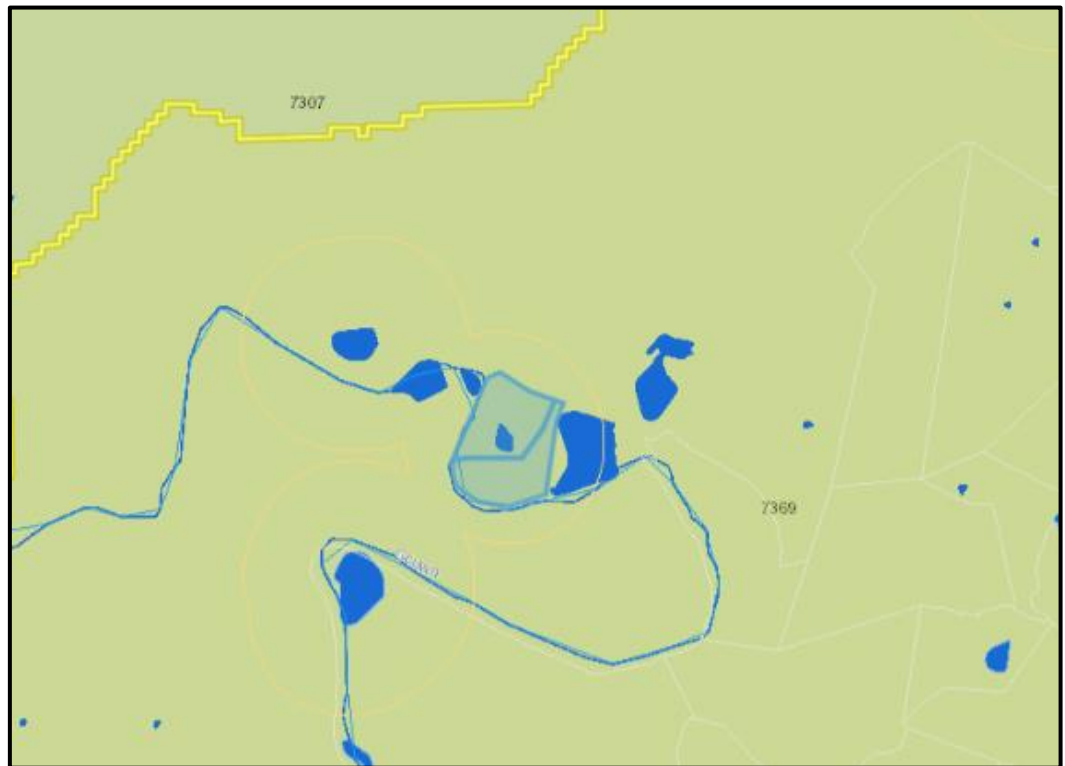
The dolerite bedrock is fractured in the area, and these fractures act as a conduit for sub-surface water seepage into the quarry excavation since its floor is lower than that

of the river. The resultant quarry excavation continuously fills with water seeping through the fractured bedrock, and the excavation must continuously be pumped out.

There are no boreholes on the property or in the surrounding areas.

**Present Day (2024) Data**

The mining area is situated in the Kei sub-water management area that forms part of the Mzimvubu to Kies Kamma Water Management Area (ID 21). According to the SANBI National Freshwater Ecosystem Priority Areas (NFEPA) Map, the study area falls within an Upstream River FEPA as presented below. According to the *Technical Report for the National Freshwater Ecosystem Priority Areas Project* (Water Research Commission, 2011), Upstream Management Areas are sub-quaternary catchments in which human activities need to be managed to prevent degradation of downstream river FEPA's and Fish Support Areas. Upstream Management Areas are like Ecological Support Areas (ESA).



*Figure 10: NFEPA BGIS Map Viewer showing the boundary (yellow line) of the Upstream River FEPA (pale green background) in relation to Butterworth Quarry (light blue polygon). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).*

The said SANBI sensitivity map further identifies a wetland cluster across the study area (see following figure). The definition of a wetland cluster is a group of wetlands within 1 km of each other that are embedded in a relatively natural landscape. This allows for important ecological processes such as migration of frogs and insects

between wetlands. However, in many areas of the country, wetland clusters no longer exist because the surrounding land has become too fragmented by human impacts. The goal of NFEPA is to ensure that at least 20% of the wetland cluster area identified for each wetland vegetation group is managed in a way that supports dispersal between wetlands within the cluster, ideally associated with a natural or near-natural condition. The primary aim is to support migration of wetland-dependant plant and animal populations through the landscape matrix. A secondary benefit may be that this target improves the regulatory ecosystem services that wetlands provide.



*Figure 11: NFEPA BGIS Map Viewer showing the Wetland Cluster (yellow polygon) in relation to the study area (light blue polygon). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).*

Fish Sanctuaries are sub-quaternary catchments required to meet fish population targets. Fish sanctuaries in a good condition (A / B ecological category) are deemed FEPA's, and the remaining ones are deemed Fish Support Areas. Ideally the river condition of a Fish Support Area must be improved, and amongst others the alien invasive fish must be removed. Fish Support Area's must be maintained in a condition that supports the threatened fish population it contain (if any). Upstream Management Areas require management only to ensure that human activities do not degrade the condition of FEPAs and Fish Support Areas that occur downstream. The SANBI BGIS Map Viewer shows the study area to be within a Fish Sanctuary Classed CDEFZ confirming the highly modified ecological status of the Gcuwa River and it is therefore deemed a Fish Support Area instead of a FEPA.

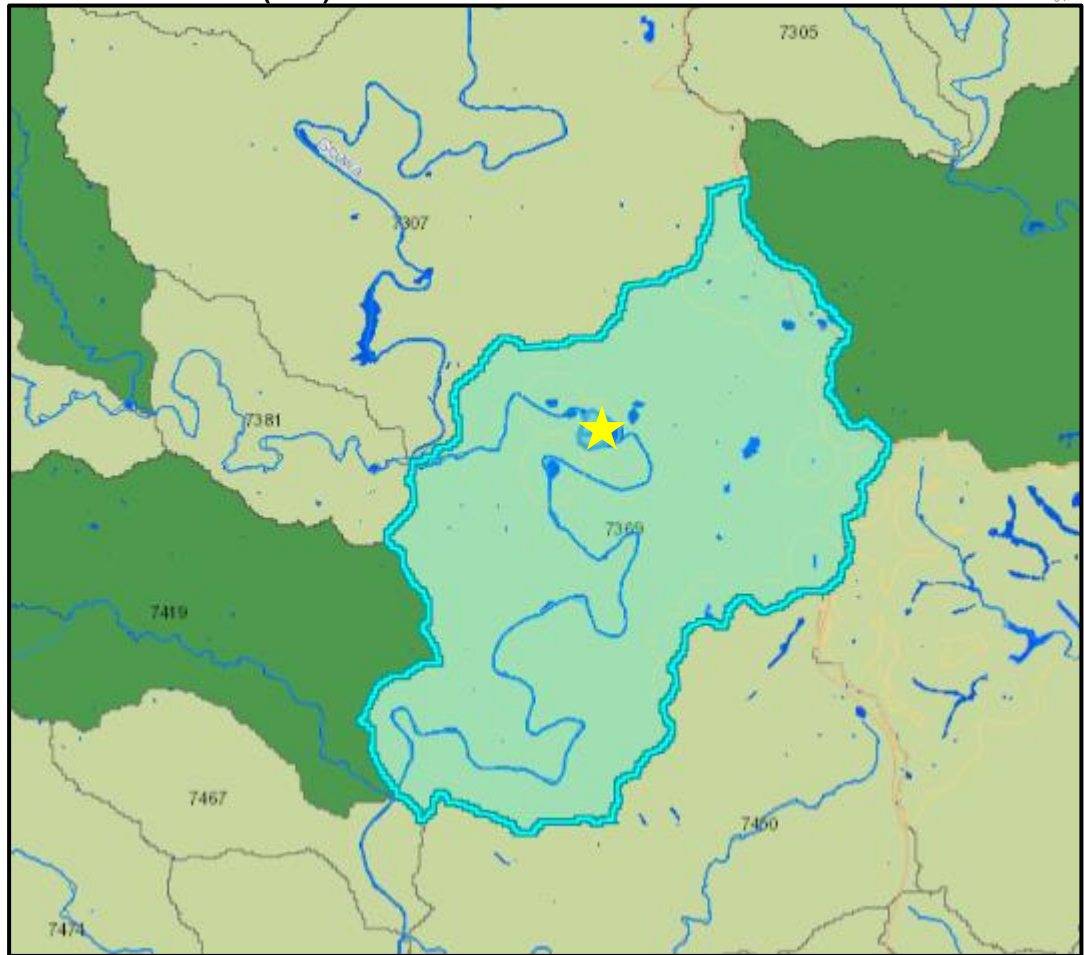


Figure 12: NFEPA BGIS Map Viewer outline of the Fish Support Area (blue polygon) in relation to the mining area (yellow star). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA).

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**

### **MINING AND BIODIVERSITY**

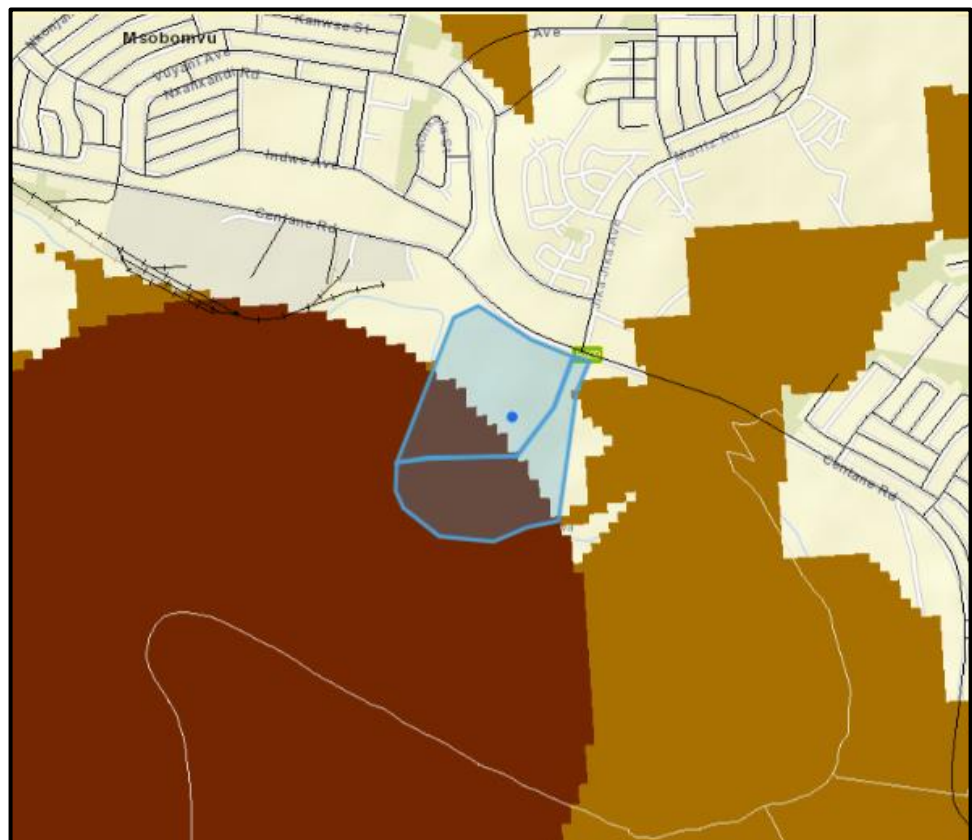
*(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)*

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

When the mining right footprint is layered over the Mining and Biodiversity Map (following figure), the south/south-western part extends across an area of highest

biodiversity importance (dark brown) with a corresponding rating of highest risk for mining.

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



*Figure 13: The Mining Guidelines map shows that the mining footprint (blue polygon) extends across an area of highest biodiversity importance with a highest risk for mining (dark brown). (Image obtained from the BGIS Map Viewer: Mining Guidelines).*

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

### **BIODIVERSITY CONSERVATION AREAS**

According to the 2019 Eastern Cape Biodiversity Conservation Plan there is a Terrestrial Ecological Support Area (ESA) defined along the western, southern, and eastern parts of the study area, with the river indicated as an Aquatic Critical Biodiversity Area (CBA) as presented in the following figure.



The Lexicon of Biodiversity Planning in South Africa provides the following definition of a CBA:

- ❖ Critical Biodiversity Area (CBA): *“an area that must be maintained in a good ecological condition to meet biodiversity targets. CBA’s collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat, that have not already been met in the protected area network.”*
  
- ❖ Ecological Support Area (ESA): *“An area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or not necessary to meet them in natural or near-natural areas.”*

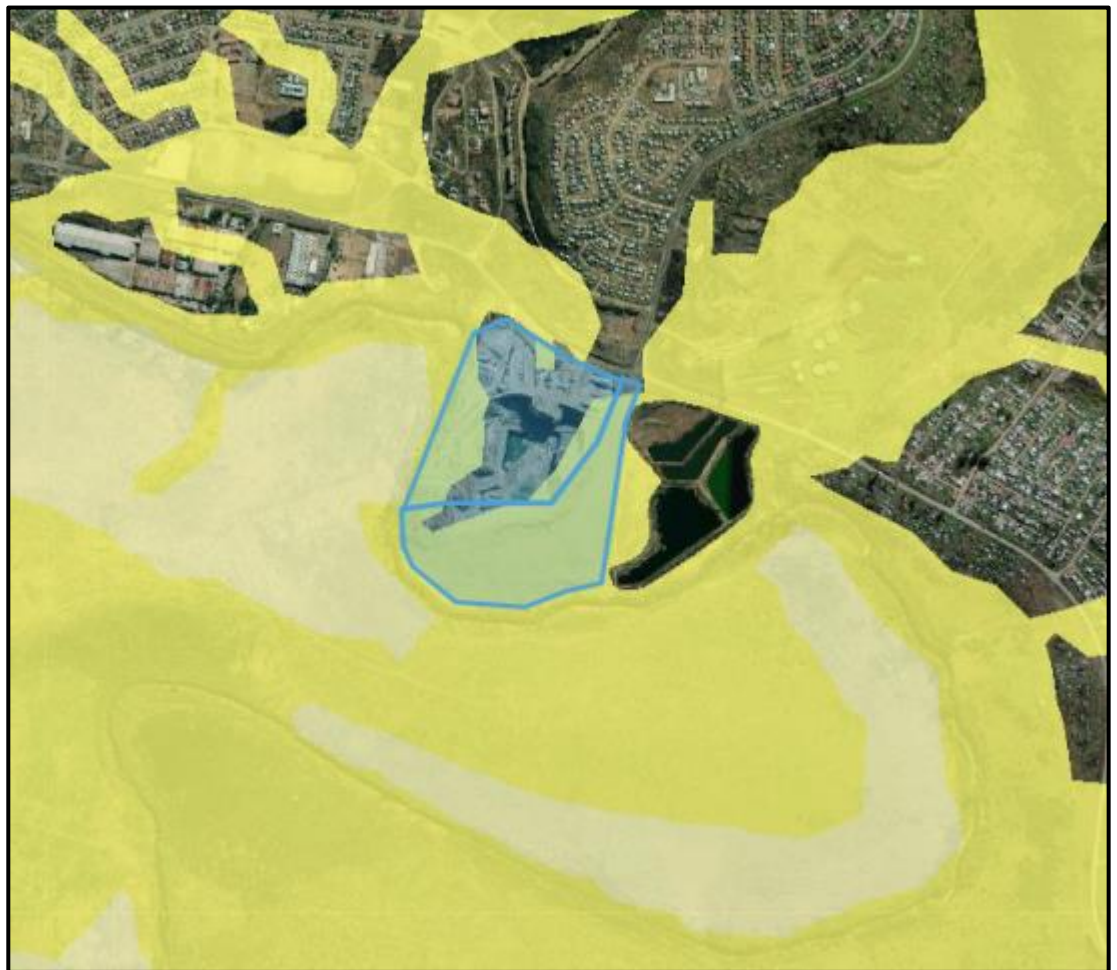


Figure 14: 2019 Eastern Cape Biodiversity Conservation Plan showing the position of the mining footprint (blue polygon) within the Terrestrial ESA (yellow shading). (Image obtained from BGIS Map Viewer – 2019 Eastern Cape Biodiversity Conservation Plan).



*Figure 15: 2019 Eastern Cape Biodiversity Conservation Plan showing the position of the mining footprint (blue polygon) within the Aquatic CBA (blue shaded lines). (Image obtained from BGIS Map Viewer – 2019 Eastern Cape Biodiversity Conservation Plan).*

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, Groundcover and Fauna.

## **GROUNDCOVER**

According to Mucina and Rutherford (2012) the natural vegetation type of the study area is classified as Bisho Thornveld (SVs7), as indicated in the following figure.

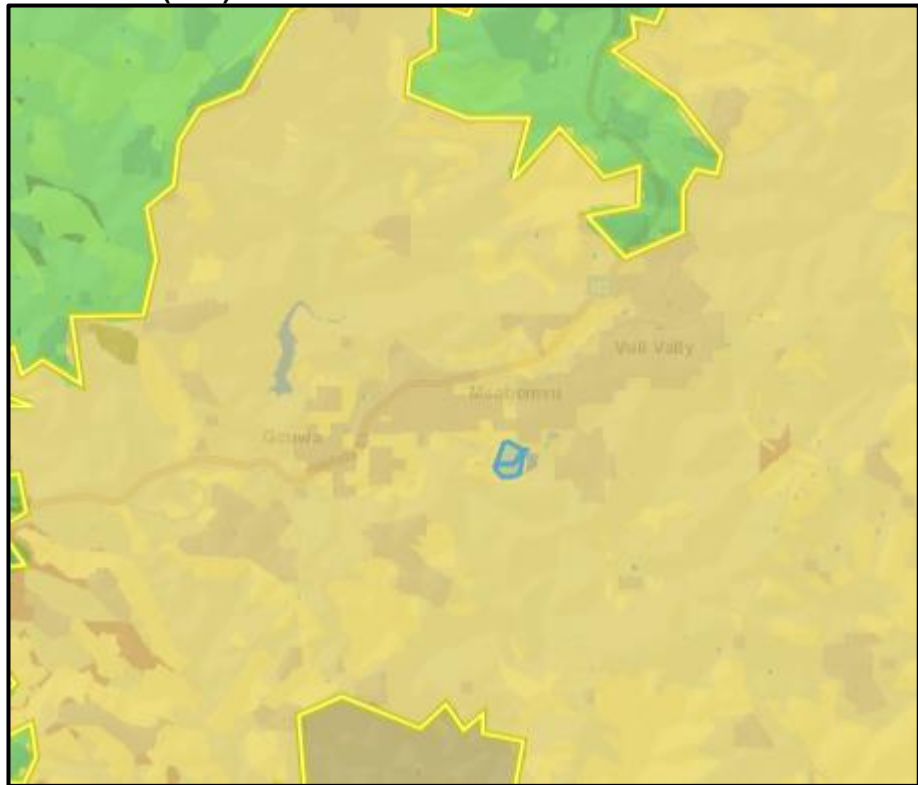


Figure 16: BGIS National Vegetation Map showing the vegetation type of the study area, where the brown shaded area indicates the Bisho Thornveld (SVs7), and the blue polygon indicates the mine. (Image obtained from the BGIS Map Viewers website).

### **Bisho Thornveld (SVs7):**

The vegetation and landscape features of the Bisho Thornveld (SVs7) vegetation type is characterised by undulating to moderately steep slopes, sometimes in shallow incised drainage valleys. Open savanna characterized by small trees of *Vachellia natalitia* with a short to medium, dense, sour grassy understorey, usually dominated by *Themeda triandra* when in good condition. A diversity of other woody species also occurs, often increasing under conditions of overgrazing (Mucina & Rutherford, 2012).

Some of the important taxa found in this vegetation type include (amongst others) the following *Vachellia natalitia*. Tall Shrub: *Tephrosia capensis*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Chrysocoma ciliata*, *Felicia muricata*. Graminoids: *Eragrostis plana*, *Heteropogon contortus*, *Hyparrhenia hirta*, *Sporobolus africanus*, *Themeda triandra*, *Aristida junciformis* subsp. *junciformis*, *Bulbostylis humilis*, *Cynodon dactylon*, *Digitaria diagonalis* Herbs: *Centella asiatica*, *Commelina africana*, *Gazania linearis*, *Gerbera ambigua*, *Helichrysum miconiifolium*, *H. nudifolium* var. *pilosellum*, *H. rugulosum*, *Senecio retrorsus*, *Spermacoce natalensis*, *Wahlenbergia stellarioides*, *Zornia capensis*. Geophytic Herbs: *Hypoxis argentea*, *Moraea polystachya*, *Pellaea calomelanos*.

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) only 0.2% of the unit is statutorily conserved in the Doubledrift and Thomas Baines Nature Reserves. About 2% is conserved in private reserves. Approximately 20% of the vegetation type has already undergone transformation for cultivation, urban development, or plantations. A conservation target of 25% was set for the vegetation type.

### **2018 SANBI Vegetation Map:**

According to the latest vegetation map provided for South Africa (SANBI, 2018), the project site is still situated within the Bisho Thornveld

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 Groundcover and Fauna.

### **FAUNA**

The study area is significantly transformed and enclosed within an area that has experienced mining activities for more than 50 years. Any animal species that may occur in the region, therefore, would most probably have migrated as disturbance levels increased.

The 2009 EMPR of the mine noted the following regarding faunal assemblages:

**Fish:** There are no surface water features (apart from the quarry pit) in the mining area therefore no fish species of importance were identified. A small chance does exist that some fish species may exist within the quarry pit. It is important that introduced fish do not enter natural drainage channels in the region. However, as the river and the quarry is geographically isolated for long periods this is not an important environmental issue.

**Herptef fauna:** The site EMPR notes that the only noteworthy species that may occur in the study area (in 2009) is the Yellowbellied House Snake (*Lamprophis fuscus*). This snake is endemic to South Africa but of Least Concern in terms of IUCN Conservation (3.1). No frogs of specific conservation concern were known to occur in the area. Irrespective of the above, all Eastern Cape reptiles and amphibians are classed as Schedule II (protected wildlife) animals, and therefore protected.

**Mammals:** In 2009 a desktop study of the species that may occur in the area revealed species such as the Tree Hyrax (*Dendrohyrax arboreus arboreus*) (VU), Spotted-

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necked Otter (*Lutra maculicollis*) (NT), Honey Badger (*Mellivora capensis*) (NT), African Weasel (*Poecilogale albinucha*) (DD), various bat species, some insectivore such as the Giant Golden Mole (*Chrysoxalax trevelyani*) (VU), Samango Monkeys (*Cercopithecus mitis*) (VU), and the White-tailed Rat (*Mystromys albicaudatus*) (EN).

**Birds:** The species with ranges that coincide with that of the study area (in 2009) included the Cape Parrot (EN), Cape Vulture (VU), African Marsh Harrier (VU), Grey Crowned Crane (VU), Stanley Bustard (VU), and the Southern Ground Hornbill (VU).

The Screening Report (2023) lists the following species that may (amongst others) be present or enter the site at various intervals:

- ❖ *Chrysoxalax trevelyani* (VU) (Butterfly)
- ❖ *Chrysoxalax trevelyani* (EN) Giant Golden Mole
- ❖ *Dendrohyrax arboreus* (LC) Tree Hyrax

The environment surrounding the mining area has seen many changes since 2009, such as the extensive development of the northern parts for residential purposes, the use of the proposed expansion area as a landfill/dumping site and the subsequent reinstatement of the area, increased poaching, and dog hunting in the undeveloped areas to the south. Considering this, the faunal component of the study area is highly disturbed, and no resident species of conservation importance were identified within the study area. If mining is kept away from the riparian vegetation lining the riverbanks, the impact on the faunal component will be of low significance.

### **HUMAN ENVIRONMENT:**

#### **CULTURAL AND HERITAGE ENVIRONMENT**

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

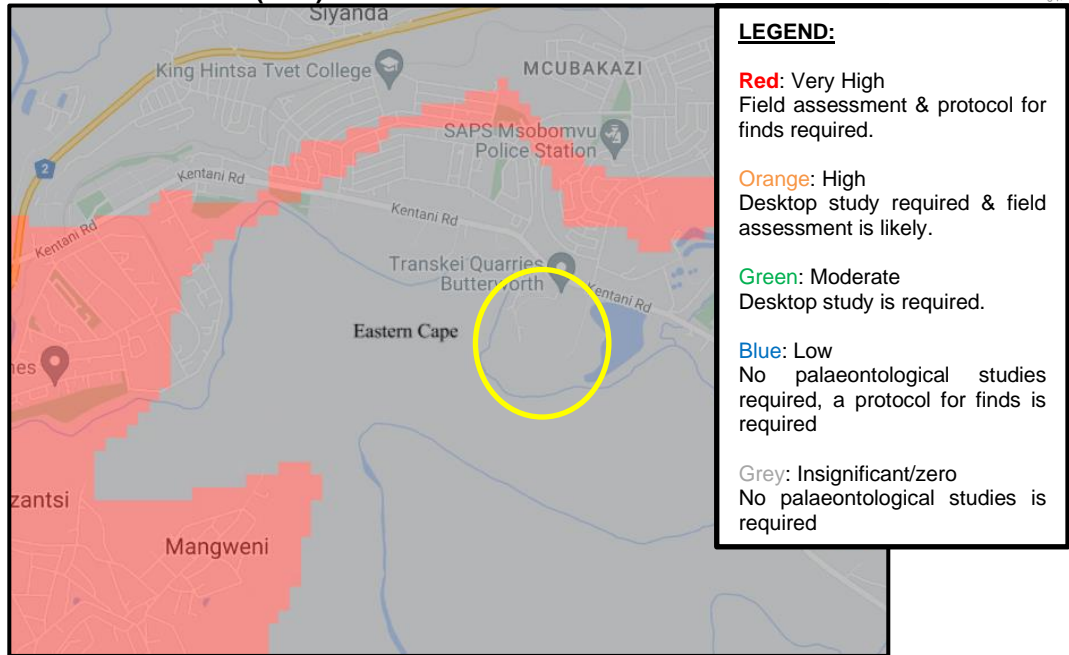


Figure 17: The SAHRA palaeontological sensitivity map shows the mining footprint (yellow circle) extends over an area of insignificant (grey) concern.

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

**SOCIO-ECONOMIC ENVIRONMENT**

*(Information extracted from the Amathole District Municipality IDP 2020/2021)*

The mining area is in Ward 03 of the Mquma Local Municipality (MLM). The MLM is a category B Municipality located in the south-eastern part of the Eastern Cape Province and falls under the jurisdiction of the Amathole District Municipality. The main economic sectors of the MLM include community (government) services (±41%), wholesale and retail trade (±18.5%) and manufacturing (15.5%).

In 2011 the MLM ranked 31<sup>st</sup> by population size of South African municipalities. The Amathole District Municipality (ADM) IDP notes that the MLM exhibited a negative growth rate as population numbers dropped from 254 000 in 2009 to 249 000 in 2019. This is supported by StatsSA showing a -1.17% growth rate between 2001 and 2011.

**Population Group, Gender and Age Profile**

Total population can be categorised according to the population group, as well as the sub-categories of age and gender. The population groups include African (99.4%), White (0.2%), Coloured and Asian (0.1%), where the Asian group includes all people originating from Asia, India and China. The age subcategory divides the population into 5-year cohorts, e.g. 0-4, 5-9, 10-13, etc.

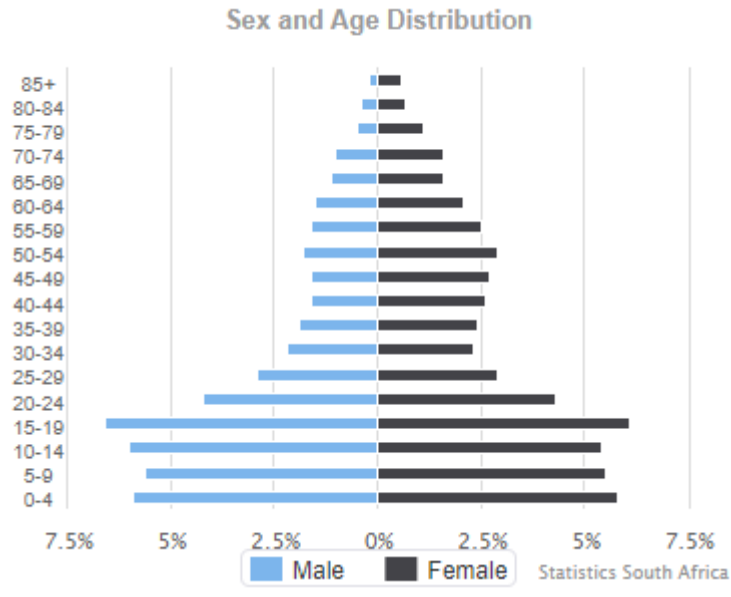


Figure 18: Gender profile for MLM as presented by StatsSA.

MLM's male/female split in population was 46.7% males and 53.3% females in 2011. The MLM appears to be a stable population with the share of female population (53.3%) being very similar to the national average of (51.03%). In 2011, the largest share of population is within the working age (15-64 years) age category with 56.7% of the total population.

StatsSA shows that the 48.6% of the MLM population had some primary education with 32.7% of the population receiving some secondary education. Only 6.3% of the population completed secondary schooling while only 0.8% had a higher than secondary school qualification.

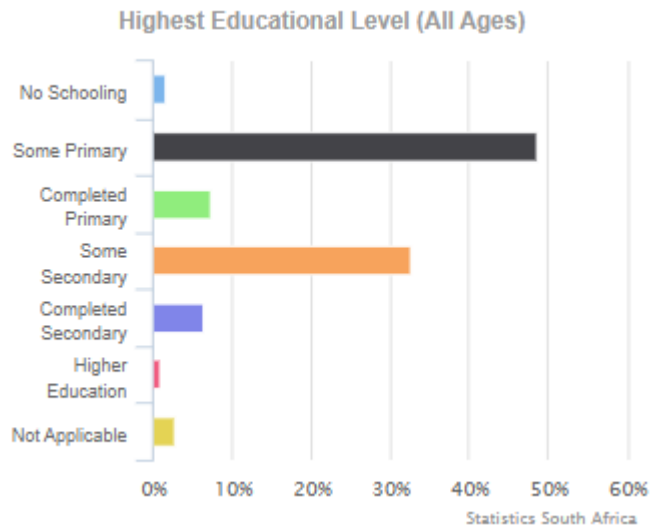


Figure 19: Education level statistics as presented by StatsSA.

The Gross Domestic Product (GDP), an important indicator of economic performance, is used to compare economies and economic states. In 2019, the MLM contributed 28.30% of the ADM's GDP.

StatsSA notes that 42 974 people of the MLM are economically active (employed or unemployed but looking for work), and of these 44.2% are unemployed. Of the 20 464 economically active youth (15 - 34 years) in the area, 55.7% are unemployed as indicated below.

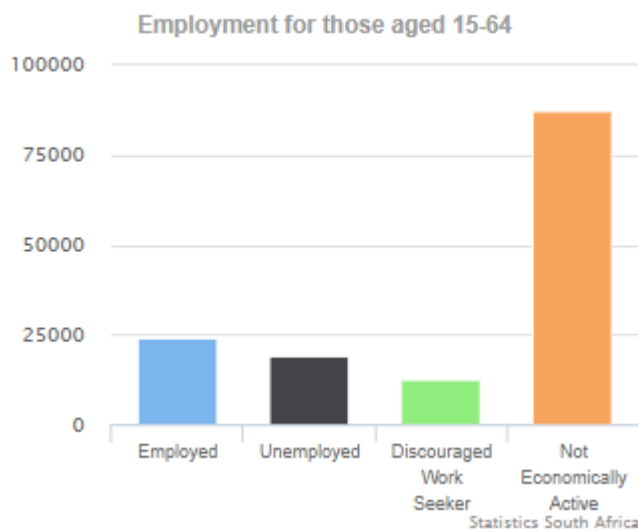


Figure 20: Employment for those aged 15-64 (StatsSA)

The ADM IDP shows an ever increasing unemployment rate for the MLM between 2009, 2014, and 2019. The unemployment rate of the ADM is higher than that of the Eastern Cape and South Africa (28.37% in 2019).

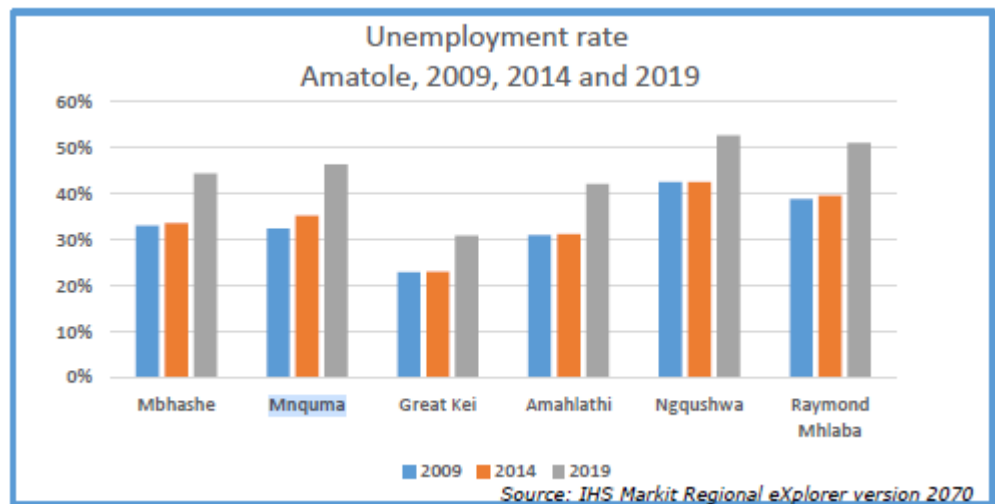


Figure 21: Unemployment rate of ADM for 2009, 2014, and 2019 (ADM IDP).



The average household income of the MLM area is between R 9 601 – R 19 600 (27.4%), followed by an average income between R 19 601 – R 38 200 (23.5%). Thirteen point six percent of the population has no income while 11.2% has an income of R 4 801 – R 9 600.

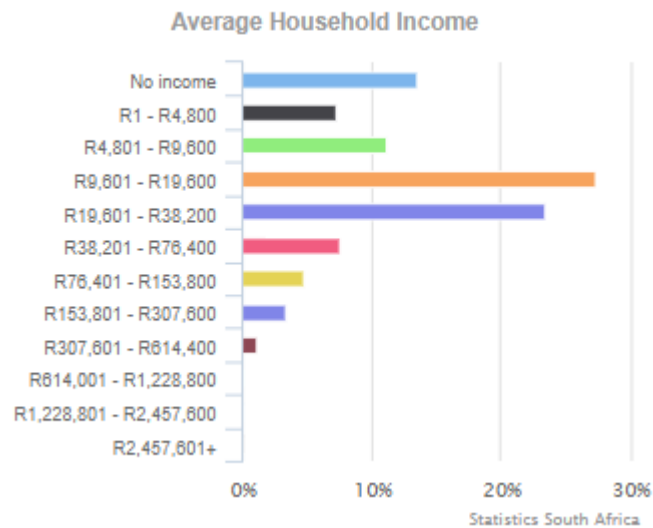


Figure 22: Average household income (StatsSA)

**(b) Description of the current land uses.**

The Quarry footprint and all surrounding land is municipal commonage owned by the Mquma Local Municipality. Rural land use includes grazing and the establishment of residential dwellings. The town’s wastewater treatment works is located to the east of the quarry. According to StatsSA 33.5% of agricultural households in the MLM farm with livestock while 32.4% are engaged in poultry farming.

The registered mine boundary is exclusively used for quarrying activities. As mentioned earlier, the quarry excavation was historically (before 2003) mined across the southern mine boundary. The proposed expansion area that applies to this application includes the previously mined section as well as land that was previously used as a waste refuse site. As mentioned earlier, the refuse site has since been reinstated and presently the footprint comprise of unoccupied rural municipal land. The MR Holder leases a part of this land for stockpiling purposes from the municipality. The following images show the gradual development of the mine and surrounding areas since 2003.



Figure 23: Satellite view of the study area in 2003 (left pane) and again in 2009 (right pane) where the development of the Mcubakazi residential area is clear. Also note the use of the area south-east of the quarry as landfill site (images obtained from Google Earth).

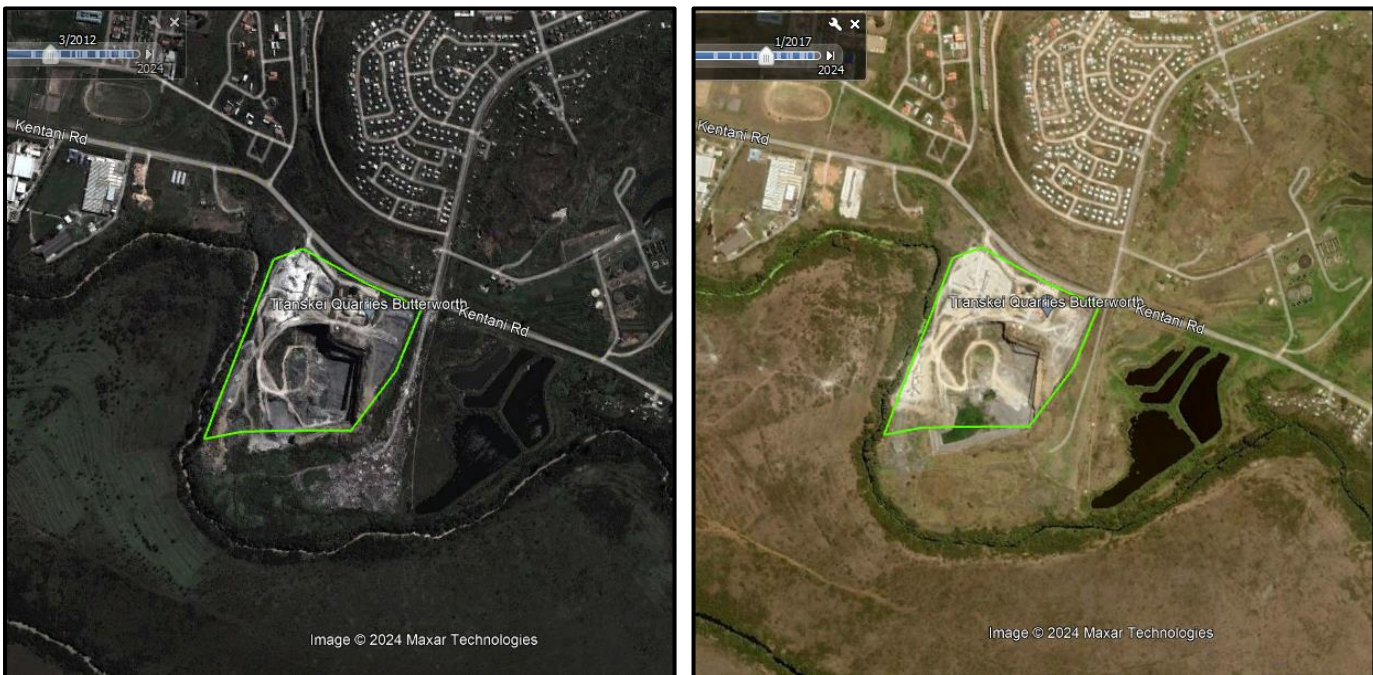


Figure 24: Satellite view of the study area in 2012 (left pane) and again in 2017 (right pane) where the rehabilitation of the landfill site (south-east of the quarry) is clear (images obtained from Google Earth).

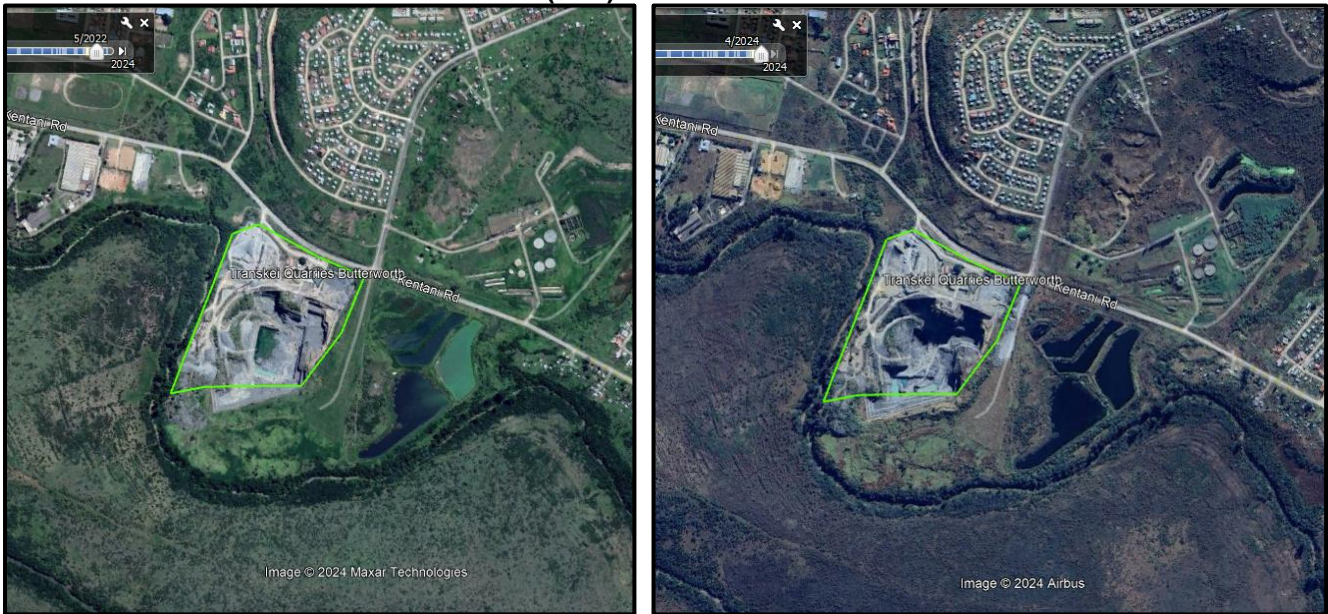


Figure 25: Satellite view of the study area in 2022 (left pane) and again in 2024 (right pane) indicating the well-developed residential and/or industrial use of the areas bordering the quarry to the north (images obtained from Google Earth).

The surrounding land uses include the following:

- ❖ Kentani Road passes the Quarry to the north and serves as the main access road;
- ❖ The Mchubakazi residential area is located north, and north-west of the Quarry, while the Zizamele residential area developed to the north-east (north of Kentani Road);
- ❖ Amongst others a Santex factory, Tiki Plant Hire, and a brick yard developed to the north-west (south of Kentani Road);
- ❖ The municipal wastewater treatment works is east of the Quarry boundary; and
- ❖ South of the Quarry, opposite the Gcuwa River, there is poorly maintained rural land occasionally used for grazing by the community.

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

Table 10: Land uses and/or prominent features that occur within 500 m radius of the study area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	YES	-	Natural areas, albeit poorly managed, adjoins the study area to the south opposite the Gcuwe River.
Low density residential	-	NO	-
Medium density residential	-	NO	-
High density residential	YES	-	The Mchubakazi and Zizamele residential areas developed north of Kentani Road, north, north-west, and north-east of the Quarry.
Informal residential	YES	-	
Retail commercial & warehousing	YES	-	North-west of the Quarry, including factories, a brick yard and plant hire.
Light industrial	YES	-	

LAND USE CHARACTER	YES	NO	DESCRIPTION
Medium industrial	-	<b>NO</b>	-
Heavy industrial	-	<b>NO</b>	-
Power station	-	<b>NO</b>	-
High voltage power line	-	<b>NO</b>	-
Office/consulting room	<b>YES</b>	-	The sales office of Butterworth Quarry operates from the property.
Military or police base / station / compound	-	<b>NO</b>	-
Spoil heap or slimes dam	<b>YES</b>	-	Overburden heaps of the Quarry are present on site.
Quarry, sand or borrow pit	<b>YES</b>	-	This application is for the expansion of the existing Quarry footprint.
Dam or reservoir	<b>YES</b>	-	The wastewater treatment works of the municipality adjoins the Quarry to the east.
Hospital/medical centre	-	<b>NO</b>	-
School/ crèche	-	<b>NO</b>	-
Tertiary education facility	-	<b>NO</b>	-
Church	-	<b>NO</b>	-
Old age home	-	<b>NO</b>	-
Sewage treatment plant	<b>YES</b>	-	The municipal wastewater treatment works borders the property to the east as well as north of Kentani road to the north-east of the mine.
Train station or shunting yard	-	<b>NO</b>	-
Railway line	-	<b>NO</b>	-
Major road (4 lanes or more)	-	<b>NO</b>	-
Airport	-	<b>NO</b>	-
Harbour	-	<b>NO</b>	-
Sport facilities	-	<b>NO</b>	-
Golf course	-	<b>NO</b>	-
Polo fields	-	<b>NO</b>	-
Filling station	-	<b>NO</b>	-
Landfill or waste treatment site	-	<b>NO</b>	-
Plantation	-	<b>NO</b>	-
Agriculture	<b>YES</b>	-	The rural land to the south is occasionally used for grazing by the community.
River, stream or wetland	<b>YES</b>	-	The Gcuwa River forms the western, southern and eastern boundary of the study area.
Nature conservation area	-	<b>NO</b>	-
Mountain, hill or ridge	<b>YES</b>	-	Various hills are present within 500 m of the application area.
Museum	-	<b>NO</b>	-
Historical building	-	<b>NO</b>	-
Protected Area	-	<b>NO</b>	-
Graveyard	-	<b>NO</b>	-
Archaeological site	-	<b>NO</b>	-
Other land uses (describe)	-	<b>NO</b>	-

**SPECIFIC ENVIRONMENTAL FEATURES**

***NOTE:** The site specific features described below refers specifically to the expansion area that this Section 102 amendment application applies to.*

**SITE SPECIFIC TOPOGRAPHY**

As mentioned earlier, the Quarry footprint is generally characterised by gentle south-westerly and westerly sloping gradients in the northern part of the study area, becoming moderate in the western and southern parts of the quarry footprint. As shown in the following figure, the topography of the proposed expansion area gradually slopes from the highest point (545 mamsl) along Kentani Road towards the river reach in the south. The route indicated below shows an average slope of 3.8% over 1 km, with a maximum elevation gain of 15.4 m (or -34.8 m elevation loss).



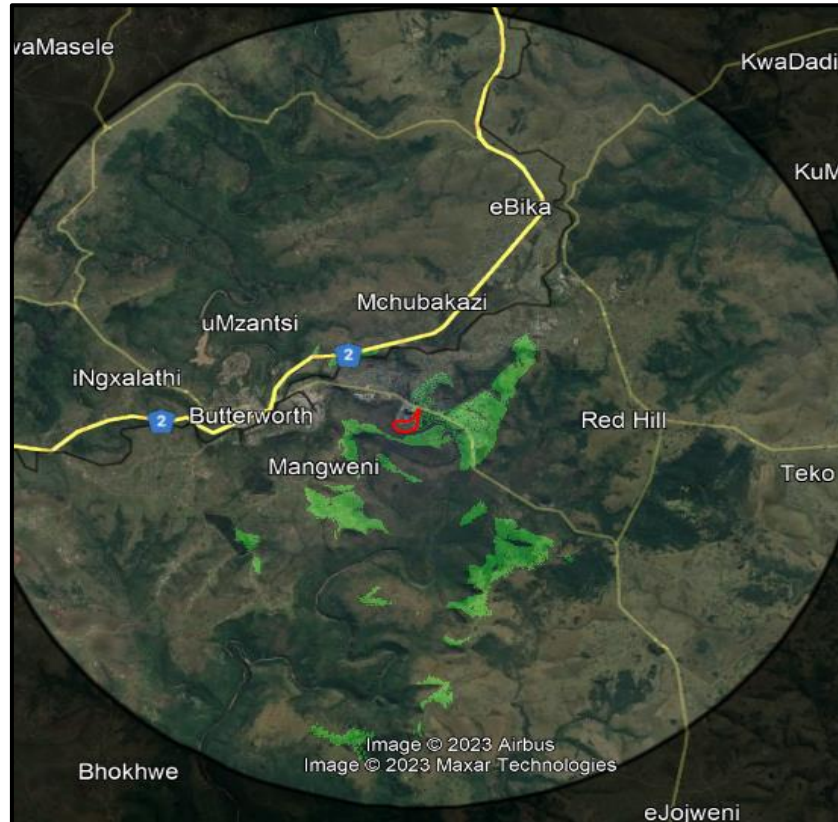
Figure 26: Elevation profile of the proposed expansion area (Image obtained from Google Earth).

Should the mining of the expansion area be allowed, the remaining landscape (between the current quarry excavation and the river) will gradually be changed through the removal of the material. Mining of the area will have a permanent impact on the topography of the area that can only be mitigated to a certain extent through bench mining and rehabilitation. Upon closure, the excavation will be made safe but will remain as a landscape feature as backfilling the excavation is not

possible/practical. The proposed activity will therefore have a residual impact on topography of the area.

**SITE SPECIFIC VISUAL CHARACTERISTICS**

The following figures show the viewshed analysis from three different points of the proposed expansion area. The green shaded areas indicate the positions from where the various areas will be visible within a 10 km range.



*Figure 27: Viewshed analysis of the proposed expansion area (red polygon) at point A16. (Image obtained from Google Earth).*

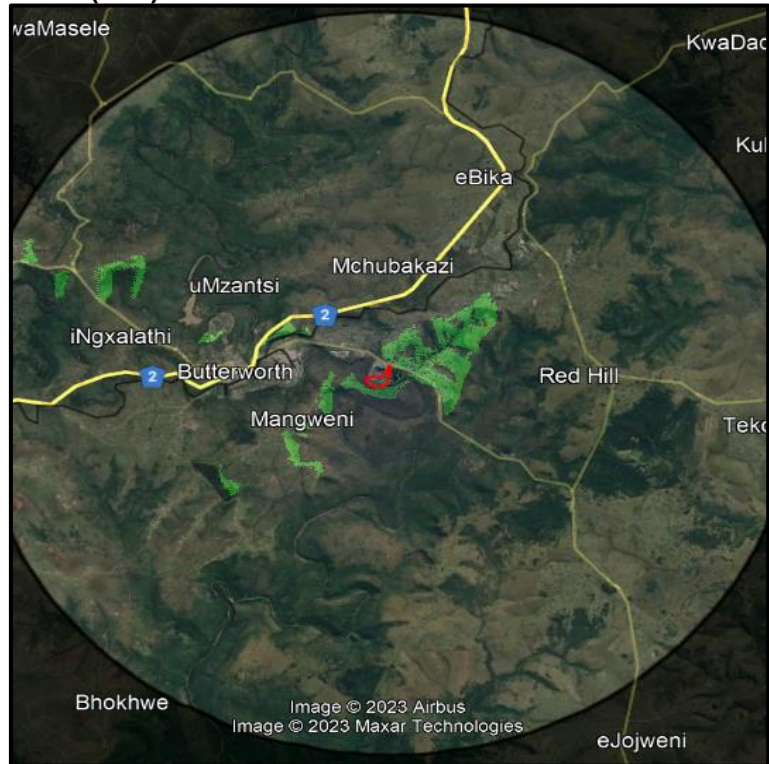


Figure 28: Viewshed analysis of the proposed expansion area (red polygon) at point A8. (Image obtained from Google Earth).

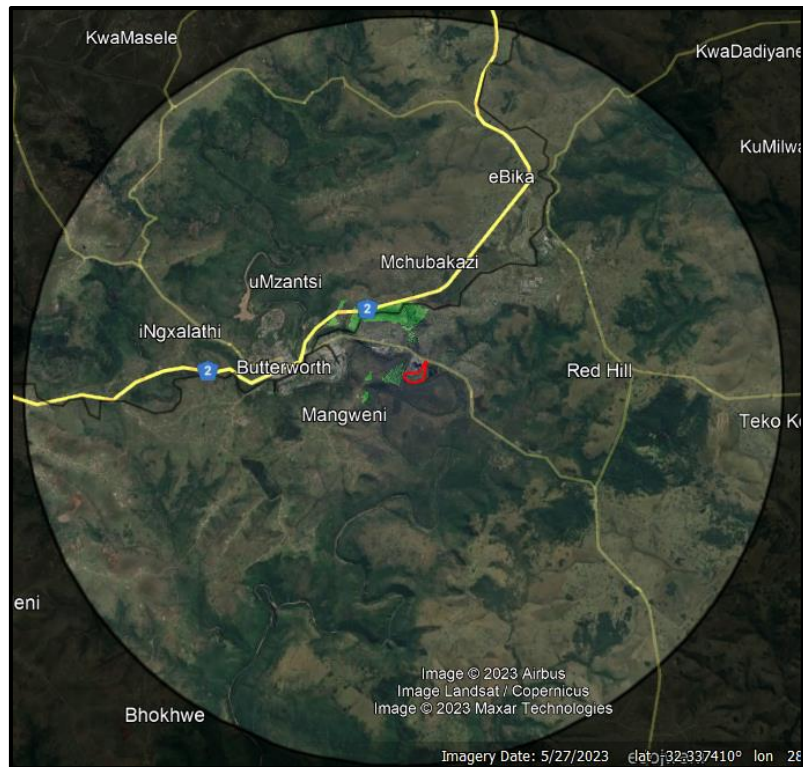


Figure 29: Viewshed analysis of the proposed expansion area (red polygon) at point A12. (Image obtained from Google Earth).

The above analysis shows that the potential visual impact of the proposed activity will be of very low concern, and therefore the visual impact is deemed to be of low-medium significance.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004 (as amended). The proposed expansion of the mining footprint does not trigger an application in terms of the said Act, as emissions to be generated because of these activities mainly entail dust from blasting, transport of material, and the crushing and screening activities.

The nearest houses to the expansion area is  $\pm 200$  m north of Kentani Road, however, it must be born in mind that these residential areas developed after and around the operational quarry. The proposed expansion of the mining footprint is not expected to have a cumulative impact on the air quality and/or noise ambiance of the receiving environment as mining will gradually move into the expansion area as the current footprint becomes depleted. Mining the excavation in a southern direction will take the operations further away from the residents (opposite Kentani Road) towards the undeveloped rural land where there are no resident human receptors. Considering this, the proposed air and noise emissions of the expansion area will be comparable to the current emissions of the Quarry, if not better due to the proposed southern direction moving away from the residents.

#### **SITE SPECIFIC GEOLOGY AND SOIL**

*(Information extracted from the Transkei Quarries – Butterworth Resource-Reserve Estimation, MLB Consulting 2024.)*

Although the Adelaide Subgroup consists mainly of sandstones and red mudstones, the quarry is found in a dolerite intrusion within the Middleton Formation. The targeted commodity of interest in the quarry is therefore the dolerite, which forms most of the rock mass of the quarry.

The dolerite deposit at Transkei Quarries is a competent rock mass deposit with a general trend of increased competence the deeper the working levels become. Above the competent intact dolerite is a weathered zone (varying in thickness) consisting of weathered dolerite and undulated mudstones and sandstones displaying the eroded dolerite boulders. The typical Karoo Dolerite, i.e. a medium to fine grained, hard igneous rock with the pyroxene and plagioclase crystals in the matrix exhibiting strong interlocking ophitic intergrowths has a small percentage of interstitial quartz grains that enhances the hardness of the rock. A few localized calcrete nodules were also found amidst this weathered zone that could pose a hazard when encountered in higher frequency in the vicinity of joints and slips within the rock mass.





Figure 30: Geology map indicating the underlying geology at Butterworth Quarry (MLB Consulting 2024).

The minable resource consists of Dolerite rock, which is a low value product mainly extracted for use in the construction industry (roads and buildings). The physical characteristics of the Dolerite are listed below:

- ❖ Density:  $\pm 3\ 200\ \text{kg/m}^3$ ;
- ❖ UCS:  $\pm 250\ \text{MPa}$  to  $300\ \text{MPa}$ ;
- ❖ Colour: light grey to light brown.

The products currently sold by the mine are as follows:

- ❖ 5 mm crusher dust;
- ❖ 7 mm crusher dust;
- ❖ 8 mm crusher dust;
- ❖ 10 mm crusher dust;
- ❖ 13 mm crusher dust;
- ❖ 19 mm crusher dust;
- ❖ 20 mm road stone;
- ❖ G1 basecourse;
- ❖ G2 basecourse;
- ❖ G5 basecourse;
- ❖ Builders blend;
- ❖ Dump rock;
- ❖ Sabunga;
- ❖ Rockfill; and
- ❖ SABA dust.

In 2024, MLB Consulting (MLB) did geological modelling of the dolerite resource up to the 520 masl datum. The study found that the dolerite is uniformly emplaced up to the pit bottom. Pit mapping and site visits to the surrounding quarries confirmed the geological principle of lateral continuity into the expansion area and into the current mining right area. All established benches and stacks have been found to be within the targeted dolerite intrusive. No geoscientific evidence of resource discontinuity or the possibility thereof was noted on the lateral extents of the resource model boundaries. The Vertical extent of the resource model has been truncated and limited to the 520 masl datum; the Dolerite intrusives have been confirmed and mapped at this (lowest) elevation in the pit bottom. A total inferred in-situ resource estimate of  $\pm 24$  million  $m^3$  was estimated based on the volumetric analysis done by MLB.

MLB notes that future expansion plans would require a cutback on the current pit to maximise resource and extend life of mine (LOM). The simplified slope configuration section is shown in the following figure.

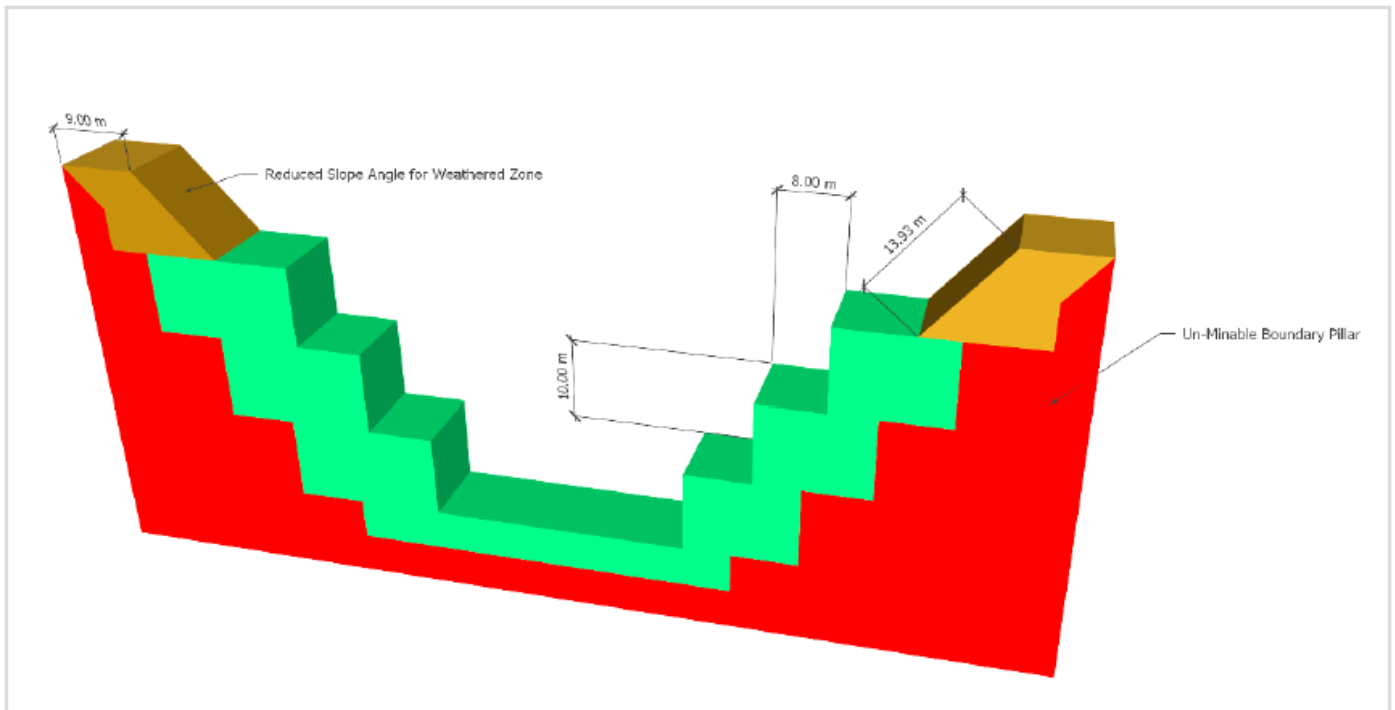


Figure 31: Image showing simplified expected excavation slope configuration in expansion phase (MLB Consulting 2024).

Geological losses may occur in the form of dilution with sedimentary host rocks (Karoo sequence), potholes in the targeted Dolerite intrusives and/or any structural interferences within the rockmass; this was accounted for in the reserve estimation by way of a 10% discount factor.

Areas with established infrastructure were discounted from the mining reserves, particularly where such infrastructure is assumed to form part of the core operation (e.g., established re-handling stockpiles, fixed crushing plants, water supply dams/vessels, haul roads, etc.). Upon accounting for these various specific discounts the probable mining reserve was conservatively calculated by MLB in 2024 to be 3.6 million m<sup>3</sup> / ±4 million m<sup>3</sup> (loose volume). Based on the current and proposed production rate of the mine, should the expansion of the mining footprint be approved, the LOM is in the region of 24 years.

The proposed expansion of the mine will impact the geology of the study area in that the rock will be removed and sold to clients upon processing. The specific design of the quarry pit will be in consultation with a qualified mine planner/engineer and will be dictated by the 1:100 year floodline of the Gcuwa River to be determined should the S102 application be successful.

## **SITE SPECIFIC HYDROLOGY**

### **DFFE National Web Based Environmental Screening Tool:**

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

According to the Screening Report (October 2023) the red shaded areas (in the following figure) indicate an Aquatic: ESA that corresponds with the position of the Gcuwa River. The remaining area is deemed of low sensitivity in terms of aquatic biodiversity.

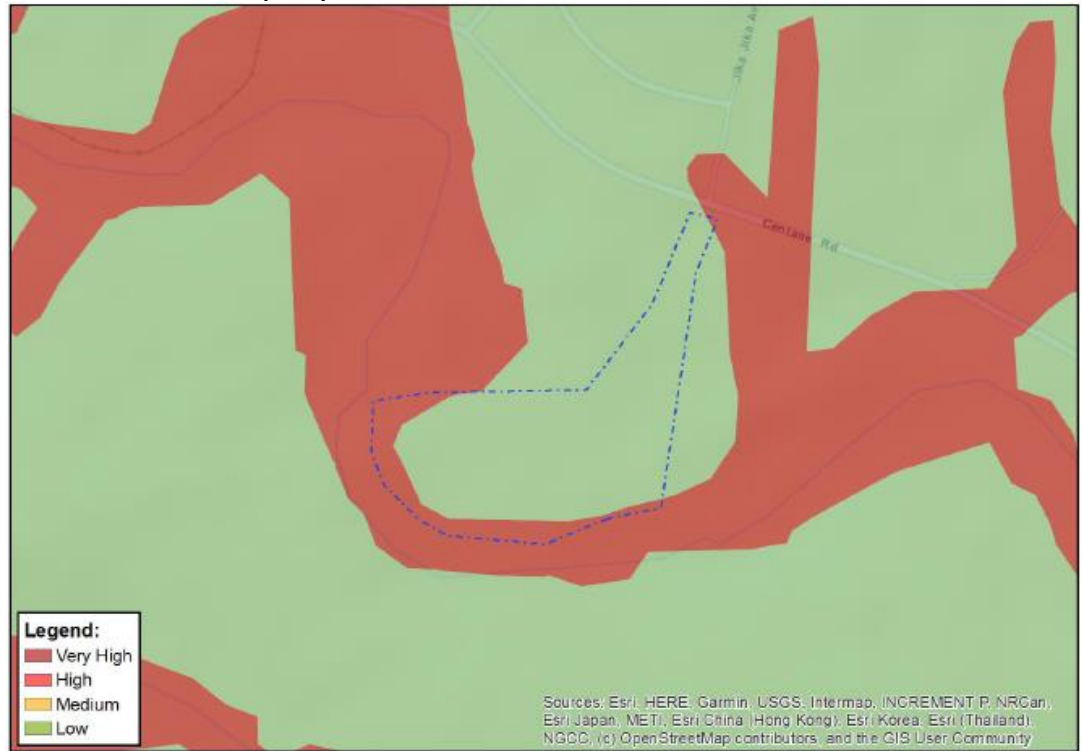


Figure 32: DFFE screening tool output for aquatic biodiversity (image obtained from DFFE screening tool report).

As mentioned earlier, the main watercourse of the study area is the Gcuwa River that borders the study area to the west, south, and east. The proposed footprint of the expansion area was chosen to stay >32 m from the banks of the river. It is also proposed that no excavations will extend into the 1:100 year floodline of the Gcuwa River. The stormwater management plan of the Quarry will be updated once the S102 application was approved. The SWMP will incorporate all the requirements of the DWS that may be identified upon further discussions with the water authority. No mining will commence prior to receipt of the appropriate water use authorisation from DWS (if required). The Quarry will continue to take biannual water quality samples of the Gcuwa River (upstream and downstream of the mine) and the water in the quarry pit to prevent the mine impacting the water quality of the river and possibly affecting downstream users.

The use of ingress water that cyphers into the excavation from the river will continue at the Quarry as done presently. Considering this and should the mitigation measures and management plans proposed in this document, be implemented, the potential impact on the hydrology will be of low significance.

Mining the proposed expansion area will not impact the fish support status of the area as the proposed activities will remain outside the 1:100 year floodline and riparian vegetation layer of the Gcuwa River. As mentioned earlier, the earmarked footprint

has been disturbed on numerous occasions during the past 10 years, and therefore no longer contribute to the wetland cluster that was previously identified by SANBI in the area.

**SITE SPECIFIC TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS, GROUND COVER AND FAUNA**

As mentioned earlier, when the expansion area footprint is layered over the Mining and Biodiversity Map, the southern part extends across an area of highest biodiversity importance with a corresponding rating of highest risk for mining. According to the 2019 Eastern Cape Biodiversity Conservation Plan (ECBCP) the expansion area is almost entirely within a Terrestrial ESA. The DFFE screening report corresponds with the findings of the ECBCP as shown in the following figure where the red shading indicates a Terrestrial ESA.

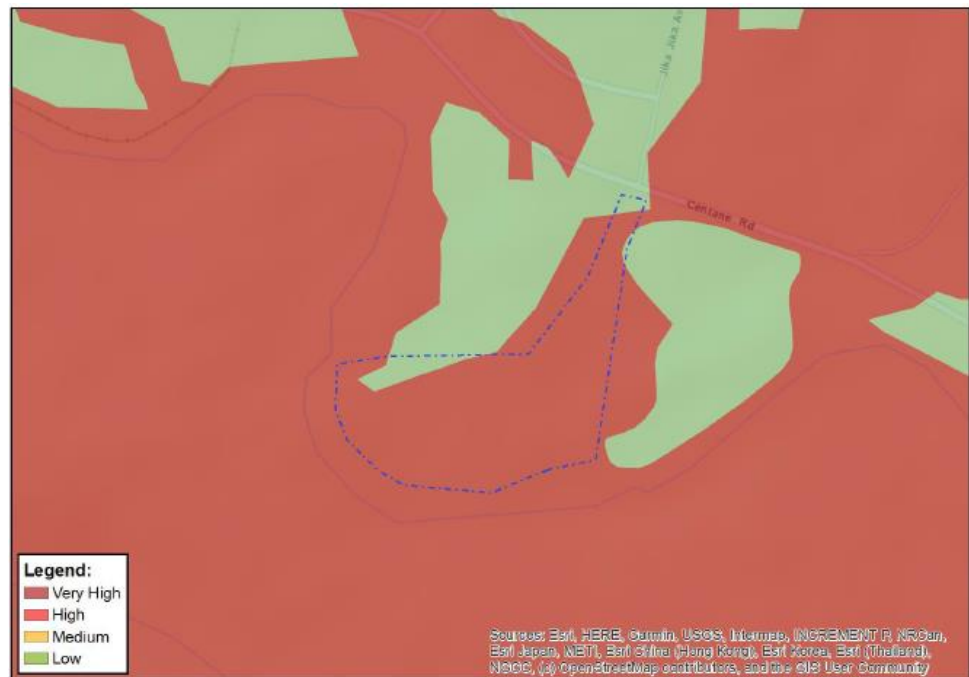


Figure 33: DFFE screening tool output for terrestrial biodiversity (image obtained from DFFE screening tool report).

The DFFE screening report further notes the plant species within the study area to be of medium sensitivity.

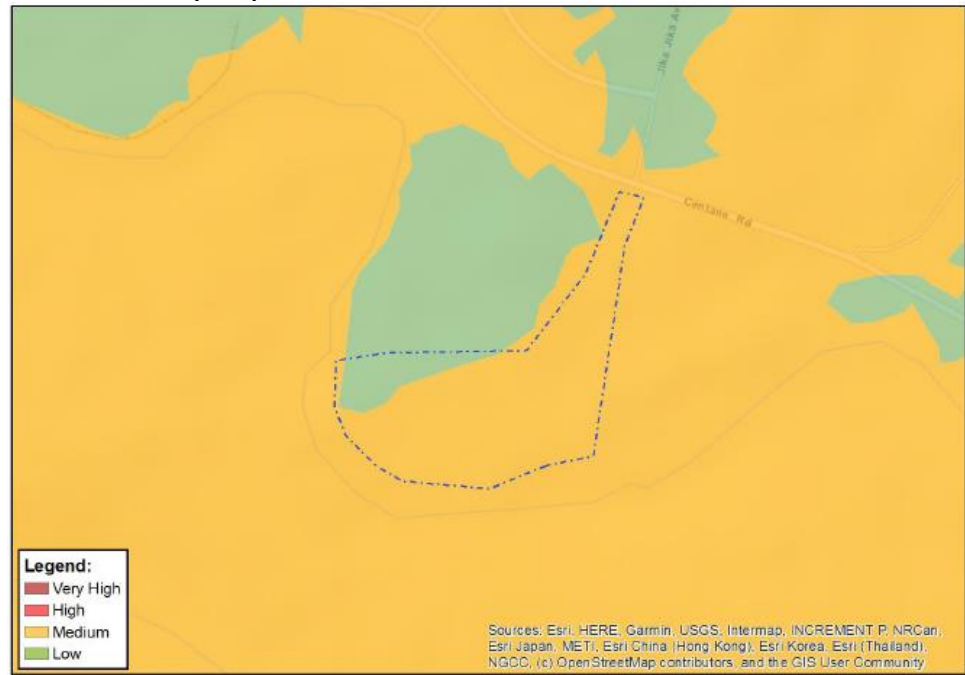


Figure 34: DFFE screening tool output for plant species (image obtained from DFFE screening tool report).

Considering the above, ground-truthing however, showed that the proposed footprint has been highly disturbed in the past when it was used as dumping grounds. Although the area has since been reinstated, the vegetation cover is representative of pioneer species with alien invader plant species scattered throughout. The disturbed area is also subject to encroachment by *Vachellia* trees. As evident in the following satellite pictures, the vegetation cover of the study area is not pristine and has been disturbed since before 2012.



Figure 35: Satellite view of the footprint area where the dumping of waste is evident in the first picture (2003). In the second picture (2009) the dumping of waste extended through the area (image obtained from Google Earth).



Figure 36: Satellite view of the footprint area where the dumping of waste is evident in the first picture (2012). In the second picture (2013) the dumping of waste is less albeit still present (image obtained from Google Earth).



Figure 37: By 2016 the dumping of waste has stopped, and the vegetation of the area was recovering (image obtained from Google Earth).

As mentioned earlier, the vegetation cover presently comprises of grassland with encroaching Sweet Thorn Trees (*Vachellia karroo*) and invader plant species such as Wild Tobacco (*Nicotiana glauca*) (Cat 1b), Syringa Trees (*Melia azedarach*) (Cat 1b); Bugweed (*Solanum mauritianum*) (Cat 1b); Giant Reed (*Arundo donax*) (Cat 1b); Eucalyptus Trees (*Eucalyptus* spp) (Cat 1b in riparian areas); White goosefoot (*Chenopodium album*); Caster-oil Plant (*Ricinus communis*) (Cat 2); Yellow bells (*Tecoma stans*) (Cat 1b). The indigenous vegetation is mainly tolerant and locally common species of least concern. The grass/graminoid layer consists mainly of indigenous species of least concern, and mainly disturbance-tolerant and

pioneer/increaser grasses such as *Cynodon dactylon*, *Eragrostic curvula* and *Hyparrhenia hirta*.



Figure 38: Pictures showing the present vegetation cover of the proposed expansion area where the disturbed nature and invader plant species are evident (2023).

No protected and/or sensitive plant species occur within the proposed expansion area, and should the right holder keep excavations out of the riparian fringe of the Gcuwa River, the proposed development will have a low-medium significance on the receiving environment.

Anthropogenic development (waste dumping as well as overgrazing) in the study area has led to the transformation of natural habitat. Grassland habitats form important ecological linkages and provide refugia for local species of flora and fauna, as well as forming important seed dispersal sites/nuclei. However, as mentioned earlier, the Gcuwa River creates a natural barrier hemming the proposed expansion area in and cutting off the surrounding rural areas to the west and south. Therefore given the relatively *status quo* of the project development area and the existing land use of the area (disturbed and encroached grasslands used for grazing) impacts to faunal movement is unlikely to be a significant concern.



Under a best practical mitigation scenario, the project is environmentally acceptable from a terrestrial biodiversity perspective, provided that the mitigation and management recommendations are strictly adhered to.

**SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT**

*(Information extracted from the Application for exemption from a Heritage Impact Assessment for the proposed expansion of the Butterworth Quarry on a Portion of Erf RE/153 and Erf RE/725, Mnquma Magisterial District, Eastern Cape Province, 2024)*

Following the earlier discussion regarding the Cultural and Heritage Environment, the DFFE screening report also shows the proposed expansion area to be of low archaeological significance.



*Figure 39: DFFE screening tool output for archaeology (image obtained from DFFE screening tool report).*

Beyond Heritage (Pty) Ltd was contracted to assess the archaeological, cultural and/or palaeontological sensitivity of the study area. The specialist noted that the archaeological record for the greater study area consists of the Stone Age and Iron Age.

**Stone Age**

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time

ranges. For (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable. The three main phases can be divided as follows;

- ❖ Later Stone Age (LSA); associated with Khoi and San societies and their immediate predecessors. - Recently to ~30 thousand years ago.
- ❖ Middle Stone Age (MSA); associated with Homo sapiens and archaic modern human - . 30-300 thousand years ago.
- ❖ Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. - 400 000-> 2 million years ago.

Most Stone Age finds in the larger area are generally isolated surface occurrences and primarily date to the Middle Stone Age. It is expected that archaeological material in the area would span the Earlier, Middle, and Later Stone Ages. Acheulian artifacts can occasionally be found in the river gravels and along the riverbanks, with MSA and LSA artifacts likely scattered across hillsides and ridges.

Evidence of Khoekhoe occupation might still be visible in the landscape, as these herding groups are known to have followed larger rivers during their migrations. Herders arrived in the area around the mid-first millennium AD (Mitchell 2002). While habitation sites of these groups are not well understood, some of the stone kraals found in the landscape likely belong to them. Khoekhoe burials, which are sometimes marked with a cairn of stones, may also be visible. Additionally, pottery found near stone kraals or in cave sites could serve as further evidence of a Khoekhoe presence in the area. Significant Khoekhoe pastoralist sites in the Eastern Cape include Scott's Cave near Patensie (Deacon 1974), the Goedgeloof shell midden along the St. Francis coast (Binneman 2007), and the Oakleigh rock shelter near Queenstown (Derricourt 1977).

The Late Stone Age communities often left behind archaeological evidence in coastal middens, cave deposits, rock shelters, open sites. Among these coastal groups were the Strandlopers, who were the known to have inhabited the shores of the Eastern Cape. Sometimes, they are identified only by a few scattered stone tools and bone fragments. In the Southern Drakensberg, hunter-gatherers occupied the area before 10 000 BP (Opperman 1987), but it was abandoned around 6,000 BP during the Holocene, only to be reoccupied around 3 000 BP. The San later faced subjugation

and assimilation initially by the Khoekhoen, who were cattle herders, and later by the amaXhosa and early European settlers.

### **Iron Age**

Bantu-speaking people moved into Eastern and Southern Africa about 2 000 years ago (Mitchell 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. It can be divided into three distinct periods:

- ❖ The Early Iron Age (EIA): Most of the first millennium AD.
- ❖ The Middle Iron Age (MIA): 10th to 13th centuries AD.
- ❖ The Late Iron Age (LSA): 14th century to colonial period.

Iron Age farming communities in southern Africa typically chose to settle in river valleys in the eastern part of the region due to the summer rainfall climate, which was ideal for cultivating millet and sorghum. Although extensive research has been conducted on the Iron Age across southern Africa, the Eastern Cape has received relatively little attention. A notable Early Iron Age site in the Eastern Cape include Kulubele, located in the Kei River Valley south of the Project area (Binneman 1996).

In the Eastern Cape Province, Later Iron Age sites are found both in low-lying river valleys adjacent to major rivers and along ridge crests. The LIA in the larger area is attributed to the Mpondomise, Thembu, and Xhosa groups (Feely 1987). Trade was a crucial aspect of the LIA economy, with goods being exchanged locally and over long distances. Key trade items included metal, salt, grain, cattle, and thatch, leading to the development of economically driven centers and an increase in trade wealth. Domestic animal husbandry, metalworking, and crop cultivation persisted, albeit with changes in economic organization (Huffman 2007). Hilltop settlements are commonly associated with LIA patterns from the second millennium AD. Later Iron Age settlements have been extensively documented by the Albany Museum and cover a broader area compared to Early Iron Age sites. Unlike the Sotho areas where stone buildings are typical, such structures are absent in the Transkei and Ciskei areas. This absence, coupled with a pattern of mobility and a lack of significant stone working technology, has made site identification difficult (Derricourt 1977).

Butterworth originated from a station of the Wesleyan Missionary Society, which was established in 1827 by Reverend W.J. Shrewsbury and named after Joseph Butterworth, a former treasurer of the Society. The town was near the residence of Hintska ka Khawuta, chief of the Gcaleka Xhosa people. After the Frontier Wars ended in 1878, traders began to settle in the area. During the Frontier Wars, the mission station was burnt down numerous times. The town itself was founded in 1880 and gained municipal status in 1904 (Raper 2004). Butterworth is more commonly referred to as Gcuwa.

Gcuwa river is a tributary of the Great Kei River, flowing south past Butterworth to where it meets at Qombolo. Its name is likely a Xhosa adaptation of the Khoekhoe term "Goea," which is believed to mean "densely overgrown place." The Gcuwa River runs past the Project area along the southern boundary.

### **Frontier Wars**

The series of conflicts known as the Frontier Wars began in 1779 and continued intermittently for nearly a century, involving the Xhosa people, Boers, Khoekhoe, San, and the British. These clashes were primarily driven by colonial expansion, which led to the displacement of the Xhosa and Khoekhoe from their land and cattle, among other losses. Before Dutch occupation, the Xhosa, Khoekhoe, and San focused on hunting, agriculture, and stock farming. In the 1700s, overcrowding forced farmers, known as "Trekboers" or migrant farmers, to move deeper into the Cape Colony. They used superior weaponry to overcome local resistance and employed subdued groups for labour. Although there were periods of relative calm between the wars, minor skirmishes often arose, typically triggered by stock theft. Additionally, alleged breaches of signed or verbal agreements were a significant factor in these armed confrontations. The Dutch East India Company (V.O.C.) grew concerned about the expanding reach of these farmers, as it became harder to exercise control. To reassert authority, the V.O.C. had to follow the farmers and constantly adjust the colony's eastern boundaries. Colonists aimed to solidify their control through military means, evident in the construction of forts, garrisons, military posts, and signal towers. The Xhosa resistance was notably unified, while some Xhosa ethnic groups cooperated with the colonial government when it served their own interests.

By 1778, the Great Fish River became the eastern frontier, where the migrant farmers encountered the Xhosa, leading to serious conflicts. Previously, they had only clashed with the San. The V.O.C. established new districts like Swellendam and Graaff-Reinet

to manage the frontier, but the violence persisted. Both the frontier farmers and the Xhosa continued to clash over territory and resources, leading to a series of wars.

The first Frontier War erupted in 1779 when armed Boer farmers attempted to expel the Xhosa from the Zuurveld but failed. This was followed by two more wars in 1793 and 1799–1801, with the third conflict seeing many Khoekhoe, who had worked for the Boers, joining the Xhosa. None of these wars resulted in a decisive victory (Britannica.com).

In the early 1800s, the British took control of the Cape Colony and sought to establish peace on the eastern border. Despite their efforts, a fourth Frontier War began in 1811, during which British troops pushed many Xhosa back across the border.

Between 1818 and 1878, the British fought five additional Frontier Wars against the Xhosa. They fortified the border with forts and stationed many soldiers there. Although the Xhosa were frequently defeated in battle, they persistently resisted British rule.

The ninth Frontier War concluded in 1878 when Xhosa leader Sarili (also known as Kreli) surrendered to the British. By the end of the 1800s, all Xhosa lands had been incorporated into the Cape Colony (sahistory.org.za).

### **Heritage and Palaeontological Resources**

No heritage resources are on record near the Project area and the heritage potential is low. The Project area has previously been mined in a small section along the quarry and the area has been used for refuse dumping (refer to Appendix G). Although the Project area was reinstated, the original vegetation cover is no longer present, nor the original soil cover. The complete transformation of the Project area would have impacted on heritage resources had any been present.

Beyond Heritage also concluded that based on the SAHRA paleontological map (Figure 17) the study area is indicated as of insignificant/zero sensitivity and no further studies are required for this aspect.

### **Conclusion**

Beyond Heritage supported and application for exemption from a Phase 1 Heritage Impact Assessment as the northern boundary of the Project area has already been subject to mining and is completely transformed. The municipality previously used the Project area as a waste dump which has since ended. The Project area was reinstated thereafter but it is evident that the Project area has been completely transformed and

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the original vegetation and topsoil is no longer present. The extensive surface disturbances of the Project area would have impacted heritage resources had any previously been present. However, due to the subsurface nature of heritage finds including graves, a Chance Find Procedure must be implemented for the Project.

Considering the above the potential of the proposed expansion area affecting any archaeological and/or palaeontological artefacts or environments is deemed to be of very low possibility.

**SITE SPECIFIC INFRASTRUCTURE**

No infrastructure exists in the proposed expansion area that could be affected by the proposed activity. If approved, the area will be fenced off to control access and prevent sprawling.

**(d) Environmental and current land use map.**

(Show all environmental and current land use features)

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

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

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

The following potential impacts were identified of each main activity in each phase of the 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.

**EXPANSION ACTIVITIES:**

**STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN**

Visual intrusion because of the expansion activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
				Degree of Mitigation: Partial			
<b>Rating: Medium</b>							
2	5	1	2.6	4	5	4.5	<b>11.7</b>

**Dust nuisance due to the movement of the soil**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
3	3	2	2.6	4	4	4	<b>10.4</b>

**Noise nuisance caused by earthmoving machinery**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	3	2	2.3	4	4	4	<b>9.2</b>

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	3	3.5	<b>9.1</b>

**Loss of vegetation cover and riparian vegetation**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
3	5	1	3	5	1	3	<b>9</b>

**Potential impact on faunal species**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	1	3	3	1	2	<b>6</b>

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	2	3.3	4	2	3	<b>9.9</b>

**Potential increase in runoff from denuded areas and associated accelerated erosion**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
2	5	1	2.6	4	3	3.5	<b>9.1</b>

**Runoff from the mining area potentially affecting the water quality of the Gcuwa River**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
4	5	4	4.3	3	1	2	<b>8.6</b>

### DRILLING AND BLASTING

Alteration of the existing topography

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium-High</b>						<b>Degree of Mitigation: Partial</b>	
4	5	1	3.3	5	5	5	<b>16.5</b>

Health and safety risk posed by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
5	5	1	3.6	3	1	2	<b>7.2</b>

Dust nuisance caused by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
4	5	2	3.6	4	3	3.5	<b>12.6</b>

Noise nuisance caused by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
4	5	2	3.6	4	3	3.5	<b>12.6</b>

Flyrock falling beyond the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
2	5	2	3	4	3	3.5	<b>10.5</b>

Potential damage to the municipal wastewater treatment works

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
5	2	4	3.6	3	1	2	<b>7.2</b>



**EXCAVATION, PROCESSING, LOADING AND HAULING OF AGGREGATE**

Alteration of the existing topography

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium-High</b>						<b>Degree of Mitigation: Partial</b>	
4	5	1	3.3	5	5	5	<b>16.5</b>

Dust nuisance caused by earthmoving machinery

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
3	3	2	2.6	4	4	4	<b>10.4</b>

Noise nuisance because of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
3	3	2	2.6	4	4	4	<b>10.4</b>

Unsafe working environment for employees

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
5	5	1	3.6	3	1	2	<b>7.2</b>

Soil contamination from hydrocarbon spills and/or littering

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	4	1	2.6	4	3	3.5	<b>9.1</b>

Flooding of the excavation due to ingress from the river

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
4	2	1	2.3	4	2	3	<b>6.9</b>

Runoff from mining area potentially impacting the Gcuwa River and/or surface water

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
4	4	4	4	4	2	3	<b>12</b>

**Infestation of the mining area with invader plant species**

Severity	Duration	Extent	Consequence	Likelihood		Significance
				Probability	Frequency	
<b>Rating: Medium-High</b>			<b>Degree of Mitigation: Full</b>			
3	5	2	3.3	5	5	<b>16.5</b>

**Overloading of trucks having an impact on the public roads**

Severity	Duration	Extent	Consequence	Likelihood		Significance
				Probability	Frequency	
<b>Rating: Medium</b>			<b>Degree of Mitigation: Full</b>			
4	4	5	4.3	3	3	<b>12.9</b>

**Continued employment opportunities (Positive Impact)**

Severity(+)	Duration	Extent	Consequence	Likelihood		Significance (+)
				Probability	Frequency	
<b>Rating: High (+)</b>			<b>Degree of Mitigation: N/A</b>			
5	5	5	5	5	5	<b>25</b>

**Continued provision of building material to the region (Positive Impact)**

Severity(+)	Duration	Extent	Consequence	Likelihood		Significance (+)
				Probability	Frequency	
<b>Rating: High (+)</b>			<b>Degree of Mitigation: N/A</b>			
4	5	5	4.6	5	5	<b>23</b>

**Continued social support to local community (Positive Impact)**

Severity(+)	Duration	Extent	Consequence	Likelihood		Significance (+)
				Probability	Frequency	
<b>Rating: High (+)</b>			<b>Degree of Mitigation: N/A</b>			
5	5	5	5	5	5	<b>5</b>

**Development direction away from the neighbouring residents (Positive Impact)**

Severity(+)	Duration	Extent	Consequence	Likelihood		Significance (+)
				Probability	Frequency	
<b>Rating: Medium-High</b>			<b>Degree of Mitigation: N/A</b>			
4	5	2	3.6	5	5	<b>18</b>

**OPERATIONAL AND EXPANSION ACTIVITIES:**
**SLOPING AND LANDSCAPING DURING REHABILITATION**
**Health and safety risk posed by unrehabilitated quarry excavations**

Severity	Duration	Extent	Consequence	Likelihood		Significance
				Probability	Frequency	
<b>Rating: High</b>			<b>Degree of Mitigation: Full</b>			
5	5	2	4	5	5	<b>20</b>

**Erosion of returned topsoil after rehabilitation**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	1	3	4	2	3	<b>9</b>

**Infestation of the reinstated area with invader plant species**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	2	3.3	5	5	5	<b>16.5</b>

**Potential impact associated with litter/hydrocarbon spills left at the mining area**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Full</b>	
4	5	1	3.3	4	5	4.5	<b>14.9</b>

**OPERATIONAL AND EXPANSION ACTIVITIES:**
**CUMULATIVE IMPACTS**
**Flooding of the quarry excavation upon closure poses a safety risk to people and livestock**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: High</b>						<b>Degree of Mitigation: Partial</b>	
5	5	2	4	5	5	5	<b>20</b>

**Alteration of hydrological and geomorphological processes**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
4	5	2	3.3	3	1	2	<b>9.9</b>

**Impact on downstream users should mining affect the water quality of the Gcuwa River**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: High</b>						<b>Degree of Mitigation: Full</b>	
4	5	4	4.6	4	5	4.5	<b>20.7</b>

**Impact on overall species and ecosystem diversity**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	2	3.3	3	1	2	<b>9.9</b>

**Impacts to ecological connectivity and/or ecological disturbance impacts**

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
3	5	2	3.3	3	1	2	<b>9.9</b>

**Cumulative visual impact when the Quarry footprint is expanded**

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	5	2	3	5	5	5	<b>15</b>

**Cumulative disturbance caused by night shift operations**

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
3	5	2	3.3	4	5	4.5	<b>14.8</b>

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

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

**Methodology for the assessment of the potential environmental, social and cultural impacts**
**DEFINITIONS AND CONCEPTS:**
**Environmental significance:**

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

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

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

**TRANSKEI QUARRIES (PTY) LTD: EC 30/5/1/2/2/0183 MR – EC-00033MR/102**  
acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

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

### **Impact**

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

### **Consequence**

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

### **Likelihood**

A qualitative term covering both probability and frequency.

### **Frequency**

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

### **Probability**

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

### **Environment**

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

### **Methodology that will be used**

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

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

### **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 the purpose of determining the environmental significance in terms of consequence, the

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

### ***Determination of Severity / Intensity***

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

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

*Table 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

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
<b>SUBTOTAL</b>	<b>10</b>
<b>TOTAL CONSEQUENCE:</b> (Subtotal divided by 3)	<b>3.3</b>

### **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
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
<b>SUBTOTAL</b>	<b>6</b>
<b>TOTAL LIKELIHOOD</b> (Subtotal divided by 2)	<b>3</b>

**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.	Impact is of low order and therefore likely to have little real	Impact is real, and potentially substantial in relation to other impacts. Can	Impact is real and substantial in relation to other impacts. Pose a	Impact is of the highest order possible. Unacceptable. Fatal flaw.



Significance	Low	Low-Medium	Medium	Medium-High	High
	Acceptable.	effect. Acceptable.	pose a risk to company	risk to the company. Unacceptable	
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

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

- High**                      Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
- Medium-High**           Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
- Medium**                    Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
- Low-Medium**            Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved 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 a number of ways, than this means of achieving the benefit

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

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

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

The preferred site-, activities- and technology alternative regarding this application entails the:

- A. expansion of the current mining footprint from  $\pm 16.16$  ha to  $\pm 30.1$  ha over a previously altered area within the coordinates as presented in this document (Table 4);
- B. mining of the proposed expansion area in the same way as the current quarry is being mined through benched open pit excavations. Hard rock breaking will be done by drilling and blasting. The broken rock will be sorted and loaded onto articulated dump trucks, that will haul it to the existing primary crushing plant of the mine, where various products will be conveyed to secondary-, tertiary- and quaternary crushing and screening processes to result in the desired products;
- C. mining of the area without the need to establish permanent infrastructure and/or buildings in the expansion area. The specific design of the quarry pit will be in consultation with a qualified mine planner/engineer and will be dictated by the 1:100 year floodline of the Gcuwa River to be determined should the S102 application be successful;
- D. mining of the expansion area through drilling, blasting, and excavation with earthmoving machinery. No complex technology is required;
- E. incorporation of the proposed activity into the ongoing operations of Butterworth Quarry. The Right Holder already extracts water from the quarry pit, no electricity is needed to allow the continuation of the proposed activity, no servicing of mining equipment will be required within the expansion area, Kentani Road and the existing internal roads will provide access to the quarry. The project does consider mitigating impacts such as dust generation, noise handling, waste management, and rehabilitation.

Table 20: Positive and negative impacts associated with the project proposal.

POTENTIAL POSITIVE IMPACTS		
ACTIVITY	IMPACT	SIGNIFICANCE
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Continued employment opportunities (+)	❖ High (+)
	❖ Continued provision of building material to the region (+)	❖ High (+)
	❖ Continued social support to local community (+)	❖ High (+)
	❖ Development direction away from the neighbouring residents (+)	❖ Medium-High (+)
<p>Also refer to:</p> <ul style="list-style-type: none"> <li>❖ Part A(1)(f) Need and desirability of the proposed activities; and</li> <li>❖ Part A(1)(g) Motivation for the overall preferred site, activity, and technology alternatives.</li> </ul>		

POTENTIAL NEGATIVE IMPACTS			
ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts	❖ Visual intrusion because of the activities.	❖ Medium ❖ Medium	❖ Low-Medium ❖ Medium
	❖ Cumulative visual impact when the Quarry footprint is expanded.		
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.	❖ Dust nuisance due to the movement of the soil.	❖ Medium ❖ Medium ❖ Medium ❖ Medium	❖ Low ❖ Medium ❖ Low ❖ Medium
	❖ Dust nuisance caused by blasting activities.		
	❖ Dust nuisance caused by earthmoving machinery.		
	❖ Cumulative disturbance caused by night shift operations.		

**POTENTIAL NEGATIVE IMPACTS**

<b>ACTIVITY</b>	<b>POTENTIAL IMPACT</b>	<b>SIGNIFICANCE (BEFORE MITIGATION)</b>	<b>SIGNIFICANCE (AFTER MITIGATION)</b>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Noise nuisance caused by earthmoving machinery.</li> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Medium</li> <li>❖ Low</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential contamination from footprint area and surface runoff because of hydrocarbon spillages.</li> <li>❖ Soil contamination from hydrocarbon spills and/or littering.</li> <li>❖ Potential impact associated with litter/hydrocarbon spills left at the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low</li> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Loss of vegetation cover and riparian vegetation.</li> <li>❖ Impact on overall species and ecosystem diversity.</li> <li>❖ Impact on ecological connectivity and/or ecological disturbance impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low</li> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential impact on faunal species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Infestation of the topsoil heaps and mining area with invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Medium-High</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low</li> </ul>

**POTENTIAL NEGATIVE IMPACTS**

<b>ACTIVITY</b>	<b>POTENTIAL IMPACT</b>	<b>SIGNIFICANCE (BEFORE MITIGATION)</b>	<b>SIGNIFICANCE (AFTER MITIGATION)</b>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Infestation of the mining area with invader plant species.</li> <li>❖ Infestation of the reinstated area with invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium-High</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential increase in runoff from denuded areas and associated erosion.</li> <li>❖ Runoff from the mining area potentially affecting the water quality of the Gcuwa River.</li> <li>❖ Flooding of the excavation due to ingress of the river.</li> <li>❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.</li> <li>❖ Erosion of returned topsoil after rehabilitation.</li> <li>❖ Alteration of hydrological and geomorphological processes.</li> <li>❖ Impact on downstream users should mining affect the water quality of the Gcuwa River.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ Medium</li> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ High</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low</li> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ Low</li> <li>❖ Low</li> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Alteration of the existing topography.</li> <li>❖ Alteration of the existing topography.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium-High</li> <li>❖ Medium-High</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation,</li> </ul>	<ul style="list-style-type: none"> <li>❖ Health and safety risk posed by blasting activities.</li> <li>❖ Unsafe working environment for employees.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ High</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low-Medium</li> <li>❖ Low</li> </ul>

POTENTIAL NEGATIVE IMPACTS			
ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
processing, loading and hauling of aggregate.  ❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.	❖ Health and safety risk posed by unrehabilitated quarry excavations.  ❖ Flooding of the quarry excavation upon closure poses a safety risk to people and livestock.	❖ High	❖ Low-Medium
❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.	❖ Flyrock falling beyond the mining area.  ❖ Potential damage to the municipal wastewater treatment works.	❖ Medium  ❖ Low-Medium	❖ Low  ❖ Low
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Overloading of trucks having an impact on the public roads.	❖ Medium	❖ Low

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

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

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

**TOPOGRAPHY**

**Rehabilitating/Landscaping of the Excavation Area:**

- ❖ The excavated area must serve as a final depositing area for the placement of overburden.
- ❖ Rocks and coarse material removed from the excavation must be dumped into the excavation.
- ❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- ❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.
- ❖ No waste may be permitted to be deposited in the excavations.

- ❖ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- ❖ The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- ❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

## **VISUAL CHARACTERISTICS**

### **Visual Mitigation:**

- ❖ The site must always have a neat appearance and be kept in good condition.
- ❖ Mining equipment must be stored neatly in dedicated areas when not in use.
- ❖ The right holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- ❖ All excavation and mining related activities must be contained within the approved mining footprint.
- ❖ 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.
- ❖ All buildings, equipment and/or infrastructure that will remain on the property after closure, must be left in a good and functional condition, and the landowner must accept responsibility for these structures in writing.

## **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).
- ❖ Dust suppression must continue during day and night shifts.
- ❖ Water sprayers must be fitted to the processing plant, and the plant may not operate if these sprayers are out of order.
- ❖ The site manager must daily assess the efficiency of all dust suppression equipment.
- ❖ Excess dust and fines must at least weekly be removed from the processing area.

- ❖ Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust.
- ❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- ❖ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- ❖ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- ❖ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.
- ❖ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013 (as amended).

#### **Noise Handling:**

- ❖ The Right Holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- ❖ No loud music may be permitted at the work areas.
- ❖ All project vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blast.
- ❖ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- ❖ The monitoring of noise pollution during night shift must form part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist) corrective measures must be implemented within one month.
- ❖ Best practice measures shall be implemented to minimize potential noise impacts.

#### **GEOLOGY AND SOIL**

##### **Topsoil/Soil Management:**

- ❖ The upper 300 mm of the soil must be stripped and stockpiled before mining.



- ❖ Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- ❖ Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.
- ❖ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. All topsoil heaps must be signposted.
- ❖ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.
- ❖ Topsoil heaps may not exceed 2 m in height and are not to be sloped more than 1:2 to avoid collapse.
- ❖ The temporary topsoil stockpiles must be kept free of invasive plant species.
- ❖ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- ❖ Storm- and runoff water must be diverted around the topsoil and overburden stockpile areas 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 right holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- ❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.
- ❖ Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- ❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

**Erosion Control and Storm Water Management:**

- ❖ A storm water management plan must be implemented for the duration of the mining activities.
- ❖ Clearing of vegetation must be limited to the mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- ❖ Vegetation clearing activities must be put on hold when heavy rains are expected.
- ❖ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- ❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- ❖ When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- ❖ A silt fence must be installed along the western, southern and south-eastern boundaries of the site to catch sediment carried by surface runoff from bare surfaces.
- ❖ No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All stormwater runoff that falls in the mining area must be channelled to the quarry sump.
- ❖ Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- ❖ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- ❖ Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas.
- ❖ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - ◆ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - ◆ Dirty water must be collected and contained in a system separate from the clean water system.

- ◆ Dirty water must be prevented from spilling or seeping into clean water systems.
- ◆ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
- ◆ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.
- ❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.
- ❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas.
- ❖ After heavy rainfall events, site management must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.

**Mitigating the potential impact on the Gcuwa River and downstream users:**

- ❖ No mining may take place within the 1:100 floodline of the Gcuwa River or nearer than 32 m from the banks of the river. Prior to the expansion of the excavation the floodline/32 m mark, whichever is greatest, must be staked out by a surveyor.
- ❖ Biannual water quality monitoring must be conducted with water samples collected upstream and downstream of the Quarry as well as from the sump in the excavation. Any deviations in water quality caused by the mining activities must immediately be addressed.
- ❖ No equipment laydown or storage areas may be located within the floodline and/or riparian vegetation of the river.
- ❖ The clearing of the grasslands must be kept to a minimum and restricted to the approved footprint.
- ❖ If it is necessary to remove surface water from the quarry pit; the water quality must first be tested, and if compliant with DWS standards, the water must be pumped to an area where it will not negatively influence the natural environment through erosion or permanent flooding.
- ❖ To prevent the contamination of the aquatic environment:
  - ◆ The employees must notify site management immediately of any pollution incidents.

- ◆ 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/sediment from entering the river as this can result in sedimentation.

## **TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER**

### **Management of Vegetation Removal:**

- ❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- ❖ No mining may take place in the riparian vegetation present along the Gcuwa River.
- ❖ The Right Holder must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.
- ❖ A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc.
- ❖ Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible.
- ❖ Cleared vegetation to be retained may not be burned but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- ❖ The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when most of the vegetation clearing is taking place.
- ❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- ❖ No 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 I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management:

Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the activities.

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

## **FAUNA**

### **Protection of Fauna:**

- ❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.
- ❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- ❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.
- ❖ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- ❖ No snares may be set, or nests raided for eggs or young.
- ❖ No litter, food or other foreign material may be thrown or left around the site. Such items must daily be removed to the site offices.

## **CULTURAL AND HERITAGE ENVIRONMENT**

### **Archaeological, Heritage and Palaeontological Aspects:**

- ❖ All mining must be confined to the development footprint area.
- ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.

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- ❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- ❖ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the ECPHRA.
- ❖ Work may only continue once the go-ahead was issued by ECPHRA.
- ❖ Should any suspected palaeontological material be at any time encountered during mining, a palaeontologist should likewise be immediately contacted to sample and record such occurrence.

## EXISTING INFRASTRUCTURE

### **Potential Impact on the Municipal Wastewater Treatment Works:**

- ❖ Activities and employees must remain within the approved footprint.
- ❖ The municipality must be informed at least a week before each blasting event.
- ❖ Flyrock that falls beyond the mining area must be collected in the first week after each blast.
- ❖ Any damage to the wastewater treatment infrastructure, as a direct result of the activities, must be refurbished by the Right Holder at his own cost.

### **Access Road Mitigation:**

- ❖ Vehicular movement must be restricted to the roads and crisscrossing of tracks through undisturbed areas must be prohibited.
- ❖ Rutting and erosion of the access and internal roads caused as a direct result of the mining activities must be repaired by the Applicant.
- ❖ Overloading of the trucks must be prevented, and proof of load weights must be filed for auditing purposes.

## 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 and/or parked in a bunded area with impermeable surface. 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.
- ❖ Equipment/tools/vehicles placed in the salvage yard must be drained of all hydrocarbons before placement. The salvage yard must be kept clean and unwanted materials must be removed from the mine as regular as possible.
- ❖ An oil spill kit must be available at the mine, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- ❖ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- ❖ When small volumes of wastewater are generated during the life of the project 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.
- ❖ All decommissioned/rehabilitated areas must be cleared of all waste at the end of the project.

#### **Management of Health and Safety Risks:**

- ❖ It must be ensured that the mining area is properly fenced off to prevent incursion by livestock and unauthorised humans.
- ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law.
- ❖ Sanitary facilities must be located within 100 m from any point of work.

- ❖ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- ❖ The surrounding landowners must be informed in writing ahead of each blasting event.
- ❖ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- ❖ A vibro recorder must be used to record all blasts.
- ❖ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- ❖ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.
- ❖ Upon closure the excavation must be fenced/walled in to restrict access. The pit may not be used for swimming and/or watering of stock without prior approval of the municipality and DWS.

**ix) Motivation where no alternative sites were considered.**

As mentioned in Part A(1)(h)(i) *Details of the development footprint alternatives considered*, the proposed project constitute the preferred and only viable development option as the:

- ❖ proposed expansion footprint was based on the position of the current mining footprint, the available geological data, the position of the Gcuwa River and the municipal wastewater treatment plant. No further location/site alternatives are possible for this application.
- ❖ nature of the operation does not allow alternative activities. Considering the existing mining method of Butterworth Quarry and the available infrastructure on site there is no alternative other than to excavate, load and haul the dolerite material to the processing plant of the mine.
- ❖ design and layout of the proposed footprint were based on the *status quo*. The design will be based on the most profitable extraction of the available dolerite from the approved footprint in accordance with the requirements of all relevant legislation such as (but not limited to) the Mine Health and Safety Act.
- ❖ project does not require other complex technology to allow the expansion of the quarry pit.
- ❖ operational aspect of the activity is based on the current activities of the mine.



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

(Provide a statement motivating the final site layout that is proposed)

Please refer to Part A(1)(g) *Motivation for the overall preferred site, activities, and technology alternative*, as well as Part A(1)(h)(ix) *Motivation where no alternative sites were considered*.

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

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

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

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

**EXPANSION ACTIVITIES:**
**STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN**

Visual intrusion because of the expansion activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
1	4	1	2	4	5	4.5	9

Dust nuisance due to the movement of the soil

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	2	2	2	2.6

Noise nuisance caused by earthmoving machinery

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Partial</b>	
1	3	2	2	2	2	2	4

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	1	1	1	2	2	2	<b>2</b>

Loss of vegetation cover and riparian vegetation

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	5	1	2.6	5	1	3	<b>7.8</b>

Potential impact on faunal species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	2	1	1.5	<b>2</b>

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	1	1	1	2	2	2	<b>2</b>

Potential increase in runoff from denuded areas and associated accelerated erosion

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	1	1	1	2	2	2	<b>2</b>

Runoff from the mining area potentially affecting the water quality of the Gcuwa River

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	1	1	1	2	2	2	<b>2</b>

## **OPERATIONAL AND EXPANSION ACTIVITIES:**

### **DRILLING AND BLASTING**

Alteration of the existing topography

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	5	1	2.6	5	5	5	<b>14.9</b>

Health and safety risk posed by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Degree of Mitigation: Full</b>				
2	1	1	1.3	2	1	1.5	<b>2</b>

Dust nuisance caused by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>			<b>Degree of Mitigation: Partial</b>				
3	5	2	3.3	4	3	3.5	<b>11.5</b>

Noise nuisance caused by blasting activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>			<b>Degree of Mitigation: Partial</b>				
3	5	2	3.3	4	3	3.5	<b>11.5</b>

Flyrock falling beyond the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Degree of Mitigation: Full</b>				
2	1	1	1.3	2	1	1.5	<b>2</b>

Potential damage to the municipal wastewater treatment works

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Degree of Mitigation: Full</b>				
5	1	4	3.3	1	1	1	<b>3.3</b>

**OPERATIONAL AND EXPANSION ACTIVITIES:**

**EXCAVATION, PROCESSING, LOADING, AND HAULING OF AGGREGATE**

Alteration of the existing topography

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>			<b>Degree of Mitigation: Partial</b>				
2	5	1	2.6	5	5	5	<b>14.9</b>

Dust nuisance caused by earthmoving machinery

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>			<b>Degree of Mitigation: Full</b>				
2	1	1	1.3	2	2	2	<b>2.6</b>

Noise nuisance because of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	3	2	2.3	4	4	4	9.2

Unsafe working environment for employees

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
3	1	1	1.6	2	1	1.5	2.4

Soil contamination from hydrocarbon spills and/or littering

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	3	3	3	3.9

Flooding of the excavation due to ingress from the river

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
3	2	1	2	4	2	3	6

Runoff from mining area potentially impacting the Gcuwa River and/or surface water

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Full</b>	
2	2	3	2.3	3	2	2.5	5.7

Infestation of the mining area with invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	4	2	3	4.8

Overloading of trucks having an impact on the public roads

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	2	5	3	2	1	1.5	4.5

Continued employment opportunities (Positive Impact)

Severity(+)	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance (+)
<b>Rating: High (+)</b>						<b>Degree of Mitigation: N/A</b>	
5	5	5	5	5	5	5	25

Continued provision of building material to the region (Positive Impact)

Severity(+)	Duration	Extent	Consequence			Likelihood	Significance (+)
				Probability	Frequency		
<b>Rating: High (+)</b>						<b>Degree of Mitigation: N/A</b>	
4	5	5	4.6	5	5	5	<b>23</b>

Continued social support to local community (Positive Impact)

Severity(+)	Duration	Extent	Consequence			Likelihood	Significance (+)
				Probability	Frequency		
<b>Rating: High (+)</b>						<b>Degree of Mitigation: N/A</b>	
5	5	5	5	5	5	5	<b>5</b>

Development direction away from the neighbouring residents (Positive Impact)

Severity(+)	Duration	Extent	Consequence			Likelihood	Significance (+)
				Probability	Frequency		
<b>Rating: Medium-High</b>						<b>Degree of Mitigation: N/A</b>	
4	5	2	3.6	5	5	5	<b>18</b>

**SLOPING AND LANDSCAPING DURING REHABILITATION:**

Health and safety risk posed by unrehabilitated quarry excavations

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	2	1	1.5	<b>2</b>

Erosion of returned topsoil after rehabilitation

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	2	1	1.6	3	2	2.5	<b>4</b>

Infestation of the reinstated area with invader plant species

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	3	2	2.5	<b>3.3</b>

Potential impact associated with litter left at the mining area

Severity	Duration	Extent	Consequence			Likelihood	Significance
				Probability	Frequency		
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	1	1	1.3	2	1	1.5	<b>2</b>

### CUMULATIVE IMPACTS

Flooding of the quarry excavation upon closure poses a safety risk to people and livestock

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low-Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	5	1	2.6	3	1	2	<b>5.2</b>

Alteration of hydrological and geomorphological processes

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	5	2	2.6	2	1	1.5	<b>3.9</b>

Impact on downstream users should mining affect the water quality of the Gcuwa River

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
1	1	4	2	2	2	2	<b>4</b>

Impact on overall species and ecosystem diversity

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	5	2	3	2	1	1.5	<b>4.5</b>

Impacts to ecological connectivity and/or ecological disturbance impacts

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Low</b>						<b>Degree of Mitigation: Full</b>	
2	5	1	2.6	2	1	1.5	<b>3.9</b>

Cumulative visual impact when the Quarry footprint is expanded

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	4	2	2.6	5	5	5	<b>13</b>

Cumulative disturbance caused by night shift operations

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
<b>Rating: Medium</b>						<b>Degree of Mitigation: Partial</b>	
2	5	2	3	3	5	4	<b>12</b>

**j) Assessment of each identified potentially significant impact and risk**

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

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

<b>ACTIVITY</b>	<b>POTENTIAL IMPACT</b>	<b>ASPECTS AFFECTED</b>	<b>PHASE</b>	<b>SIGNIFICANCE</b>	<b>MITIGATION TYPE</b>	<b>SIGNIFICANCE</b>
Whether listed or not listed.  (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc...etc...etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc)  E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	If not mitigated.
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts	❖ Visual intrusion because of the activities.  ❖ Cumulative visual impact when the Quarry footprint is expanded.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	❖ Medium  ❖ Medium	<u>Control:</u> Implementing proper housekeeping and progressive rehabilitation.	❖ Low-Medium  ❖ Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust nuisance due to the movement of the soil.</li> <li>❖ Dust nuisance caused by blasting activities.</li> <li>❖ Dust nuisance caused by earthmoving machinery.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	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"> <li>❖ Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<u>Control:</u> Dust suppression methods and proper housekeeping.	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Medium</li> <li>❖ Low</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Noise nuisance caused by earthmoving machinery.</li> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational Phase	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<u>Control:</u> Noise suppression methods and proper housekeeping.	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Medium</li> <li>❖ Low-Medium</li> <li>❖ Medium</li> </ul>



ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.						
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.  ❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.	❖ Potential contamination from footprint area and surface runoff because of hydrocarbon spillages.  ❖ Soil contamination from hydrocarbon spills and/or littering.  ❖ Potential impact associated with litter/hydrocarbon spills left at the mining area.	Contamination of the footprint areas will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the Right Holder.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low-Medium  ❖ Low-Medium  ❖ Medium	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	❖ Low  ❖ Low  ❖ Low
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts	❖ Loss of vegetation cover and riparian vegetation.  ❖ Impact on overall species and ecosystem diversity.  ❖ Impact on ecological connectivity and/or ecological disturbance impacts.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	❖ Low-Medium  ❖ Low-Medium  ❖ Low-Medium	<u>Control:</u> Implementing proper housekeeping and the mitigation measures.	❖ Low-Medium  ❖ Low  ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.	❖ Potential impact on faunal species.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	❖ Low-Medium	<u>Control:</u> Implementing proper housekeeping and the mitigation measures.	❖ Low
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.  ❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.	❖ Infestation of the topsoil heaps and mining area with invader plant species.  ❖ Infestation of the mining area with invader plant species.  ❖ Infestation of the reinstated area with invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment, Operational, and Decommissioning Phase	❖ Low-Medium ❖ Medium-High ❖ Medium-High	<u>Control &amp; Remedy:</u> Implementation of an invasive plant species management plan.	❖ Low ❖ Low ❖ Low
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Potential increase in runoff from denuded areas and associated erosion.  ❖ Runoff from the mining area potentially affecting the water quality of the Gcuwa River.  ❖ Flooding of the excavation due to ingress of the river.	This could impact the hydrology of the receiving environment and cause erosion.	Site Establishment, & Operational Phase.	❖ Low-Medium ❖ Low-Medium ❖ Low-Medium ❖ Medium ❖ Low-Medium ❖ Low-Medium	<u>Control:</u> Implementing the SWMP.	❖ Low ❖ Low ❖ Low-Medium ❖ Low-Medium ❖ Low ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.</li> <li>❖ Erosion of returned topsoil after rehabilitation.</li> <li>❖ Alteration of hydrological and geomorphological processes.</li> <li>❖ Impact on downstream users should mining affect the water quality of the Gcuwa River.</li> </ul>			<ul style="list-style-type: none"> <li>❖ High</li> </ul>		<ul style="list-style-type: none"> <li>❖ Low</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Continued employment opportunities (+)</li> <li>❖ Continued provision of building material to the region (+)</li> <li>❖ Continued social support to local community (+)</li> <li>❖ Development direction away from the neighbouring residents (+)</li> </ul>	These impacts will affect the socio-economic status of the area positively.	Site Establishment, and Operational Phase	<ul style="list-style-type: none"> <li>❖ High (+)</li> <li>❖ High (+)</li> <li>❖ High (+)</li> <li>❖ Medium-High (+)</li> </ul>	Not applicable.	<ul style="list-style-type: none"> <li>❖ High (+)</li> <li>❖ High (+)</li> <li>❖ High (+)</li> <li>❖ Medium-High (+)</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Alteration of the existing topography.</li> <li>❖ Alteration of the existing topography.</li> </ul>	<p>This impact may affect the land use opportunities of the property.</p>	<p>Site Establishment, Operational and Decommissioning Phase</p>	<ul style="list-style-type: none"> <li>❖ Medium-High</li> <li>❖ Medium-High</li> </ul>	<p>Should the proposed project be approved, the operation will change the land use options of the property. The impact could be controlled to a certain extent through progressive rehabilitation.</p>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Health and safety risk posed by blasting activities.</li> <li>❖ Unsafe working environment for employees.</li> <li>❖ Health and safety risk posed by unrehabilitated quarry excavations.</li> <li>❖ Flooding of the quarry excavation upon closure poses a safety risk to people and livestock.</li> </ul>	<p>An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.</p>	<p>Operational-, and Decommissioning Phase</p>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Low-Medium</li> <li>❖ High</li> <li>❖ High</li> </ul>	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.</p>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low-Medium</li> <li>❖ Low</li> <li>❖ Low-Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Flyrock falling beyond the mining area.</li> </ul>	<p>Damage to the municipal infrastructure will incur costs for the</p>	<p>Operational Phase</p>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Low-Medium</li> </ul>	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation</p>	<ul style="list-style-type: none"> <li>❖ Low</li> <li>❖ Low</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	❖ Potential damage to the municipal wastewater treatment works.	right holder and complaints from the landowner and/or community.			of the mining area and proper housekeeping.	
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Overloading of trucks having an impact on the public roads.	Impacting the condition of public roads may incur public complaints and additional costs to the MR Holder.	Operational Phase	❖ Medium	<u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Low

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

**k) Summary of specialist reports.**

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

*Table 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
Application for Exemption from a Heritage Impact Assessment (HIA) for the proposed Expansion of the Butterworth Quarry on a Portion of Erf RE/153 and Erf RE/725,	<b><u>Conclusion:</u></b> The Project area consists of the expansion of the Butterworth Quarry with the Project area extending south of the quarry towards the Gcuwa River. The northern boundary of the Project area has already been	The Chance Find Protocol was incorporated into this report and the EMPR.	<i>Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk</i>

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>Mnquma Magisterial District, Eastern Cape Province.</p> <p>Beyond Heritage (Pty) Ltd, 2024</p> <p>Refer to Appendix G</p>	<p>subject to mining and is completely transformed. The municipality previously used the Project area as a waste dump which has since ended. The Project area was reinstated thereafter but it is evident that the Project area has been completely transformed and the original vegetation and topsoil is no longer present. The extensive surface disturbances of the Project area would have impacted heritage resources had any previously been present. However, due to the subsurface nature of heritage finds including graves, a Chance Find Procedure must be implemented for the Project.</p> <p>According to the SAHRA paleontological map, the study area is indicated as of insignificant/zero sensitivity and no further palaeontological studies are required for this aspect.</p> <p>An application for exemption from a Phase 1 Heritage Impact is therefore supported for the Project based on the complete transformation of the Project area by refuse dumping and mining, heritage resources would have been impacted. It is recommended that:</p> <ul style="list-style-type: none"> <li>❖ A Chance find procedure (detailed in appendix G) should be implemented for the project.</li> </ul> <p>This application is subject to approval from SAHRA.</p>		<p>– <i>Cultural and Heritage Environment.</i></p> <p><i>Part B(1)(d)(iv) Impacts to be mitigated in their respective phases.</i></p> <p><i>Part B(1)(g)-(k) Mechanism for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including...</i></p>

## **l) Environmental impact statement**

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

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

#### **Project Proposal:**

- ❖ Transkei Quarries (Pty) Ltd, applied for a Section 102 amendment application in terms of the MPRDA, 2002 to expand the mining footprint;
- ❖ The mining method will remain unchanged, and no additional infrastructure needs to be established in the expansion area, as the motivation for the proposed extension is to expand only the quarry pit perimeter.
- ❖ If the expansion is approved, the southernmost boundary of the quarry pit will extend up to the 1:100 year floodline of the Gcuwa River but stay more than 32 m from the bank of the river.
- ❖ Upon closure the quarry pit will be developed into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate indigenous grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

#### **Topography:**

- ❖ Should the mining of the expansion area be allowed, the remaining landscape (between the current quarry excavation and the river) will gradually be changed through the removal of the material. Mining of the area will have a permanent impact on the topography of the area that can only be mitigated to a certain extent through bench mining and rehabilitation. Upon closure, the excavation will be made safe but will remain as a landscape feature as backfilling the excavation is not possible/practical. The proposed activity will therefore have a residual impact on the topography of the area.

**Visual Characteristics:**

- ❖ The viewshed analysis shows that the potential visual impact of the proposed activity will be of very low concern, and therefore the visual impact is deemed to be of low-medium significance.

**Air and Noise Quality:**

- ❖ Night shift work may have a medium negative impact on the receiving environment, and therefore the management and mitigation measures proposed in this document must be implemented for the duration of the operational phase.
- ❖ The proposed activity is not expected to have a cumulative impact on the air quality and/or noise ambience of the receiving environment as mining will gradually move into the expansion area as the current footprint becomes depleted. Mining the excavation in a southern direction will take the operations further away from the residents (opposite Kentani Road) towards the undeveloped rural land where there are no resident human receptors. Considering this, the proposed air and noise emissions of the expansion area will be comparable to the current emissions of the Quarry, if not better due to the proposed southern direction away from the residents.

**Hydrology:**

- ❖ The SANBI BGIS Map Viewer shows the study area to be within a Fish Sanctuary Classed CDEFZ confirming the highly modified ecological status of the Gcuwa River and it is therefore deemed a Fish Support Area instead of a FEPA.
- ❖ Mining the proposed expansion area will not impact the fish support status of the area as the proposed activities will remain outside the 1:100 year floodline and riparian vegetation layer of the Gcuwa River. The earmarked footprint has been disturbed on numerous occasions during the past 10 years, and therefore no longer contribute to the wetland cluster that was previously identified by SANBI.
- ❖ The proposed footprint of the expansion area was chosen to stay >32 m from the banks of the river.
- ❖ Should the mitigation measures and management plans proposed in this document, be implemented, the potential impact on the hydrology will be of low significance.



**Terrestrial Biodiversity, Conservation Areas, and Groundcover:**

- ❖ No protected and/or sensitive plant species occur within the proposed expansion area, and should the right holder keep excavations out of the riparian fringe along the Gcuwa River, the proposed development will have a low-medium significance on the receiving environment.
- ❖ Given the relatively *status quo* of the project development area and the existing land use of the area (disturbed and encroached grasslands used for grazing) impacts to faunal movement is unlikely to be a significant concern.

**Cultural and Heritage Environment:**

- ❖ Beyond Heritage (Pty) Ltd concluded that the extensive surface disturbances of the project area would have impacted heritage resources had any previously been present and therefore an application for exemption from a Phase 1 HIA was supported. However, due to the subsurface nature of heritage finds including graves, a Chance Find Procedure must be implemented for the Project.
- ❖ Due to the historic disturbed nature of the area, the potential of the proposed expansion area affecting any archaeological and/or palaeontological artefacts or environments is deemed to be of very low possibility.

**Existing Infrastructure:**

- ❖ No infrastructure exists in the proposed expansion area that could be affected by the proposed activity. If approved, the area will be fenced off to control access and prevent sprawling.

**ii) Final Site Map**

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts of the proposed activity entails:

- ❖ The proposed expansion of the mining area will move the mining activities (such as blasting) away from the nearby community houses that borders the Quarry

- opposite Kentani Road and include the part of the excavation that historically extended across the mine boundary.
- ❖ The life of mine is calculated at ±24 years should the expansion be approved. An increase in the life of mine will provide the employees with peace of mind regarding downscaling and retrenchments linked to mine closure, as well as socio-economic benefits and growth development opportunities.
  - ❖ The MLM will benefit financially from the project as their undeveloped land will generate surface use income.

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 after mitigation:

*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)
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Visual intrusion because of the activities.</li> <li>❖ Cumulative visual impact when the Quarry footprint is expanded.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Low-Medium</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust nuisance caused by blasting activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Medium</li> <li>❖ Medium</li> </ul>	<ul style="list-style-type: none"> <li>❖ Medium</li> <li>❖ Low-Medium</li> <li>❖ Medium</li> </ul>

ACTIVITY	POTENTIAL IMPACT	SIGNIFICANCE (BEFORE MITIGATION)	SIGNIFICANCE (AFTER MITIGATION)
❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.			
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.	❖ Loss of vegetation cover and riparian vegetation.	❖ Low-Medium	❖ Low-Medium
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Flooding of the excavation due to ingress of the river.  ❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.	❖ Low-Medium  ❖ Medium	❖ Low-Medium  ❖ Low-Medium
❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Alteration of the existing topography.  ❖ Alteration of the existing topography.	❖ Medium-High  ❖ Medium-High	❖ Medium  ❖ Medium
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Unsafe working environment for employees.  ❖ Flooding of the quarry excavation upon closure poses a safety risk to people and livestock.	❖ Low-Medium  ❖ High	❖ Low-Medium  ❖ Low-Medium

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

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

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

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p><b>TOPOGRAPHY</b></p> <p>Landscaping of the Excavation 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"> <li>❖ Use the excavated area for the final depositing of overburden.</li> <li>❖ Dump rocks and coarse material removed from the excavation into the excavation.</li> <li>❖ Remove coarse natural material used for the construction of ramps and dump it into the excavations.</li> <li>❖ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium.</li> <li>❖ Do not permit any waste to be deposited into the excavations.</li> <li>❖ Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures.</li> <li>❖ Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.</li> <li>❖ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Effectively restoring the mined area to allow the return of land to the municipality.</li> </ul>
<p><b>VISUAL CHARACTERISTICS</b></p> <p>Visual mitigation</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</p>	<ul style="list-style-type: none"> <li>❖ Ensure that the site has a neat appearance and is always kept in good condition.</li> <li>❖ Store mining equipment neatly in dedicated areas when not in use.</li> <li>❖ Limit vegetation removal, and only do stripping of topsoil immediately prior to the mining/use of a specific area.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase and</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	<p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>❖ Contain the excavation within the approved footprint of the permitted area.</li> <li>❖ Upon closure, rehabilitate the site and reduce the residual visual impacts to the minimum.</li> <li>❖ Leave all buildings, equipment and/or infrastructure that will remain on the property after closure in a good and functional condition and obtain written transfer of liability of the structures to the landowner.</li> </ul>	<p>minimise the residual impact after closure.</p>
<p><b>AIR AND NOISE QUALITY</b></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> <p>Air Quality Monitoring Specialist to monitor and report on all air emissions.</p>	<ul style="list-style-type: none"> <li>❖ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents.</li> <li>❖ Ensure dust suppression continue during day and night shifts.</li> <li>❖ Fit water sprayers to the processing plant and stop operations if the sprayers are out of order.</li> <li>❖ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>❖ Remove excess dust and fines at least weekly from the processing area.</li> <li>❖ Limit speed on the haul roads to 20 km/h to prevent the generation of excess dust.</li> <li>❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining.</li> <li>❖ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> <li>❖ 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).</li> <li>❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust prevention measures are applied to minimise the impact.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>❖ Implement monthly fallout-dust monitoring at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013 (as amended).</li> </ul>	
<p><b>AIR AND NOISE QUALITY</b></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"> <li>❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>❖ No loud music may be permitted at the mining area.</li> <li>❖ 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.</li> <li>❖ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding landowners in writing prior to each blasting occasion.</li> <li>❖ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.</li> <li>❖ Make the monitoring of noise pollution during night shift part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist) implement corrective actions within one month.</li> <li>❖ Implement best practice measures to minimise potential noise impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.</li> </ul>
<p><b>GEOLOGY AND SOIL</b></p> <p>Topsoil/Soil 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"> <li>❖ Strip and stockpile the upper 300 mm of the soil before mining.</li> <li>❖ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.</li> <li>❖ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time.</li> <li>❖ Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Adequate fertile topsoil is available to rehabilitate the mined area.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>❖ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.</li> <li>❖ Ensure that topsoil heaps do not exceed 2 m and not sloped more than 1:2 to avoid collapse.</li> <li>❖ Keep temporary topsoil stockpiles free of invasive plant species.</li> <li>❖ Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.</li> <li>❖ Divert storm- and runoff water around the on-site stockpile area to prevent erosion.</li> <li>❖ Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>❖ 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.</li> <li>❖ Plant an indigenous grass layer immediately after spreading topsoil to stabilise the soil and protect it from erosion. Rehabilitation extends until the first grass layer is well established.</li> <li>❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion.</li> <li>❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.</li> </ul>	
<b>HYDROLOGY</b>  Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	<ul style="list-style-type: none"> <li>❖ Implement a storm water management plan for the duration of the mining activities.</li> <li>❖ Limit clearing of vegetation to the mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint.</li> <li>❖ Place vegetation clearing on hold when heavy rains are expected.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Impact on the environment caused by stormwater discharge is avoided and erosion is managed.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
	<p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>❖ Divert stormwater around the topsoil heaps and mining areas to prevent erosion.</li> <li>❖ Protect stockpiles from erosion and store it on flat areas surrounded by appropriate berms where possible.</li> <li>❖ Ensure that adequate slope protection is provided when mining within steep slopes.</li> <li>❖ Install a silt fence along the eastern boundary of the site to catch sediment carried by surface runoff from bare surfaces at the site.</li> <li>❖ Do not discharge dirty water emanating from the quarry into the natural environment or any watercourse. Channel all runoff into the quarry sump.</li> <li>❖ 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.</li> <li>❖ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>❖ 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.</li> <li>❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.</li> <li>❖ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.</li> <li>❖ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion and sediment control structures once vegetation cover has successfully recolonised the affected areas.</li> </ul>	



MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>❖ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.</li> </ul>	
<p><b>HYDROLOGY</b></p> <p>Mitigating the potential impact on the Gcuwa River and downstream users.</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"> <li>❖ Keep all mining outside the 1:100 floodline of the Gcuwa River or more than 32 m from the banks of the river. Arrange a surveyor to stake the 1:100 year floodline/32 m mark, whichever is greatest, prior to the expansion of the quarry pit.</li> <li>❖ Do biannual water quality monitoring with water samples collected upstream and downstream of the Quarry as well as from the sump in the excavation. Address any deviations in water quality because of the mining activities immediately.</li> <li>❖ Do not place any equipment or storage areas within the floodline and/or riparian vegetation of the river.</li> <li>❖ Keep the clearing of the grasslands to a minimum and restrict it to the approved footprint.</li> <li>❖ If it is necessary to remove surface water from the quarry pit; determine the water quality first and if compliant with DWS standards, pump the water to an area where it will not negatively influence the natural environment through erosion of permanent flooding.</li> <li>❖ To prevent the contamination of the aquatic environment:               <ul style="list-style-type: none"> <li>◆ The employees must notify site management immediately of any pollution incidents.</li> <li>◆ The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source.</li> </ul> </li> <li>❖ Build structures like berms to prevent soil from entering the river as this can result in sedimentation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ The mining activities have no impact on the nearby wetland system.</li> </ul>
<p><b>TERRESTRIAL BIODIVERSITY,</b></p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</p>	<ul style="list-style-type: none"> <li>❖ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Vegetation clearing is restricted to the authorised development footprint of the mine.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
<p><b>CONSERVATION AREAS AND GROUNDCOVER</b></p> <p>Management of vegetation removal.</p>	<p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> <li>❖ Do not mine in the riparian vegetation along the Gcuwa River.</li> <li>❖ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum.</li> <li>❖ Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc.</li> <li>❖ Do not allow grubbing as a method of clearing vegetation. Cut any trees that need to be cleared using chain saws and hauled it from the site using appropriate machinery where practically possible.</li> <li>❖ Do not burn cleared vegetation to be retained, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation.</li> <li>❖ 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.</li> <li>❖ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas.</li> <li>❖ Do not allow fires on-site.</li> <li>❖ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses.</li> </ul>	
<p><b>TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER</b></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"> <li>❖ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities.</li> <li>❖ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose.</li> <li>❖ Keep all stockpiles (topsoil &amp; overburden) free of invasive plant species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Mining area is kept free of invasive plant species.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>❖ Control declared invader or exotic species on the rehabilitated areas.</li> </ul>	
<p><b>FAUNA</b></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"> <li>❖ Ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>❖ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location.</li> <li>❖ Arrange a suitably qualified individual to handle and relocation any animal perceived to be dangerous/venomous/poisonous.</li> <li>❖ 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.</li> <li>❖ Ensure no snares are set or nests raided for eggs or young.</li> <li>❖ Prevent litter, food or other foreign material thrown or left around the site. Daily remove such items to the site offices.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Disturbance to fauna is minimised.</li> </ul>
<p><b>CULTURAL AND HERITAGE ENVIRONMENT</b></p> <p>Archaeological, heritage and palaeontological aspects.</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"> <li>❖ Confine all mining to the development footprint area.</li> <li>❖ Implement the following change find procedure when discoveries are made on site:               <ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ 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.</li> <li>◆ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>❖ Impact to cultural/heritage resources is avoided or at least minimised.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>a professional archaeologist for an assessment of the finds who will notify the ECPHRA.</p> <ul style="list-style-type: none"> <li>◆ Work may only continue once the go-ahead was issued by ECPHRA.</li> <li>❖ Contact a palaeontologist, should any suspected palaeontological material be at any time encountered.</li> </ul>	
<p><b>EXISTING INFRASTRUCTURE</b></p> <p>Potential impact on the municipal wastewater treatment works.</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"> <li>❖ Ensure activities and employees must remain within the approved footprint.</li> <li>❖ Inform the municipality at a least a week before each blast.</li> <li>❖ Collect flyrock that falls beyond the mining area in the first week after each blast.</li> <li>❖ Refurbish any damage to the wastewater treatment infrastructure, as a direct result of the activities.</li> </ul>	<ul style="list-style-type: none"> <li>❖ No impact to the surrounding infrastructure.</li> </ul>
<p><b>GENERAL</b></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"> <li>❖ Ensure regular vehicle maintenance, repairs and services only take place at an off-site workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes.</li> <li>❖ If a diesel bowser is used on site, always equip it with a drip tray and ensure that it is parked in a bunded area with impermeable surface. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.</li> <li>❖ 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</li> </ul>	<ul style="list-style-type: none"> <li>❖ Wastes are appropriately handled and safely disposed of at recognised waste facilities.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<p>trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.</p> <ul style="list-style-type: none"> <li>❖ Drain hydrocarbons from equipment/tools/vehicles placed in the salvage yard. Keep the salvage yard clean and remove unwanted materials from the mine as regular as possible.</li> <li>❖ 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.</li> <li>❖ Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof.</li> <li>❖ Do not discharge water containing waste into the natural environment.</li> <li>❖ Implement measures to contain the wastewater and safely dispose thereof.</li> <li>❖ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities.</li> <li>❖ Clean all decommissioned / rehabilitated areas of all waste at the end of the project.</li> </ul>	
<p><b>GENERAL</b></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"> <li>❖ Properly fence the mining area to prevent incursion by livestock and unauthorised humans.</li> <li>❖ Ensure that workers have access to the correct PPE as required by law.</li> <li>❖ Locate sanitary facilities within 100 m from any point of work.</li> <li>❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>❖ Plan the type, duration, and timing of blasting with due cognizance of other land users and structures in the vicinity.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Employees work in a healthy and safe environment.</li> </ul>

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTIONS	MANAGEMENT OUTCOMES
		<ul style="list-style-type: none"> <li>❖ Inform the surrounding landowners and communities in writing ahead of any blasting event.</li> <li>❖ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event.</li> <li>❖ Record all blasts with a vibro recorder.</li> <li>❖ Give audible warning of a pending blast at least 3 minutes in advance of the blast.</li> <li>❖ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area.</li> <li>❖ Fence/wall the excavation upon closure to restrict access. The pit may not be used for swimming and/or watering of stock without prior approval of the municipality and DWS.</li> </ul>	
<p><b>EXISTING INFRASTRUCTURE</b></p> <p>Access Road 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"> <li>❖ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>❖ Repair rutting and erosion of the access road caused as a direct result of the mining activities.</li> <li>❖ Prevent the overloading of the truck and file proof of load weights for auditing purposes.</li> </ul>	<ul style="list-style-type: none"> <li>❖ The access road remains in an acceptable condition during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the right holder.</li> </ul>

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

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

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

(Which relate to the assessment and mitigation measures proposed)

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

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

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

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

**ii) Conditions that must be included in the authorisation**

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

In addition to the above, DWS must confirm whether the project requires any additional authorisation in terms of the NWA, 1998.

**q) Period for which the Environmental Authorisation is required.**

The Right Holder requests that the Environmental Authorisation be valid for the duration of the mining right.

**r) Undertaking**

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

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

**s) Financial Provision**

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

**i) Explain how the aforesaid amount was derived**

The 2024 amount required to manage and rehabilitate the current operational activities was calculated as ±R 5 293 566.00. The methodology used to calculate the financial provision amount was according to Section B of the working manual for the determination of the closure cost of mining area. Also refer to Part B(1)(f)(i) *Financial Provision* that explains the closure amount that will be needed should this application be successful.

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

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

Transkei Quarries (Pty) Ltd has been managing the Butterworth Quarry since 2018 and is also responsible for the financial and technical aspects of the project. The operating expenditure is provided for as such, and the right holder has a guarantee to the value of R 4 386 642.62 lodged with the DMRE that will be increased should the cost estimate in this document be approved.

**t) Specific Information required by the competent Authority****i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:-****(1) Impact on the socio-economic conditions of any directly affected person.**

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

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



❖ **Visual intrusion because of the expansion of the mining area:**

Although expansion of the mining area will have a cumulative impact on the area, the viewshed analysis showed that the area will only be visible from the direct surroundings. The alteration of the topography will be away from the bordering residential areas, and no sensitive visual receptors are present to the south of the quarry. Therefore the potential visual impact on the receiving environment is deemed to have a Low-Medium significance after mitigation.

❖ **Impact on the air quality and noise ambiance of the study area:**

The nearest houses to the expansion area is ±200 m north of Kentani Road, however, it must be born in mind that these residential areas developed after and around the operational quarry. The proposed expansion of the mining footprint is not expected to have a cumulative impact on the air quality and/or noise ambiance of the receiving environment as mining will gradually move into the expansion area as the current footprint becomes depleted. Mining the excavation in a southern direction will take the operations further away from the residents (opposite Kentani Road) towards the undeveloped rural land where there are no resident human receptors. Considering this, the proposed air and noise emissions of the expansion area will be comparable to the current emissions of the Quarry, if not better due to the proposed southern direction moving away from the residents.

❖ **Positive impacts of the proposed project entail (amongst others):**

- ◆ Continued employment opportunities;
- ◆ Continued provision of building material to the region;
- ◆ Continued social support to local community.

*Also refer to Part A(1)(f) Need and desirability of the project, and Part A(1)(g) Motivation for the overall preferred site, activities and technology alternative.*

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

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

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

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

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

Although various alternatives, associated with the activity, were considered during the impact assessment process, none were found to be feasible as discussed in Part A(1)(h)(i) *Details of the development footprint alternatives considered*, and Part A(1)(h)(ix) *Motivation where no alternative sites were considered*.

## PART B

**NOTE: THE EMPR, APPLIES TO THE OPERATIONAL ACTIVITIES AS WELL AS THE EXPANSION ACTIVITIES, AND (UPON APPROVAL) REPLACES THE 2009 EMPR OF THE MINE.**

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### 1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

##### a) Details of the EAP,

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

The details and expertise of 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 K as required.

##### b) Description of the Aspects of the Activity

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

#### 1. UPDATED DESCRIPTION OF THE OPERATIONAL MINING ACTIVITIES

*Also refer to Part A(d)(ii) Description of the activities to be undertaken.*

##### 1.1 EXISTING INFRASTRUCTURE AND MANAGEMENT PRACTICES

The Quarry is accessed directly off the surfaced Kentani Road, which passes the mine along the northern boundary. Gravel roads dominate the working areas within the Quarry boundary. All products leave the Quarry via a single entrance once the truck loads have been determined at the weighbridge.

Butterworth Quarry is served by an overhead Eskom powerline supplied from the Eskom reticulation. The overhead powerlines feed to the office administration complex and the crusher plant respectively.

The administrative office complex is in the northern part of the Quarry near the main entrance. The workshop and storage areas are to the west of the admin complex, while the weighbridge and associated office is to the east. There are no accommodation on site as no employees reside at the mine.

### **Waste Management**

Industrial/hazardous waste that originate at the workshop (from servicing and maintenance) is stored in a designated tank and/or refuse bins within bunded areas until collected by an appropriately qualified sub-contractor that disposes of it at an appropriately qualified hazardous waste handling facility. Fuel is stored on site in the aboveground 23 000 l diesel tank that sits within a bunded area with impermeable surface. Contaminated soil is bioremediated in a designated area, and once clean reintroduced into the excavation.

Domestic waste is collected in various bins and disposed of at the municipal waste disposal site in Butterworth. Recycling is encouraged on site and implemented where possible.

The ablution facilities at the mine drains into a septic tank that is serviced by an accredited service provider who dispose of the waste at the municipal sewerage works.

The mine does not have any stormwater/runoff siltation dams. A sump collects cypher water from the river and stormwater runoff from the mining area in the quarry excavation, and contaminated water from the wash bay is directed to a multi-tanked oil sump. The sludge from the first tank of the oil sump is cleaned by an approved hazardous waste handling contractor when needed and the water from the last tank in the separator is used for dust suppression purposes on site.

Although mine residue/overburden were historically indiscriminately discarded in the mining area, this practice has since been adjusted and all natural unwanted material/overburden is stockpiled in a designated area near the pit to be used during rehabilitation. The 2009 EMPR noted that the debris from mining related activities had to be removed from the Gcuwa riverbed. Since 2009, a rock berm was placed between the mining area and the eastern bank of the river to prevent the spilling of material into the river. The Gcuwa riverbanks are presently stable and covered with a well-established vegetation layer albeit highly infested by alien invader plant species. Removal of the historically spilled material is no longer supported as removal of the material will do more harm to the vegetation layer and eastern riverbank than it will positively contribute to the area. It is therefore proposed that the *status quo* be maintained and that no material is spoiled/placed opposite the stormwater berm along the western boundary of the mine. Flyrock

that may fall onto the riverbank must be removed within a week from the event occurring.

## **1.2 OPERATIONAL ACTIVITIES**

### **Topsoil and Rehabilitation**

It is considered good practice to remove topsoil prior to the excavation or development of any structure within the Quarry footprint. The topsoil is then stockpiled in a clearly marked area that is offered protection from erosive forces such as wind and surface run-off. The topsoil will be reused incrementally as faces are advanced and existing and future faces and benches are rehabilitated.

### **Mining Method and Mine Layout**

The mining method is simple and comprises the standard blasting of material, transportation to the crusher for processing and then the stockpiling of various size fractions for commercial sale. The mine programme moves with progressive advance of each mine block, as indicated in the mine plan attached as Appendix A2 compiled by the appointed mine surveyor.

Blasting is outsourced to a sub-contractor with the required legal appointments and all explosives are brought to site when needed.

A step-by-step process of production at Butterworth Quarry is as follows:

- ❖ Clear and remove topsoil and overburden where applicable.
- ❖ Drill and blast.
- ❖ Load rock onto trucks and cart to the processing plant.
- ❖ Dump rock into feeder, crush oversize, convey to screens. Oversize conveyed to secondary crushers for further shaping, screened again and moved to stockpiles by conveyors.
- ❖ Load onto trucks and dump on permanent stockpiles in demarcated areas.
- ❖ Load onto vehicles (clients/Transkei Quarries) for dispatch.

### **Mineral Processing**

Hard rock recovered from the quarry excavation is hauled to the primary crusher plant of the mine. At the primary crusher the aggregate is fed through a grizzly into the crusher. From the primary crusher the material is conveyed to the respective secondary-, tertiary- and quaternary crushing and screening processes for size

separation before moving on conveyor belts to the various stockpiles. Deliveries are made from the stockpiles. See attached as Appendix C a drawing of the current (2024) Butterworth Quarry processing plant.

### **Plant Residue Disposal**

The only plant residue is the fines/waste rock not sent through the crusher infrastructure. The material is kept in the waste rock stockpile. Upon closure this material will be reintroduced into the excavation to soften the floor and to assist with sloping during post-mining rehabilitation. The Quarry does not have a washing plant and therefore no settling ponds are required.

## **2. PROPOSED EXPANSION FOOTPRINT**

The aspects regarding the expansion footprint, covered by the draft environmental management programme, were described, and included in this document in Part A, section (1)(d) and (h).

### **c) Composite Map**

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

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

### **d) Description of impact management objectives including management statements**

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

The overall objective of the rehabilitation plan is to minimise adverse environmental impacts associated with the quarrying activities whilst maximising the future utilisation of the property. The idea, therefore, is to leave the mined dolerite quarry in a condition that reduces all negative impacts associated with a mined area.

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

- ❖ Remove all infrastructure that will no longer be needed by the landowner as well as all waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources.
- ❖ Shape and contour disturbed areas in compliance with the EMPR.
- ❖ Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or a safety risk to the community.
- ❖ Make all excavations safe.
- ❖ Use the topsoil effectively to promote the re-establishment of vegetation.
- ❖ Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- ❖ Eradicate all weeds/invader plant species by intensive management of the mining area.

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

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. The buildings and roads at the property will most likely be retained for future use by the landowner and will therefore not be demolished unless required by the municipality.

Should the excavation expand up to the 1:100 year floodline of the Gcuwa River in the south/south-east (upon approval of the S102 application),  $\pm 20$  ha of the  $\pm 30$  ha mining footprint will be excavated. This will leave an area of  $\pm 6$  ha between the excavation and Ketani Road that can be returned to municipal use. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be softened with overburden, top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

A possible future land use that may be considered by the municipality (landowner) is the use of the pit as a landfill site. However, the potential impacts of this will need to be assessed if and/or when the need arises.

The decommissioning activities will therefore consist of the following:

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

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

❖ Rehabilitation of the Excavated Area:

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

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

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

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

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

❖ Rehabilitation of Plant, Offices and Service Areas:

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



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

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

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

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

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area. The site shall be seeded with a local, adapted indigenous seed mix.

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

❖ Final rehabilitation:

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

All mining equipment, and other items used during the mining period (not needed by the landowner) must be removed from the site (section 44 of the MPRDA).

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

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

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

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

### **Residual Impacts After Closure**

Overburden will be reintroduced to the quarry excavation to soften sides and assist with shaping of the excavation during post-quarrying rehabilitation. Provided all final slopes are maintained at 1:3 batters (quarry rim and mine residue infill) and successfully revegetated, there will be no long term instability in the rehabilitated area. The quarry cliffs precision blasted to angles of not steeper than 85° also provide an element of stability to hard rock quarry cliffs.

Once adequately rehabilitated, including vegetation regrowth, the risk of siltation of the river no longer exists. The mine excavation will, nevertheless, behave as a sump and collect surface run-off after wet periods. The floor of the quarry may, therefore, reveal fluctuating water levels depending on rainfall patterns. Considering this, it is important to adequately fence/wall the excavation off to prevent unauthorized access to humans (especially children) and domestic animals upon closure of the mine. It is important that the fencing of the excavation upon mine closure is conducted with very close

participation and support of the local community, to ensure the fencing remains in place and is not stolen.

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

The potable water required on site is bought from the municipality as needed, while process water (mainly for dust suppression) is pumped from the quarry sump. Water use is monitored and recorded in the Environmental and Social Governance (ESG) spreadsheet of the mine. For the period March 2024 to June 2024 the mine used 3 660 kl process water. There are no boreholes on site and no water is extracted from the adjacent river.

The proposed expansion of the mining footprint will not increase the volume of water needed for the operation.

**iii) Has a water use licence been applied for?**

In 2019 the DWS confirmed in writing that upon visiting the mine it was determined that no water use activities in terms of the NWA are triggered, and therefore no water use licence application was required.

As mentioned earlier, the Quarry needs to approach the DWS regarding the need for a possible water use authorisation considering the proposed expansion of the mining footprint in a southern direction that will take mining activities nearer to the Gcuwa River.

**iv) Impacts to be mitigated in their respective phases**

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

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place.  State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m <sup>2</sup> )	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative impact.</li> </ul>	Site Establishment & Operational Phase	30.1036 ha	<p><b><u>Visual Mitigation:</u></b></p> <ul style="list-style-type: none"> <li>❖ The site must always have a neat appearance and be kept in good condition.</li> <li>❖ Mining equipment must be stored neatly in dedicated areas when not in use.</li> <li>❖ The right holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.</li> </ul>	Management of the activities must be in accordance with the: <ul style="list-style-type: none"> <li>❖ MPRDA, 2008</li> <li>❖ NEMA, 1998</li> </ul>	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"> <li>❖ All excavation and mining related activities must be contained within the approved mining footprint.</li> <li>❖ 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.</li> <li>❖ All buildings, equipment and/or infrastructure that will remain on the property after closure, must be left in a good and functional condition, and the landowner must accept responsibility for these structures in writing.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and</li> </ul>	<p align="center">Site Establishment and Operational Phase</p>	<p align="center">30.1036 ha</p>	<p><b><u>Fugitive Dust Emission Mitigation Measures:</u></b></p> <ul style="list-style-type: none"> <li>❖ 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).</li> <li>❖ Dust suppression must continue during day and night shifts.</li> <li>❖ Water sprayers must be fitted to the processing plant, and the plant may not operate if these sprayers are out of order.</li> <li>❖ The site manager must daily assess the efficiency of all dust suppression equipment.</li> </ul>	<p>Dust generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> <li>❖ National Dust Control Regulations, GN No R827</li> <li>❖ ASTM D1739 (SANS 1137:2012)</li> </ul>	<p>Throughout the site establishment-, operational, and decommissioning phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
hauling of aggregate.  ❖ <u>Operational and expansion activities:</u> Cumulative Impacts.			<ul style="list-style-type: none"> <li>❖ Excess dust and fines must at least weekly be removed from the processing area.</li> <li>❖ Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust.</li> <li>❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.</li> <li>❖ 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.</li> <li>❖ 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).</li> <li>❖ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.</li> <li>❖ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013 (as amended).</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative Impacts.</li> </ul>	<p>Site Establishment- , Operational Phase</p>	<p>30.1036 ha</p>	<p><b><u>Noise Handling:</u></b></p> <ul style="list-style-type: none"> <li>❖ The Right Holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>❖ No loud music may be permitted at the work areas.</li> <li>❖ All project 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).</li> <li>❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blast.</li> <li>❖ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.</li> <li>❖ The monitoring of noise pollution during night shift must form part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist)</li> </ul>	<p>Noise generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> <li>❖ NRTA, 1996</li> </ul>	<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>corrective measures must be implemented within one month.</p> <ul style="list-style-type: none"> <li>❖ Best practice measures shall be implemented to minimize potential noise impacts.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p>Site Establishment-, Operational-, and Decommissioning Phase</p>	<p>30.1036 ha</p>	<p><b><u>Waste Management:</u></b></p> <ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ If a diesel bowser is used on site, it must always be equipped with a drip tray and/or parked in a bunded area with impermeable surface. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest</li> </ul>	<p>Project related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NWA, 1998</li> <li>❖ NEM:WA, 2008</li> </ul>	<p>Throughout the site establishment-, operational and decommissioning phases.</p>



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>in a sleeve to prevent dripping after refuelling.</p> <ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ Equipment/tools/vehicles placed in the salvage yard must be drained of all hydrocarbons before placement. The salvage yard must be kept clean and unwanted materials must be removed from the mine as regular as possible.</li> <li>❖ An oil spill kit must be available at the mine, 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.</li> <li>❖ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.</li> <li>❖ When small volumes of wastewater are generated during the life of the project the following is applicable:</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>◆ Water containing waste must not be discharged into the natural environment.</li> <li>◆ Measures to contain the wastewater and safely dispose thereof must be implemented.</li> <li>❖ 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.</li> <li>❖ All decommissioned/rehabilitated areas must be cleared of all waste at the end of the project.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative impact.</li> </ul>	<p align="center">Site Establishment- and Operational Phase</p>	<p align="center">13.9402 ha</p>	<p><b><u>Management of Vegetation Removal:</u></b></p> <ul style="list-style-type: none"> <li>❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.</li> <li>❖ No mining may take place in the riparian vegetation present along the Gcuwa River.</li> <li>❖ The Right Holder must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.</li> <li>❖ A pre-commencement environmental induction for all site staff must be</li> </ul>	<p>Natural vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:BA 2004</li> </ul>	<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>provided to ensure that basic environmental principles are adhered to. This includes awareness of littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc.</p> <ul style="list-style-type: none"> <li>❖ Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible.</li> <li>❖ Cleared vegetation to be retained 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.</li> <li>❖ 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.</li> <li>❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.</li> <li>❖ No fires must be allowed on-site.</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>❖ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<p align="center">Site Establishment- and Operational Phase</p>	<p align="center">30.1036 ha</p>	<p><b><u>Protection of Fauna:</u></b></p> <ul style="list-style-type: none"> <li>❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.</li> <li>❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.</li> <li>❖ 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.</li> <li>❖ No snares may be set, or nests raided for eggs or young.</li> <li>❖ No litter, food or other foreign material may be thrown or left around the site. Such items must daily be removed to the site offices.</li> </ul>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:BA 2004</li> </ul>	<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
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p>Site Establishment, Operational- and Decommissioning Phase</p>	<p>30.1036 ha</p>	<p><b><u>Management of Invasive Plant Species:</u></b></p> <ul style="list-style-type: none"> <li>❖ An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the activities.</li> <li>❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.</li> <li>❖ All stockpiles (topsoil &amp; overburden) must be kept free of invasive plant species.</li> <li>❖ 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"> <li>◆ The plants can be uprooted, felled, or cut off and can be destroyed completely.</li> <li>◆ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide</li> </ul> </li> </ul>	<p>Weeds and invader plants on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ NEM:BA, 2004</li> </ul>	<p>Throughout the site establishment, operational- and decommissioning phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or aggregate.</li> </ul>	Site establishment-, Operational-, and Decommissioning Phase	13.9402 ha	<p><b><u>Topsoil/Soil Management:</u></b></p> <ul style="list-style-type: none"> <li>❖ The upper 300 mm of the soil must be stripped and stockpiled before mining.</li> <li>❖ 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.</li> <li>❖ Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.</li> <li>❖ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. All topsoil heaps must be signposted.</li> <li>❖ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.</li> <li>❖ Topsoil heaps may not exceed 2 m in height and are not to be sloped more than 1:2 to avoid collapse.</li> </ul>	Stockpiles must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> </ul>	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"> <li>❖ The temporary topsoil stockpiles must be kept free of invasive plant species.</li> <li>❖ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.</li> <li>❖ Storm- and runoff water must be diverted around the topsoil and overburden stockpile areas to prevent erosion.</li> <li>❖ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>❖ The right 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.</li> <li>❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>complete until the first grass layer is well established.</p> <ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p align="center">Operational-, and Decommissioning Phase</p>	<p align="center">30.1036 ha</p>	<p><b><u>Erosion Control and Storm Water Management:</u></b></p> <ul style="list-style-type: none"> <li>❖ A storm water management plan must be implemented for the duration of the mining activities.</li> <li>❖ Clearing of vegetation must be limited to the mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.</li> <li>❖ Vegetation clearing activities must be put on hold when heavy rains are expected.</li> <li>❖ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.</li> <li>❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.</li> </ul>	<p>Soil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ Closure Plan (Appendix H)</li> <li>❖ MPRDA, 2002</li> <li>❖ NEM:BA, 2004</li> <li>❖ NWA, 1998</li> <li>❖ SWMP</li> </ul>	<p>Throughout the site establishment-, operational- and decommissioning phase.</p>



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>❖ When mining within steep slopes, it must be ensured that adequate slope protection is provided.</li> <li>❖ A silt fence must be installed along the western, southern and south-eastern boundaries of the site to catch sediment carried by surface runoff from bare surfaces.</li> <li>❖ No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All stormwater runoff that falls in the mining area must be channelled to the quarry sump.</li> <li>❖ 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.</li> <li>❖ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> <li>❖ 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</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>maintained and cleared to ensure effective drainage of the areas.</p> <ul style="list-style-type: none"> <li>❖ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:               <ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ Dirty water must be collected and contained in a system separate from the clean water system.</li> <li>◆ Dirty water must be prevented from spilling or seeping into clean water systems.</li> <li>◆ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).</li> <li>◆ The statutory requirements of various regulatory agencies and the interests of stakeholders must be</li> </ul> </li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>considered and incorporated into a storm water management plan.</p> <ul style="list-style-type: none"> <li>❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.</li> <li>❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas.</li> <li>❖ After heavy rainfall events, site management must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of</li> </ul>	Operational Phase	30.1036 ha	<p><b><u>Mitigating the potential impact on the Gcuwa River and downstream users:</u></b></p> <ul style="list-style-type: none"> <li>❖ No mining may take place within the 1:100 floodline of the Gcuwa River or nearer than 32 m from the banks of the</li> </ul>	<p>The Gcuwa River must be shielded in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NWA, 1998</li> <li>❖ SWMP</li> </ul>	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>topsoil and/or overburden.</p> <p>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</p> <p>❖ <u>Operational and expansion activities:</u> Cumulative impacts.</p>			<p>river. Prior to the expansion of the excavation the floodline/32 m mark, whichever is greatest, must be staked out by a surveyor.</p> <p>❖ Biannual water quality monitoring must be conducted with water samples collected upstream and downstream of the Quarry as well as from the sump in the excavation. Any deviations in water quality caused by the mining activities must immediately be addressed.</p> <p>❖ No equipment laydown or storage areas may be located within the floodline and/or riparian vegetation of the river.</p> <p>❖ The clearing of the grasslands must be kept to a minimum and restricted to the approved footprint.</p> <p>❖ If it is necessary to remove surface water from the quarry pit; the water quality must first be tested, and if compliant with DWS standards, the water must be pumped to an area where it will not negatively influence the natural environment through erosion or permanent flooding.</p> <p>❖ To prevent the contamination of the aquatic environment:</p> <ul style="list-style-type: none"> <li>◆ The employees must notify site management immediately of any pollution incidents.</li> <li>◆ The contractor must prevent discharge of any pollutants, such as</li> </ul>		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			cement, concrete, lime chemicals and fuels into any water source. ❖ Ensure that structures like berms are built to prevent soil/sediment from entering the river as this can result in sedimentation.		
❖ <u>Operational and expansion activities:</u> Drilling and blasting.  ❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.  ❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.  ❖ <u>Operational and expansion activities:</u>	Operational-, and Decommissioning Phase	30.1036 ha	<p><b><u>Management of health and safety risks:</u></b></p> ❖ It must be ensured that the mining area is properly fenced off to prevent incursion by livestock and unauthorised humans. ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law. ❖ Sanitary facilities must be located within 100 m from any point of work. ❖ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. ❖ The surrounding landowners must be informed in writing ahead of each blasting event. ❖ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ HSA, 1973	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Cumulative impacts.			<ul style="list-style-type: none"> <li>❖ A vibro recorder must be used to record all blasts.</li> <li>❖ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.</li> <li>❖ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.</li> <li>❖ Upon closure the excavation must be fenced/walled in to restrict access. The pit may not be used for swimming and/or watering of stock without prior approval of the municipality and DWS.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> </ul>	Operational Phase	30.1036 ha	<p><b><u>Potential impact on the municipal wastewater treatment works:</u></b></p> <ul style="list-style-type: none"> <li>❖ Activities and employees must remain within the approved footprint.</li> <li>❖ The municipality must be informed at least a week before each blasting event.</li> <li>❖ Flyrock that falls beyond the mining area must be collected in the first week after each blast.</li> <li>❖ Any damage to the wastewater treatment infrastructure, as a direct result of the activities, must be refurbished by the Right Holder at his own cost.</li> </ul>	Management of the activities must be in accordance with the: <ul style="list-style-type: none"> <li>❖ MPRDA, 2008</li> <li>❖ NEMA, 1998</li> </ul>	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.	Operational Phase	30.1036 ha	<u><b>Access road Management:</b></u> <ul style="list-style-type: none"> <li>❖ Vehicular movement must be restricted to the roads and crisscrossing of tracks through undisturbed areas must be prohibited.</li> <li>❖ Rutting and erosion of the access and internal roads caused as a direct result of the mining activities must be repaired by the Applicant.</li> <li>❖ Overloading of the trucks must be prevented, and proof of load weights must be filed for auditing purposes.</li> </ul>	The access road must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ NRTA, 1996</li> </ul>	Throughout the operational phase.
❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.	Site Establishment & Operational Phase	30.1036 ha	<u><b>Archaeological, Heritage and Palaeontological Aspects:</b></u> <ul style="list-style-type: none"> <li>❖ All mining must be confined to the development footprint area.</li> <li>❖ 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.</li> </ul>	Cultural/heritage aspects must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ NHRA, 1999</li> </ul>	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ 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 ECPHRA.</li> <li>❖ Work may only continue once the go-ahead was issued by ECPHRA.</li> <li>❖ Should any suspected palaeontological material be at any time encountered during mining, a palaeontologist should likewise be immediately contacted to sample and record such occurrence.</li> </ul>		
<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	Operational- and Decommissioning Phase	30.1036 ha	<p><b><u>Rehabilitation/landscaping of the excavation area.</u></b></p> <ul style="list-style-type: none"> <li>❖ The excavated area must serve as a final depositing area for the placement of overburden.</li> <li>❖ Rocks and coarse material removed from the excavation must be dumped into the excavation.</li> <li>❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.</li> <li>❖ Stockpiles must be removed during the decommissioning phase, the area</li> </ul>	<p>The mining area must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ MPRDA, 2002</li> </ul>	Throughout the operational and decommissioning phase.



ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			<p>ripped, and the topsoil returned to its original depth to provide a growth medium.</p> <ul style="list-style-type: none"> <li>❖ No waste may be permitted to be deposited in the excavations.</li> <li>❖ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.</li> <li>❖ The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.</li> <li>❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.</li> </ul>		

**e) Impact Management Outcomes**

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

*Table 26: Impact Management Outcomes*

<b>ACTIVITY</b>	<b>POTENTIAL IMPACT</b>	<b>ASPECTS AFFECTED</b>	<b>PHASE</b>	<b>MITIGATION TYPE</b>	<b>STANDARD TO BE ACHIEVED</b>
<p>whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>		<p>In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)  E.g.  <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation.</li> </ul> </p>	<p>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.</p>
<p>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</p>	<p>❖ Visual intrusion because of the activities.  ❖ Cumulative visual impact when the Quarry footprint is expanded.</p>	<p>The visual impact may affect the aesthetics of the landscape.</p>	<p>Site Establishment &amp; Operational Phase</p>	<p><u>Control:</u> Implementing proper housekeeping and progressive rehabilitation.</p>	<p>Management of the activities must be in accordance with the:          ❖ MPRDA, 2008          ❖ NEMA, 1998</p>
<p>❖ <u>Expansion Activities:</u> Stripping and</p>	<p>❖ Dust nuisance due to the movement of the soil.</p>	<p>Increased dust generation will impact</p>	<p>Site Establishment-, Operational- and</p>	<p><u>Control:</u> Dust suppression methods and proper housekeeping.</p>	<p>Dust generation on site must be managed in accordance with the:</p>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<p>stockpiling of topsoil and/or overburden.</p> <ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust nuisance caused by blasting activities.</li> <li>❖ Dust nuisance caused by earthmoving machinery.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<p>on the air quality of the receiving environment.</p>	<p>Decommissioning Phase</p>		<ul style="list-style-type: none"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> <li>❖ National Dust Control Regulations, GN No R827</li> <li>❖ ASTM D1739 (SANS 1137:2012)</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Noise nuisance caused by earthmoving machinery.</li> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<p>Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.</p>	<p>Site Establishment-, Operational 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"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> <li>❖ NRTA, 1996</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.					
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.  ❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.	❖ Potential contamination from footprint area and surface runoff because of hydrocarbon spillages.  ❖ Soil contamination from hydrocarbon spills and/or littering.  ❖ Potential impact associated with litter/hydrocarbon spills left at the mining area.	Contamination of the footprint areas will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the Right Holder.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Project related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts	❖ Loss of vegetation cover and riparian vegetation.  ❖ Impact on overall species and ecosystem diversity.  ❖ Impact on ecological connectivity and/or ecological disturbance impacts.	This will impact on the biodiversity of the receiving environment.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping and the mitigation measures.	Natural vegetated areas must be managed in accordance with the: ❖ NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential impact on faunal species.</li> </ul>	<p>This will impact on the biodiversity of the receiving environment.</p>	<p>Site Establishment &amp; Operational Phase</p>	<p><u>Control:</u> Implementing proper housekeeping and the mitigation measures.</p>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:BA 2004</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>❖ Infestation of the mining area with invader plant species.</li> <li>❖ Infestation of the reinstated area with invader plant species.</li> </ul>	<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 &amp; 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"> <li>❖ CARA, 1983</li> <li>❖ NEM:BA, 2004</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential increase in runoff from denuded areas and associated erosion.</li> <li>❖ Runoff from the mining area potentially affecting the water quality of the Gcuwa River.</li> <li>❖ Flooding of the excavation due to ingress of the river.</li> </ul>	<p>This could impact the hydrology of the receiving environment and cause erosion.</p>	<p>Site Establishment, &amp; Operational Phase.</p>	<p><u>Control:</u> Implementing the SWMP.</p>	<p>Soil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ Closure Plan (Appendix H)</li> <li>❖ MPRDA, 2002</li> <li>❖ NEM:BA, 2004</li> <li>❖ NWA, 1998</li> <li>❖ SWMP</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.</li> <li>❖ Erosion of returned topsoil after rehabilitation.</li> <li>❖ Alteration of hydrological and geomorphological processes.</li> <li>❖ Impact on downstream users should mining affect the water quality of the Gcuwa River.</li> </ul>				
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Alteration of the existing topography.</li> <li>❖ Alteration of the existing topography.</li> </ul>	This impact may affect the land use opportunities of the property.	Site Establishment, Operational and Decommissioning Phase	Should the proposed project be approved, the operation will change the land use options of the property. The impact could be controlled to a certain extend through progressive rehabilitation.	The mining area must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ MPRDA, 2002</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing,</li> </ul>	<ul style="list-style-type: none"> <li>❖ Health and safety risk posed by blasting activities.</li> <li>❖ Unsafe working environment for employees.</li> </ul>	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	<u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: <ul style="list-style-type: none"> <li>❖ MHSA, 1996</li> <li>❖ OHSA, 1993</li> <li>❖ OHSAS 18001</li> <li>❖ HSA, 1973</li> </ul>

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<p>loading and hauling of aggregate.</p> <p>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</p> <p>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</p>	<p>❖ Health and safety risk posed by unrehabilitated quarry excavations.</p> <p>❖ Flooding of the quarry excavation upon closure poses a safety risk to people and livestock.</p>				
<p>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</p>	<p>❖ Flyrock falling beyond the mining area.</p> <p>❖ Potential damage to the municipal wastewater treatment works.</p>	<p>Damage to the municipal infrastructure will incur costs for the right holder and complaints from the landowner and/or community.</p>	Operational Phase	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.</p>	<p>Management of the activities must be in accordance with the:</p> <p>❖ MPRDA, 2008</p> <p>❖ NEMA, 1998</p>
<p>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</p>	<p>❖ Overloading of trucks having an impact on the public roads.</p>	<p>Impacting the condition of public roads may incur public complaints and additional costs to the MR Holder.</p>	Operational Phase	<p><u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</p>	<p>The access road must be managed in accordance with the:</p> <p>❖ NRTA, 1996</p>

**f) Impact Management Actions**

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

*Table 27: Impact Management Actions*

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<p>whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation.</li> </ul>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:</p> <p>Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</p> <p>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</p>	<p>❖ Visual intrusion because of the activities.</p> <p>❖ Cumulative visual impact when the Quarry footprint is expanded.</p>	<p><u>Control:</u> Implementing proper housekeeping and progressive rehabilitation.</p>	<p>Throughout the site establishment- and operational phases.</p>	<p>Management of the activities must be in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ MPRDA, 2008</li> <li>❖ NEMA, 1998</li> </ul>
<p>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</p>	<p>❖ Dust nuisance due to the movement of the soil.</p>	<p><u>Control:</u> Dust suppression methods and proper housekeeping.</p>	<p>Throughout the site establishment-, operational, and decommissioning phases.</p>	<p>Dust generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> </ul>



ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust nuisance caused by blasting activities.</li> <li>❖ Dust nuisance caused by earthmoving machinery.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>			<ul style="list-style-type: none"> <li>❖ National Dust Control Regulations, GN No R827</li> <li>❖ ASTM D1739 (SANS 1137:2012)</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Noise nuisance caused by earthmoving machinery.</li> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<p><u>Control:</u> Noise suppression methods and proper housekeeping.</p>	<p>Throughout the site establishment, and operational phases.</p>	<p>Noise generation on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:AQA, 2004 Regulation 6(1)</li> <li>❖ NRTA, 1996</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential contamination from footprint area and surface runoff because of hydrocarbon spillages.</li> <li>❖ Soil contamination from hydrocarbon spills and/or littering.</li> <li>❖ Potential impact associated with litter/hydrocarbon spills left at the mining area.</li> </ul>	<p><u>Control &amp; Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.</p>	<p>Throughout the site establishment-, operational- and decommissioning phases.</p>	<p>Project related waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NWA, 1998</li> <li>❖ NEM:WA, 2008</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Loss of vegetation cover and riparian vegetation.</li> <li>❖ Impact on overall species and ecosystem diversity.</li> <li>❖ Impact on ecological connectivity and/or ecological disturbance impacts.</li> </ul>	<p><u>Control:</u> Implementing proper housekeeping and the mitigation measures.</p>	<p>Throughout the site establishment-, and operational phases.</p>	<p>Natural vegetated areas must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:BA 2004</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential impact on faunal species.</li> </ul>	<p><u>Control:</u> Implementing proper housekeeping and the mitigation measures.</p>	<p>Throughout the site establishment-, and operational phases.</p>	<p>Fauna must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ NEM:BA 2004</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>❖ Infestation of the mining area with invader plant species.</li> <li>❖ Infestation of the reinstated area with invader plant species.</li> </ul>	<p><u>Control &amp; Remedy:</u> Implementation of an invasive plant species management plan.</p>	<p>Throughout the site establishment-, operational-, and decommissioning phases.</p>	<p>Weeds and invader plants on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ NEM:BA, 2004</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Potential increase in runoff from denuded areas and associated erosion.</li> <li>❖ Runoff from the mining area potentially affecting the water quality of the Gcuwa River.</li> <li>❖ Flooding of the excavation due to ingress of the river.</li> <li>❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.</li> </ul>	<p><u>Control:</u> Implementing the SWMP.</p>	<p>Throughout the site establishment- and operational phases.</p>	<p>Soil must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ CARA, 1983</li> <li>❖ Closure Plan (Appendix H)</li> <li>❖ MPRDA, 2002</li> <li>❖ NEM:BA, 2004</li> <li>❖ NWA, 1998</li> <li>❖ SWMP</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Erosion of returned topsoil after rehabilitation.</li> <li>❖ Alteration of hydrological and geomorphological processes.</li> <li>❖ Impact on downstream users should mining affect the water quality of the Gcuwa River.</li> </ul>			
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Alteration of the existing topography.</li> <li>❖ Alteration of the existing topography.</li> </ul>	<p>Should the proposed project be approved, the operation will change the land use options of the property. The impact could be controlled to a certain extent through progressive rehabilitation.</p>	<p>Throughout the site establishment, operational and decommissioning phases.</p>	<p>The mining area must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ MPRDA, 2002</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and Expansion Activities:</u></li> </ul>	<ul style="list-style-type: none"> <li>❖ Health and safety risk posed by blasting activities.</li> <li>❖ Unsafe working environment for employees.</li> <li>❖ Health and safety risk posed by unrehabilitated quarry excavations.</li> <li>❖ Flooding of the quarry excavation upon closure</li> </ul>	<p><u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.</p>	<p>Throughout operational and decommissioning phases.</p>	<p>Health and safety aspects on site must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>❖ MHSA, 1996</li> <li>❖ OHSA, 1993</li> <li>❖ OHSAS 18001</li> <li>❖ HSA, 1973</li> </ul>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
❖ Sloping and landscaping during rehabilitation.  ❖ <u>Operational and Expansion Activities:</u> Cumulative impacts.	poses a safety risk to people and livestock.			
❖ <u>Operational and Expansion Activities:</u> Drilling and blasting.	❖ Flyrock falling beyond the mining area.  ❖ Potential damage to the municipal wastewater treatment works.	<u>Stop &amp; Control:</u> Adherence to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational phase.	Management of the activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ <u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	❖ Overloading of trucks having an impact on the public roads.	<u>Operational and Expansion Activities:</u> Excavation, processing, loading and hauling of aggregate.	Throughout operational phase.	The access road must be managed in accordance with the: ❖ NRTA, 1996

**i) Financial Provision****(1) Determination of the amount of Financial Provision.****(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.**

The decommissioning phase will entail the reinstatement of the processing area and support areas by removing the stockpiled material, and site infrastructure/equipment that will no longer be required by the landowner and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the excavation to its original topography, the rehabilitation option is to develop the quarry pit into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be softened with overburden and top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil. The Right Holder will comply with the minimum closure objectives as prescribed by DMRE.

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

This report, the Final Basic Assessment Report (FBAR), includes all the environmental objectives in relation to closure and was available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period. The comments received on the DBAR were incorporated into the FBAR.

**(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

The requested rehabilitation plan is attached as Appendix D.

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

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

❖ Rehabilitation of the Excavated Area:

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

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

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

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

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

❖ Rehabilitation of Plant, Offices and Service Areas:

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

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

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

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

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

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200 mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area. The site shall be seeded with a local, adapted indigenous seed mix.

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

❖ Final rehabilitation:

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

All mining equipment, and other items used during the mining period (not needed by the landowner) must be removed from the site (section 44 of the MPRDA).

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

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

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



**(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.**

The quantum for financial provision makes provision for both the current mining activities as well as the proposed expansion area and was calculated according to Section B of the working manual.

**Mine type and saleable mineral by-product**

According to Tables B.12, B.13 and B.14

Mine type	Aggregate, Stone Aggregate and Gravel
Saleable mineral by-product	None

**Risk ranking**

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	Class B
Revised risk ranking (B.14)	N/A

**Environmental sensitivity of the mine area**

According to Table B.4

Environmental sensitivity of the mine area	Low
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**Level of information**

According to Step 4.2:

Level of information available	Extensive
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**Identify closure components**

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
		YES	-
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)  ❖ Rehabilitation of the primary and secondary crusher, screens and conveyors.	YES	-

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
2(A)	Demolition of steel buildings and structures	-	<b>NO</b>
2(B)	Demolition of reinforced concrete buildings and structures  ❖ The reinforced concrete is associated with the following areas: <ul style="list-style-type: none"> <li>◆ The plant in terms of concrete pads, reinforcement and retaining walls;</li> <li>◆ The weighbridge;</li> <li>◆ Bunded areas associated with diesel/hydrocarbon storage.</li> </ul>	<b>YES</b>	-
3	Rehabilitation of access roads  ❖ The road/s will still be required to access the area after closure and will therefore not be rehabilitated.	-	<b>NO</b>
4(A)	Demolition and rehabilitation of electrified railway lines  ❖ There are no railway lines associated with the mine.	-	<b>NO</b>
4(B)	Demolition and rehabilitation of non-electrified railway lines  ❖ There are no railway lines associated with the mine.	-	<b>NO</b>
5	Demolition of housing and facilities  ❖ The brick buildings will remain on site to be reused by the landowner after closure of the mine.	-	<b>NO</b>
6	Opencast rehabilitation including final voids and ramps	<b>YES</b>	-
7	Sealing of shafts, adits and inclines	-	<b>NO</b>
8(A)	Rehabilitation of overburden and spoils  ❖ The stockpiled overburden will be used to rehabilitate the excavation upon closure.	<b>YES</b>	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	<b>NO</b>
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	<b>NO</b>
9	Rehabilitation of subsided areas	-	<b>NO</b>
10 (A)	General surface rehabilitation, including grassing of all denuded areas (with remnants)	<b>YES</b>	-
10 (B)	General surface rehabilitation, including grassing of all denuded areas (without remnants)	<b>YES</b>	-

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
		Yes	No
11	River diversions	-	<b>NO</b>
12	Fencing  ❖ Once rehabilitated the excavation will need to be fenced to restrict access.	<b>YES</b>	-
13	Water management (Separating clean and dirty water, managing polluted water, and managing the impact on groundwater)	-	<b>NO</b>
14	2 to 3 years of maintenance and aftercare	<b>YES</b>	-

**Unit rates for closure components**

The calculation of the financial provision amount required to manage and rehabilitate the environment was aligned with the guideline document prescribed in terms of Regulation 54 (1). The master rate for each closure component was taken from the 2023 financial provision calculation of the mine and inflated by the 2024 CPIX of 5.3% to account for escalation over the past year as presented in the table below:

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	R 19.79	1.00
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	R 406.25	1.00
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	R 280 599.84	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	R 192 676.62	1.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10(A)	General surface rehabilitation, including grassing of all denuded areas (with remnants)	R 152 632.38	1.00
10(B)	General surface rehabilitation, including grassing of all denuded areas (without remnants)	R 101 754.93	1.00
11	River diversions	-	-
12	Fencing	R 174.10	1.00
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-

<b>Component No.</b>	<b>Main description</b>	<b>Master rate</b>	<b>Multiplication factor</b>
14	2 to 3 years of maintenance and aftercare	R 20 312.30	1.00

**Determine weighting factors**

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.00 (Urban)

**Calculation of closure costs**

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 28: Calculation of closure cost

CALCULATION OF THE QUANTUM							
<b>Mine:</b>	Butterworth Quarry			<b>Location:</b>	Butterworth		
<b>Evaluators:</b>	C Fouché			<b>Date:</b>	11 July 2024		
No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A *B*C*D Amount (Rand)
			Step 4.5	Step 4.3	Step 4.3	Step 4.4	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m <sup>3</sup>	2 976	19.79	1.00	1.00	R 58 895.04
2(B)	Demolition of reinforced concrete buildings and structures	m <sup>2</sup>	1 695	406.25	1.00	1.00	R 688 593.75
6	Opencast rehabilitation including final voids and ramps	ha	18	280 599.84	0.52	1.00	R 2 626 414.50
8(A)	Rehabilitation of overburden and spoils	ha	2.3	192 676.62	1.00	1.00	R 443 156.23
10(A)	General surface rehabilitation (with remnants)	ha	1.5	152 632.38	1.00	1.00	R 228 948.57
10(B)	General surface rehabilitation (without remnants)	ha	5.8	101 754.93	1.00	1.00	R 590 178.59
12	Fencing	m	1 000	174.10	1.00	1.00	R 174 100.00
14	2 to 3 years of maintenance and aftercare	ha	30	20 312.30	1.00	1.00	R 609 369.00
Sum of items 1 to 15 above							R 5 419 655.68
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.00		R 5 419 655.68	<b>Sub Total 1</b>		R 5 419 655.68
1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00					R 325 179.34
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00					-
2	Contingency	10.0% of Subtotal 1					R 541 965.57
<b>Sub Total 2</b> (Subtotal 1 plus management and contingency)							R 6 286 800.59
Vat (15%)							R 943 020.09
<b>GRAND TOTAL</b> (Subtotal 3 plus VAT)							<b>R 7 229 820.68</b>

Considering the above, the amount that will be necessary for the rehabilitation of damages caused by the operation (including both the current activities and the proposed expansion of the footprint), both sudden closures during the normal operation of the project and at final, planned closure gives a sum of R 7 229 820.00.

Transkei Quarries (Pty) Ltd has a financial guarantee to the value of R 4 386 642.62 lodged with the DMRE that will have to be increased to provide for the shortfall should the above calculation be approved by the DMRE and the S102 application be successful.

**(f) Confirm that the financial provision will be provided as determined.**

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Right Holder in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

**Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**

- g) Monitoring of Impact Management Actions**
- h) Monitoring and reporting frequency**
- i) Responsible persons**
- j) Time period for implementing impact management actions**
- k) Mechanisms for monitoring compliance**

*Table 29: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.*

<b>SOURCE ACTIVITY</b>	<b>IMPACTS REQUIRING MONITORING PROGRAMMES</b>	<b>FUNCTIONAL REQUIREMENTS FOR MONITORING</b>	<b>ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)</b>	<b>MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS</b>
❖ Demarcation of site with visible beacons.	❖ Maintenance of beacons	<ul style="list-style-type: none"> <li>❖ Visible beacons need to be established at the boundaries of the mining area.</li> <li>❖ The 1:100 year floodline or 32 m mark from the river (whichever is greatest) must be demarcated.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Ensure beacons are in place throughout the life of the mine.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.	<p><u>Visual Characteristics:</u></p> <ul style="list-style-type: none"> <li>❖ Visual intrusion because of the expansion activities.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Parking- and dedicated storage areas for equipment.</li> <li>❖ Good housekeeping practices.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> </ul>	<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
<p><u>Operational and Expansion Activities:</u> Cumulative impacts</p>	<ul style="list-style-type: none"> <li>❖ Cumulative visual impact when the Quarry footprint is expanded.</li> </ul>		<ul style="list-style-type: none"> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The site must always have a neat appearance and be kept in good condition.</li> <li>❖ Mining equipment must be stored neatly in dedicated areas when not in use.</li> <li>❖ The right holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.</li> <li>❖ All excavation and mining related activities must be contained within the approved mining footprint.</li> <li>❖ 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.</li> <li>❖ All buildings, equipment and/or infrastructure that will remain on the property after closure, must be left in a good and functional condition, and the landowner must accept responsibility for these structures in writing.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> <li>❖ Dust nuisance due to the movement of soil.</li> <li>❖ Dust nuisance caused by blasting activities.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Gravimetric- and fallout dust monitoring equipment.</li> <li>❖ Dust suppression equipment such as a water car, water</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul>	<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"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative Impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust nuisance caused by earthmoving machinery.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<ul style="list-style-type: none"> <li>dispenser and sprayers on the crusher plant.</li> <li>❖ Signage that clearly reduce the speed on the access roads.</li> <li>❖ Maintenance schedule to remove excess dust from the processing area.</li> <li>❖ Cover crop to re-vegetate denuded areas.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ 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).</li> <li>❖ Dust suppression must continue during day and night shifts.</li> <li>❖ Water sprayers must be fitted to the processing plant, and the plant may not operate if these sprayers are out of order.</li> <li>❖ The site manager must daily assess the efficiency of all dust suppression equipment.</li> <li>❖ Excess dust and fines must at least weekly be removed from the processing area.</li> <li>❖ Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust.</li> <li>❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.</li> <li>❖ 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.</li> <li>❖ 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).</li> </ul>	<ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Monthly compliance monitoring by dust monitoring service provider.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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"> <li>❖ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.</li> <li>❖ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013 (as amended).</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative Impacts.</li> </ul>	<p><u>Air and Noise Quality:</u></p> <ul style="list-style-type: none"> <li>❖ Noise nuisance caused by earthmoving machinery.</li> <li>❖ Noise nuisance caused by blasting activities.</li> <li>❖ Noise nuisance because of the mining activities.</li> <li>❖ Cumulative disturbance caused by night shift operations.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Personal noise exposure monitoring equipment.</li> <li>❖ Signage indicating noise zones.</li> <li>❖ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The Right Holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>❖ No loud music may be permitted at the work areas.</li> <li>❖ All project 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).</li> <li>❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Quarterly reporting by a qualified occupation hygienist.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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>Surrounding landowners must be notified in writing prior to each blast.</p> <ul style="list-style-type: none"> <li>❖ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.</li> <li>❖ Make the monitoring of noise pollution during night shift part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist) implement corrective actions within one month.</li> <li>❖ Best practice measures shall be implemented to minimize potential noise impacts.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion Activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p><u>General – Waste Management:</u></p> <ul style="list-style-type: none"> <li>❖ Potential contamination of footprint area and surface runoff because of hydrocarbon spillages.</li> <li>❖ Soil contamination from hydrocarbon spills and/or littering.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Waste management plan.</li> <li>❖ Formal waste disposal system with waste registers.</li> <li>❖ Drip trays.</li> <li>❖ Covered refuse bins for both hazardous- and general waste.</li> <li>❖ Oil spill kit.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ 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</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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"> <li>❖ Potential impact associated with litter/hydrocarbon spills left at the mining area.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Chemical toilets.</li> <li>❖ Bunded areas with impermeable surface.</li> <li>❖ Stormwater management plan.</li> </ul>	<p>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"> <li>❖ If a diesel bowser is used on site, it must always be equipped with a drip tray and/or parked in a bunded area with impermeable surface. 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.</li> <li>❖ 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.</li> <li>❖ Equipment/tools/vehicles placed in the salvage yard must be drained of all hydrocarbons before placement. The salvage yard must be kept clean and unwanted materials must be removed from the mine as regular as possible.</li> <li>❖ An oil spill kit must be available at the mine, 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.</li> <li>❖ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the</li> </ul>	

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>Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.</p> <ul style="list-style-type: none"> <li>❖ When small volumes of wastewater are generated during the life of the project the following is applicable: <ul style="list-style-type: none"> <li>◆ Water containing waste must not be discharged into the natural environment.</li> <li>◆ Measures to contain the wastewater and safely dispose thereof must be implemented.</li> </ul> </li> <li>❖ 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.</li> <li>❖ All decommissioned/rehabilitated areas must be cleared of all waste at the end of the project.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative impact.</li> </ul>	<p><u>Terrestrial biodiversity, conservation areas and groundcover:</u></p> <ul style="list-style-type: none"> <li>❖ Loss of vegetation cover and riparian vegetation.</li> <li>❖ Impact on overall species and ecosystem diversity.</li> <li>❖ Impacts to ecological connectivity and/or</li> </ul>	<ul style="list-style-type: none"> <li>❖ Visible beacons indicating the boundary of the mineable areas and no-go areas.</li> <li>❖ Environmental awareness training material.</li> <li>❖ Fire management plan.</li> <li>❖ Alien invasive species management plan.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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	ecological disturbance impacts.	❖ Cover crop to seed rehabilitated areas.	<p>must be declared a no-go area, and all staff must be educated accordingly.</p> <ul style="list-style-type: none"> <li>❖ No mining may take place in the riparian vegetation present along the Gcuwa River.</li> <li>❖ The Right Holder must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum.</li> <li>❖ 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 littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc.</li> <li>❖ Grubbing is not permitted as a method of clearing vegetation. Any trees needing clearing must be cut down using chain saws and hauled from the site using appropriate machinery where practically possible.</li> <li>❖ Cleared vegetation to be retained 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.</li> <li>❖ 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.</li> </ul>	

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			<ul style="list-style-type: none"> <li>❖ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.</li> <li>❖ No fires must be allowed on-site.</li> <li>❖ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> </ul>	<p><u>Fauna:</u></p> <ul style="list-style-type: none"> <li>❖ Potential impact on faunal species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Visible beacons indicating the boundary of the mineable areas.</li> <li>❖ Environmental awareness training material.</li> <li>❖ Snake posters.</li> <li>❖ Refuse bins with lids.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with.</li> <li>❖ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.</li> <li>❖ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual.</li> <li>❖ 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.</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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			<ul style="list-style-type: none"> <li>❖ No snares may be set, or nests raided for eggs or young.</li> <li>❖ No litter, food or other foreign material may be thrown or left around the site. Such items must daily be removed to the site offices.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p><u>Terrestrial biodiversity, conservation areas and groundcover:</u></p> <ul style="list-style-type: none"> <li>❖ Infestation of the topsoil heaps and mining area with invader plant species.</li> <li>❖ Infestation of the mining area with invader plant species.</li> <li>❖ Infestation of the reinstated area with invader plant species.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Alien invasive plant species management plan.</li> <li>❖ Designated team to cut or pull-out invasive plant species that germinated on site.</li> <li>❖ Contact details of a Pest Control Officer.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the activities.</li> <li>❖ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.</li> <li>❖ All stockpiles (topsoil &amp; overburden) must be kept free of invasive plant species.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>



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			<ul style="list-style-type: none"> <li>❖ 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"> <li>◆ The plants can be uprooted, felled, or cut off and can be destroyed completely.</li> <li>◆ 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.</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or aggregate.</li> </ul>	<p><u>Geology and Soil:</u> Topsoil/Soil Management.</p>	<ul style="list-style-type: none"> <li>❖ Earthmoving equipment to strip, stockpile and spread the topsoil.</li> <li>❖ Stormwater control infrastructure.</li> <li>❖ Designated team to control weeds/invader plant species that may germinate on the topsoil heaps.</li> <li>❖ Cover crop to vegetate topsoil heaps (when needed) and reinstated soil.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The upper 300 mm of the soil must be stripped and stockpiled before mining.</li> <li>❖ 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.</li> <li>❖ Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time.</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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			<ul style="list-style-type: none"> <li>❖ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. All topsoil heaps must be signposted.</li> <li>❖ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (indigenous grass) on the stockpiles will help to prevent erosion.</li> <li>❖ Topsoil heaps may not exceed 2 m in height and are not to be sloped more than 1:2 to avoid collapse.</li> <li>❖ The temporary topsoil stockpiles must be kept free of invasive plant species.</li> <li>❖ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.</li> <li>❖ Storm- and runoff water must be diverted around the topsoil and overburden stockpile areas to prevent erosion.</li> <li>❖ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.</li> <li>❖ The right 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,</li> </ul>	

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			<p>when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.</p> <ul style="list-style-type: none"> <li>❖ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.</li> <li>❖ 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.</li> <li>❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> </ul>	<p><u>Hydrology:</u></p> <ul style="list-style-type: none"> <li>❖ Potential increase in runoff from denuded areas and associated accelerated erosion.</li> <li>❖ Erosion of returned topsoil after rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Stormwater management plan.</li> <li>❖ Storm water control structures such as berms to direct storm- and runoff water around the stockpiled topsoil area.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ A storm water management plan must be implemented for the duration of the mining activities.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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			<ul style="list-style-type: none"> <li>❖ Clearing of vegetation must be limited to the mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.</li> <li>❖ Vegetation clearing activities must be put on hold when heavy rains are expected.</li> <li>❖ Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.</li> <li>❖ Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.</li> <li>❖ When mining within steep slopes, it must be ensured that adequate slope protection is provided.</li> <li>❖ A silt fence must be installed along the western, southern and south-eastern boundaries of the site to catch sediment carried by surface runoff from bare surfaces.</li> <li>❖ No dirty water emanating from the quarry shall be discharged into the natural environment or any watercourse. All stormwater runoff that falls in the mining area must be channelled to the quarry sump.</li> <li>❖ 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.</li> <li>❖ Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.</li> </ul>	

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			<ul style="list-style-type: none"> <li>❖ 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.</li> <li>❖ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:               <ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ Dirty water must be collected and contained in a system separate from the clean water system.</li> <li>◆ Dirty water must be prevented from spilling or seeping into clean water systems.</li> <li>◆ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).</li> <li>◆ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.</li> </ul> </li> </ul>	

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			<ul style="list-style-type: none"> <li>❖ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence.</li> <li>❖ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas.</li> <li>❖ After heavy rainfall events, site management must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Expansion activities:</u> Stripping and stockpiling of topsoil and/or overburden.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<p><u>Hydrology:</u></p> <ul style="list-style-type: none"> <li>❖ Runoff from the mining area potentially affecting the water quality of the Gcuwa River.</li> <li>❖ Flooding of the excavation due to ingress from the river.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Stormwater Management Plan.</li> <li>❖ Stormwater management structures.</li> <li>❖ Beacons to demarcate the work areas.</li> <li>❖ Biannual water quality monitoring.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ No mining may take place within the 1:100 floodline of the Gcuwa River or nearer than 32 m from the</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Cumulative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Runoff from mining area potentially impacting the Gcuwa River and/or surface water.</li> <li>❖ Impact on downstream users should mining affect the water quality of the Gcuwa River.</li> <li>❖ Alternation of hydrological and geomorphological processes.</li> </ul>		<p>banks of the river. Prior to the expansion of the excavation the floodline/32 m mark, whichever is greatest, must be staked out by a surveyor.</p> <ul style="list-style-type: none"> <li>❖ Biannual water quality monitoring must be conducted with water samples collected upstream and downstream of the Quarry as well as from the sump in the excavation. Any deviations in water quality caused by the mining activities must immediately be addressed.</li> <li>❖ No equipment laydown or storage areas may be located within the floodline and/or riparian vegetation of the river.</li> <li>❖ The clearing of the grasslands must be kept to a minimum and restricted to the approved footprint.</li> <li>❖ If it is necessary to remove surface water from the quarry pit; the water quality must first be tested, and if compliant with DWS standards, the water must be pumped to an area where it will not negatively influence the natural environment through erosion or permanent flooding.</li> <li>❖ To prevent the contamination of the aquatic environment:               <ul style="list-style-type: none"> <li>◆ The employees must notify site management immediately of any pollution incidents.</li> <li>◆ The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any water source.</li> </ul> </li> <li>❖ Ensure that structures like berms are built to prevent soil/sediment from entering the river as this can result in sedimentation.</li> </ul>	

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<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> <li>❖ <u>Operational and expansion activities:</u> Sloping and landscaping during rehabilitation.</li> <li>❖ <u>Operational and expansion activities:</u> Cumulative impacts.</li> </ul>	<p><u>General – Health and Safety Risks:</u></p> <ul style="list-style-type: none"> <li>❖ Health and safety risk posed by blasting activities.</li> <li>❖ Unsafe working environment for employees.</li> <li>❖ Health and safety risk posed by unrehabilitated quarry excavations.</li> <li>❖ Flooding of the quarry excavation upon closure poses a safety risk to people and livestock.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Stocked first aid box.</li> <li>❖ Level 1 certified first aider.</li> <li>❖ All appointments in terms of the Mine Health and Safety Act, 1996.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ It must be ensured that the mining area is properly fenced off to prevent incursion by livestock and unauthorised humans.</li> <li>❖ Workers must have access to the correct personal protection equipment (PPE) as required by law.</li> <li>❖ Sanitary facilities must be located within 100 m from any point of work.</li> <li>❖ All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).</li> <li>❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.</li> <li>❖ The surrounding landowners must be informed in writing ahead of each blasting event.</li> <li>❖ The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.</li> <li>❖ A vibro recorder must be used to record all blasts.</li> <li>❖ Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>



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			<ul style="list-style-type: none"> <li>❖ Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.</li> <li>❖ Upon closure the excavation must be fenced/walled in to restrict access. The pit may not be used for swimming and/or watering of stock without prior approval of the municipality and DWS.</li> </ul>	
<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> </ul>	<p><u>Existing Infrastructure:</u></p> <ul style="list-style-type: none"> <li>❖ Flyrock falling beyond the mining area.</li> <li>❖ Potential damage to the municipal wastewater treatment works.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Beacons to demarcate the mining area.</li> <li>❖ Blast monitoring plan.</li> <li>❖ Contact detail of the relevant municipal official to be informed of a blast.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ Activities and employees must remain within the approved footprint.</li> <li>❖ The municipality must be informed at least a week before each blasting event.</li> <li>❖ Flyrock that falls beyond the mining area must be collected in the first week after each blast.</li> <li>❖ Any damage to the wastewater treatment infrastructure, as a direct result of the activities, must be refurbished by the Right Holder at his own cost.</li> </ul>	<p>Applicable throughout operational phase.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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"> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<p><u>Existing Infrastructure:</u></p> <ul style="list-style-type: none"> <li>❖ Overloading of trucks having an impact on the public roads.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Earthmoving equipment to maintain the gravel pavement structure of the roads.</li> <li>❖ Road signage to control traffic speed.</li> <li>❖ Proof of load weights to prevent overloading.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ Vehicular movement must be restricted to the roads and crisscrossing of tracks through undisturbed areas must be prohibited.</li> <li>❖ Rutting and erosion of the access and internal roads caused as a direct result of the mining activities must be repaired by the Applicant.</li> <li>❖ Overloading of the trucks must be prevented, and proof of load weights must be filed for auditing purposes.</li> </ul>	<p>Applicable throughout operational phase.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
<ul style="list-style-type: none"> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<p><u>Cultural and Heritage Environment:</u></p> <p>Archaeological, Heritage and Palaeontological Aspects.</p>	<ul style="list-style-type: none"> <li>❖ Contact number of an archaeologist &amp; palaeontologist that can be contacted when a discovery is made on site.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul>	<p>Applicable throughout site establishment-, and operational phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an</li> </ul>

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><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ All mining must be confined to the development footprint area.</li> <li>❖ 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.</li> <li>❖ 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.</li> <li>❖ 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 ECPHRA.</li> <li>❖ Work may only continue once the go-ahead was issued by ECPHRA.</li> <li>❖ Should any suspected palaeontological material be at any time encountered during mining, a palaeontologist should likewise be immediately contacted to sample and record such occurrence.</li> </ul>	<p>Environmental Control Officer.</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"> <li>❖ <u>Operational and expansion activities:</u> Drilling and blasting.</li> <li>❖ <u>Operational and expansion activities:</u> Excavation, processing, loading and hauling of aggregate.</li> </ul>	<p><u>Topography:</u></p> <ul style="list-style-type: none"> <li>❖ Alteration of the existing topography.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Earthmoving equipment to rehabilitate mined areas.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>❖ The excavated area must serve as a final depositing area for the placement of overburden.</li> <li>❖ Rocks and coarse material removed from the excavation must be dumped into the excavation.</li> <li>❖ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.</li> <li>❖ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium.</li> <li>❖ No waste may be permitted to be deposited in the excavations.</li> <li>❖ Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.</li> <li>❖ The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or</li> </ul>	<p>Applicable throughout site establishment-, operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>❖ Daily compliance monitoring by site management.</li> <li>❖ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

<b>SOURCE ACTIVITY</b>	<b>IMPACTS REQUIRING MONITORING PROGRAMMES</b>	<b>FUNCTIONAL REQUIREMENTS FOR MONITORING</b>	<b>ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)</b>	<b>MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS</b>
			<p>regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.</p> <ul style="list-style-type: none"> <li>❖ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.</li> </ul>	

**l) Indicate the frequency of the submission of the performance assessment/environmental audit report.**

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the period stipulated by the Environmental Authorisation.

**m) Environmental Awareness Plan**

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

Once the S102 application is approved, and the activities may commence, a copy of the BAR & updated EMPR will be handed to senior management for their perusal. Issues such as activity boundaries, waste management, and water principals 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 and the proposed expansion area.

**ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.**

The operations manager must ensure that he/she understands the EMPR, its requirement and commitments before commencement. An Environmental Control Officer needs to check compliance of the activities with 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 roads.
- ◆ Respect speed limits.

- ◆ Only use turn-around areas – no crisscrossing through undisturbed areas.
- ◆ Avoid unnecessary loud noises.
- ◆ Report or repair noisy vehicles.

❖ **Vegetation and Animal life:**

- ◆ Do not remove any plants or trees without approval of the site manager.
- ◆ Do not collect fire wood.
- ◆ Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
- ◆ Report any animal trapped in the work area.
- ◆ Do not set snares or raid nests for eggs or young.

❖ **Fire Management:**

- ◆ Do not light any fires on site, unless contained in a drum at demarcated area.
- ◆ Put cigarette butts in a rubbish bin.
- ◆ Do not smoke near gas, paints or petrol.
- ◆ Know the position of firefighting equipment.
- ◆ Report all fires.
- ◆ Don't burn waste or vegetation.

**n) Specific information required by the Competent Authority**

(Among others, confirm that the financial provision will be reviewed annually)

The Right Holder undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.



## 2. UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- 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, and
- d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein



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Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

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Name of Company:

29 August 2024

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Date:

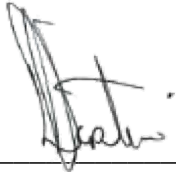
# UNDERTAKING

I, David Vorster.....the undersigned and duly authorised thereto  
by..... Transkei Quarries (Pty) Ltd... Butterworth.....

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

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

SIGNED at .....Butterworth..... this 30..... day of .....August..... 2024



\_\_\_\_\_  
SIGNATURE

**WITNESSES:**

- 1.....
- 2.....

\_\_\_\_\_  
Official use

**APPROVAL**

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

SIGNED at ..... this ..... day ..... 202.....

\_\_\_\_\_  
**REGIONAL MANAGER**

**EASTERN CAPE**

Undertaking/eg

**-END-**

# APPENDIX A1

## REGULATION 42 MINE PLAN

# APPENDIX A2

## 2024 SURVEYOR MINE PLAN

# APPENDIX B

## LOCALITY AND LAND USE MAP

# APPENDIX C

## SITE ACTIVITIES MAP & PLANT LAYOUT

# APPENDIX D

## REHABILITATION PLAN

# APPENDIX E1

## COMMENTS AND RESPONSE REPORT



# APPENDIX E2

## PROOF OF PUBLIC PARTICIPATION

# APPENDIX F

## SUPPORTING IMPACT ASSESSMENT

# APPENDIX G

## MOTIVATION LETTER FOR EXEMPTION FROM A HIA

# APPENDIX H

## CLOSURE PLAN

# APPENDIX I

## ALIEN INVADER PLANT SPECIES MANAGEMENT PLAN

# APPENDIX J

## PHOTOGRAPHS OF THE SITE

# APPENDIX K

## CV AND EXPERIENCE RECORD OF EAP