PROPOSED MINING ON A PORTION OF LESSEYTON FARM 81, QUEENSTOWN, EASTERN CAPE PROVINCE

FINAL BASIC ASSESSMENT REPORT
&
ENVIRONMENTAL MANAGEMENT PROGRAMME

MAY 2019

REFERENCE NUMBER: EC 30/5/1/3/2/10498 MP

PREPARED FOR:

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EXECUTIVE SUMMARY

The Applicant, Komani Quarry (Pty) Ltd, applied for environmental authorisation to expand the existing dolerite quarry, mined by Raumix Aggregates (Pty) Ltd at Queenstown Quarry on a portion of Lesseyton Farm No 81, Queenstown, Eastern Cape Province. The proposed mining area of the Applicant was chosen along the south, south-eastern boundary of the current mining right (EC 30/5/1/2/2/009 MR) on the same property. The mining permit (MP) footprint lays outside the mining right (MR) area, but will allow the Applicant to expand the existing dolerite quarry on the property. The Applicant entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd to win dolerite through opencast mining methods from the MP footprint, should the application be approved. In light of the said agreement, the Applicant appointed Raumix Aggregates (Pty) Ltd as the entity responsible for the financial and technical aspects of the proposed project, which will include, but not be limited to, the use of the existing equipment, infrastructure, labour force, and services at Queenstown Quarry.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended 2017) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources) when considering the environmental authorisation. This report, the Final Basic Assessment Report, forms part of the departmental requirements, and presents the final report of the Basic Assessment process.

Should the MP be granted and the mining of dolerite be allowed, the Komani Quarry project will comprise of activities that can be divided into 3 key phases namely the:

(1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area and required buffer no-go zones pertaining to areas of significant importance identified during the environmental impact assessment.

(2) *Operational phase* that is presently expected to entail the mining of dolerite from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to the existing crushing and screening processing plant of Queenstown Quarry where it will be screened to various sized stockpiles, before it is sold and transported from site to clients.

(3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources (DMR). The permit

holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMR in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

Preferred Site

Site Alternative 1, which entails the expansion of the existing dolerite quarry of Queenstown Quarry, was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the preferred and only viable site alternative.

Project Alternatives

The use of the existing infrastructure at Queenstown Quarry was compared to the establishment of crushing and screening infrastructure within the Komani Quarry footprint, during the planning phase of the project. The assessment showed that the use of the existing crushing and screening infrastructure of Queenstown Quarry is deemed to be the most viable and preferred project alternative.

No-go Alternative

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. The hard rock to be crushed and screened on site will be used for building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant will not be able to expand the existing dolerite quarry and utilise the mineral resource.

Public Participation Process

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents/pamphlets that were sent directly to the contact persons. An advertisement was placed in The Rep, and three (two English and one Xhosa) on-site notices were placed at conspicuous places. A 30-days commenting period was allowed which expired on 12 April 2019. In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report was compiled and distributed for perusal by the I&AP's and stakeholders. A 30-day commenting period, ending 20 May 2019, was allowed for perusal of the documentation and submission of comments. No additional comments were received on the DBAR that could be incorporated into the Final Basic Assessment Report (FBAR).

Basic Assessment Report

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

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

Mining and Biodiversity Conservation Areas:

- The environmental impact assessment identified a critical biodiversity area (CBA 2) that extends through the southern boundary of the proposed mining area. This area is also highlighted in terms of the Mining and Biodiversity Guideline as an area of high biodiversity importance with a corresponding rating of high risk for mining.
- In order to preserve the CBA and prevent mining having a negative impact on the biodiversity sensitive area, it is proposed that a 20 m no-go buffer be set from the border of the CBA line in which no mining may take place.

Protected and/or Red Listed Plant Species:

- Numerous *Aloe ferox* trees are found throughout the site that are protected in terms of CITES.
- Cycads (most likely white-haired cycads *Encephalartos friderici-guilielmi*) were noted within the proposed mining footprint.
- The Applicant will have to apply for a permit for the removal and relocation of all protected plants that will be affected, and will have to obtain the written permission of the landowner to do so.
- It is proposed that a qualified botanist conduct a plant identification walkthrough with site management to identify the plants in need of a destruction/removal permit. Bush clearance must be delayed until the DEDEAT-EC issue the plant permits and the recommendations of the specialist has been implemented.

Other Site Specific Environmental Aspects:

- Komani quarry will be cut into the northern slope of the hill. Due to the nature of the activity, the topography of the hill will be altered in that a depression will be created with stepped side walls as mining progress. The rehabilitation option (upon closure) is to render the quarry safe and leave it as a minor landscape feature.
- The viewshed analysis showed that the proposed visual impact will be high towards the north, north-west and north-east due to the elevation of the earmarked area. It is therefore anticipated that the proposed mine will be highly visible within the short to medium distance zone; however,

as the distance between the proposed development and the observer increases the visual impact will decrease. To the south, south-west and south-east the visual impact will be negligible as the mining area will be screened by the hill.

- As the prevalent wind direction is in an easterly direction, the hill will screen dust generated at Komani quarry from the operations/residents on the opposite side. Should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low-medium significance.
- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place in a pristine environment, and the impact is therefore deemed compatible with the current operations and of low significance.
- There are no rivers, streams or wetlands within close proximity of the mining area. As Komani Quarry (Pty) Ltd entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd any water to be used at the proposed mining area (mainly for dust suppression purposes) will be obtained from Queenstown Quarry in accordance with their water use licence.
- The fauna at the site will not be impacted on by the proposed mining activity as they will be able to move away or through the site, without being harmed.
- No sites of archaeological or cultural importance were identified during the site inspection.
- As the proposed mining footprint will be developed in a greenfield area, as extension of the existing dolerite quarry, no infrastructure exist on site that will be impacted on.

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

Environmental Management Programme (EMPR)

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

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both for sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R 163 711.05.

LIST OF ABBREVIATIONS

BID	Background Information Document
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DBAR	Draft Basic Assessment Report
DEDEAT-EC	Department of Economic Development, Environmental Affairs and Tourism – Eastern Cape Province
DMR	Department of Mineral and Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EC	Eastern Cape Province
ECO	Environmental Control Officer
ECNEO	Eastern Cape Nature and Environmental Ordinance 19 of 1974
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EMLM	Enoch Mgijima Local Municipality
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
FBAR	Final Basic Assessment Report
GDP	Gross Domestic Product
GNR	Government Notice
Gs17	Tarkastad Montane Shrubland
I&AP's	Interested and Affected Parties
IUCN	International Union for Conservation of Nature
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
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)
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
S1	Site Alternative 1
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBE	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WMA	Water Management Area

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ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: Komani Quarry (Pty) Ltd

TEL NO: 051 433 2964/5
FAX NO: 086 661 4441
POSTAL ADDRESS: P.O. Box 13057, Arboretum, Bloemfontein
PHYSICAL ADDRESS: Hillside 2830, Bloemfontein, Free State Province
FILE REFERENCE NUMBER SAMRAD: EC 30/5/1/3/2/10498 MP

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

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

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

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

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

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

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

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

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

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

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the aforementioned Act. Komani Quarry (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Komani Quarry (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended April 2017) (EIA Regulations).

i) Details of the EAP

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

ii) Expertise of the EAP.

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

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

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

Ms Fouche has fourteen years' experience in doing Environmental Impact Assessments and Mining Applications in South Africa. See Appendix L.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	Lesseyton Farm No 81
Application area (Ha)	4.9 ha
Magisterial district:	Queenstown
Distance and direction from the nearest town	±9km west of Queenstown central. Using Carthcart Street/N6/R61, head west for approximately 7km. The entrance to the proposed mining area is found on the left of the road, as indicated by the "Raumix Queenstown Quarry" sign.
21 digit Surveyor General Code for each farm portion	C06200000000081000000

c) Locality map

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

The requested map is attached as Appendix B.

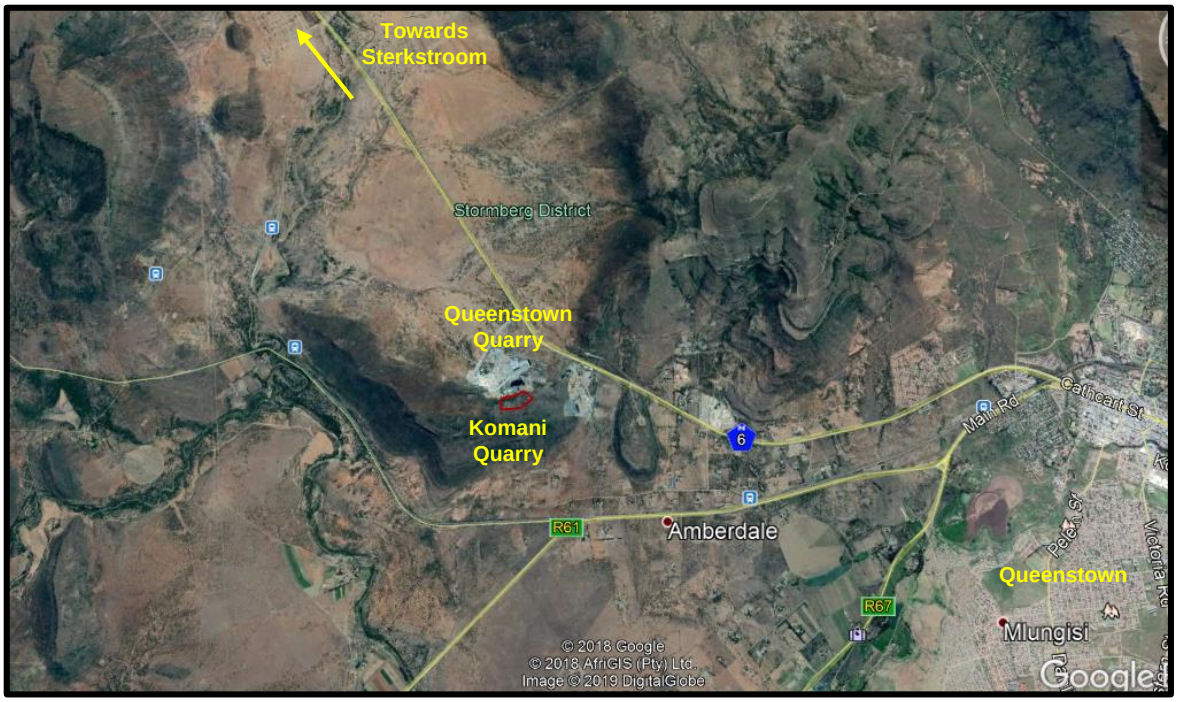

Figure 1: Satellite view of the proposed mining permit area (red polygon) of Komani Quarry (Pty) Ltd (image obtained from Google Earth).

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

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

The Applicant, Komani Quarry (Pty) Ltd (herein after referred to as "the Applicant"), applied for environmental authorisation to expand the existing dolerite quarry, mined by Raumix Aggregates (Pty) Ltd at Queenstown Quarry, on a portion of Lesseyton Farm No 81, Queenstown, Eastern Cape Province.

The proposed mining area of the Applicant (herein after referred to as "Komani Quarry"), was chosen along the south, south-eastern boundary of the current mining right (EC 30/5/1/2/2/009 MR) on the same property. The mining permit (MP) footprint lays outside the mining right (MR) area, but will allow the Applicant to expand the existing dolerite quarry on the property.

The Applicant entered into a mining and offtake agreement (see agreement attached as Appendix F3) with Raumix Aggregates (Pty) Ltd to win dolerite through opencast mining methods from the MP footprint, should the application be approved. In light of the said agreement, the Applicant appointed Raumix Aggregates (Pty) Ltd as the entity responsible for the financial and technical aspects of the proposed project, which will include, but not be limited to, the use of the existing equipment, infrastructure, labour force, and services at Queenstown Quarry.

The proposed MP project will entail the:

- stripping and stockpiling of topsoil from the proposed mining footprint area;
- blasting and excavation of the mining area;
- crushing and screening of the loosened material at the existing processing plant of Queenstown Quarry; and
- stockpiling the product, at the existing Queenstown Quarry stockpile area, until sold.

As the existing infrastructure of Queenstown Quarry can be used during the operational phase of the project, the Applicant will not establish infrastructure within the proposed 4.9 ha mining area. See attached as Appendix C a copy of the site activities map for the proposed project.

i) Listed and specified activities

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

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	4.9 ha	N/A	Not listed
Stripping and stockpiling of topsoil from the proposed mining area.	±3.7 ha	X	GNR 327 LN 1 Activity 27, 28.
Drilling and blasting.	±3.7 ha	X	GNR 327 LN 1 Activity 21, 28.
Excavation, loading and hauling to the existing Queenstown Quarry processing area.	±3.7 ha	X	GNR 327 LN 1 Activity 21, 28.
Sloping and landscaping upon closure of the mining area.	±3.7 ha	X	GNR 327 LN 1 Activity 22
Replacing the topsoil and vegetating the disturbed area.	±3.7 ha	X	GNR 327 LN 1 Activity 22

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)

As mentioned earlier, the Applicant applied for environmental authorisation to expand the existing dolerite quarry, mined by Raumix Aggregates (Pty) Ltd at Queenstown Quarry, on a portion of Lesseyton Farm No 81, Queenstown, Eastern Cape Province.

Table 3 lists the GPS coordinates of the proposed mining area as shown on the Regulation 2.2 Mine Plan attached as Appendix A.

Table 3: GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	31º53'45.701"	26º47'41.399"	-31.896028º	26.794833º
B	31º53'44.686"	26º47'49.909"	-31.895746º	26.797197º
C	31º53'41.399"	26º47'54.802"	-31.894833º	26.798556º
D	31º53'38.000"	26º47'50.899"	-31.893889º	26.797472º
E	31º53'39.998"	26º47'48.001"	-31.894444º	26.796667º
F	31º53'40.999"	26º47'40.999"	-31.894722º	26.794722º

The figure below shows the location of the MP application area in relation to the MR footprint.

Figure 2: Satellite view showing the location of the MP application area (red polygon) in relation to the MR footprint (yellow polygon).

As a result of the close proximity of the MP footprint to the MR area, the Applicant appointed Raumix Aggregates (Pty) Ltd as the entity responsible for the financial and technical aspects of the proposed project, which will include, but not be limited to, the use of the existing equipment, infrastructure, labour force, and services at Queenstown Quarry (see agreement to this effect attached as Appendix F3).

Should the MP be granted and the mining of dolerite aggregate be allowed, the proposed project will comprise of activities that can be divided into 3 key phases (discussed in more detail below) namely the:

(1) *Site establishment/construction phase* which will involve the demarcation of the permitted mining area and required buffer no-go zones pertaining to areas of significant importance (such as the critical biodiversity area (CBA)) identified during the environmental impact assessment. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery.

(2) *Operational phase* that is presently expected to entail the mining of dolerite from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to the existing crushing and screening processing plant of Queenstown Quarry where it will be screened to various sized stockpiles, before it is sold and transported from site to clients.

(3) *Decommissioning phase* which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources (DMR). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMR in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

As mentioned earlier, should the proposed activity be authorised, Komani Quarry will make use of the existing infrastructure at Queenstown Quarry, and therefore no new infrastructure will be established within the MP footprint.

PHASES OF THE PROJECT

1. *Site Establishment Phase:*

   Site establishment entails the demarcation of the mining boundaries and identified sensitive areas, clearance of vegetation, and stripping and stockpiling of topsoil to access the mineral as detailed below:

❖ **Demarcation of Mining Boundaries:**

Pursuant to receipt of an Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area has to be demarcated. The project specific area to be demarcated includes a 20 m no-go buffer area from the boundary of the CBA that extends into the proposed mining footprint (see *Part A (h)(iv)(1)(c) - Site Specific Mining and Biodiversity Conservation Areas* for detail in this regard).

❖ **Clearing of Vegetation:**

The vegetation type of the earmarked footprint is classified as Tarkastad Montane Shrubland (Gs 17). The vegetation cover of the mining footprint is in a natural to near natural state, and therefore the proposed activity will require the removal of indigenous vegetation during the site establishment- and operational phases to access the mineral.

The vegetation cover mainly consists of a well-established semi-open mixed shrubland within which the presence of cycads (most likely white-haired cycads *Encephalartos friderici-guilielmi*) were noted. In South Africa, the indigenous cycad species is protected under provincial legislation and/or the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004) (NEM:BA). Destruction/removal of these plants, in the Eastern Cape, therefore requires a permit from the Department of Economic Development, Environmental Affairs and Tourism – Eastern Cape (DEDEAT-EC).

In the circumstance, upon receipt of the EA and prior to site establishment, a qualified botanist will conduct a plant identification walkthrough with site management to identify the plants in need of a destruction/removal permit. Bush clearance will only commence upon receipt of the destruction/removal plant permit. The environmental control officer (ECO) will assess the compliance of the permit holder with the conditions of the plant permit.

❖ **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, or at Queenstown Quarry (upon mutual agreement thereto), to be replaced during

the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 1.5 m in height in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

- **Access Road:**

The proposed mining area will be reached via the existing access road to Queenstown Quarry, making use of the existing internal/haul roads to access the material within the mining area. Haul roads into the excavation will be extended as mining progresses. The haul roads to be established will be below the threshold of the NEMA, 1998 EIA Regulations, 2017.

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

- **Introduction of Mining Machinery:**

As the existing infrastructure of Queenstown Quarry can be used during the operational phase of the project, the Applicant will not establish any permanent

infrastructure within the proposed 4.9 ha mining area. Mining machinery that will operate within the footprint is expected to consist of at least the following:

- Excavators;
- Loaders;
- ADT trucks; and
- Drilling equipment.

2. *Operational Phase:*

The Applicant intents to loosen the hard rock of the quarry by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The rock will then be delivered to the existing crushing and screening plant of Queenstown Quarry where it will be reduced to various sized aggregate. The screened material will be delivered to various size category stockpiles (at Queenstown Quarry). Transportation of the final product will be from the stockpile area to the end point by means of trucks. The existing infrastructure and labour force of Queenstown Quarry will be used for the duration of the operational phase.

❖ <u>Water Use:</u>

Any water required for the implementation of the project will be drawn from the existing quarry pit (Queenstown Quarry), while potable water will be pumped from the existing borehole on the property. As the processing of the dolerite will be done at the existing screening and crushing plant of Queenstown Quarry, the water requirements for the project will mainly consist of water needed for dust suppression on the haul roads.

❖ <u>Waste Handling:</u>

Due to the nature of the project and the fact that no infrastructure will be established on site, very little if any general waste will be generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be incorporated into the existing waste disposal system of Queenstown Quarry.

Due to the nature of the project very little generation of hazardous waste is expected. Hazardous waste will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and contaminated soil will be contained

in designated hazardous waste containers to be removed daily to the hazardous waste storage area at Queenstown Quarry from where it will be disposed of as part of the hazardous waste of Queenstown Quarry by a registered hazardous waste handling contractor.

- Servicing and Maintenance:

  No workshop or servicing area will be established within the boundaries of the permitted area. Any maintenance/services will be performed at the existing workshop of Queenstown Quarry.

Decommissioning Phase:

Due to the nature of the project, no buildings/infrastructure will have to be demolished upon closure of the mining area. The closure objectives are for the quarry pit to be rendered safe, and to return the disturbed areas to agricultural use. Benches will be built with oversize rock and 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 (see Appendix I for the Closure Plan).

The decommissioning activities will consist of the following:

- Sloping and landscaping the mining area;
- Replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling the invasive plant species.

The future land use of the proposed area will be agriculture. Upon the replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

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

- Rehabilitation of the excavated area:

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

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

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

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order 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 permit holder is required to submit a closure application to the Department of Mineral Resources in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Eastern Cape Nature and Environmental Ordinance 19 of 1974 (as amended).	Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – *Site Specific Groundcover.*	The mitigation measures proposed for the site includes specifications of the ECNEO, 1974.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ❖ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMR-EC. Ref No: EC 30/5/1/3/2/10498 MP

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) ❖ GNR 327 Listing Notice 1 Activity 21 ❖ GNR 327 Listing Notice 1 Activity 22 ❖ GNR 327 Listing Notice 1 Activity 27 ❖ GNR 327 Listing Notice 1 Activity 28	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMR-EC. Ref No: EC 30/5/1/3/2/10498 MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Dust Handling*.	The mitigation measures proposed for the site take into account the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM:WA.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment*	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The mitigation measures proposed for the site includes specifications of the NWA, 1998.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations

f) Need and desirability of the proposed activities.

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

The Queenstown Quarry dolerite pit has been exhausted, and extending the quarry will result in it spreading across the approved mining right border. Komani Quarry (Pty) Ltd identified the need for dolerite aggregate in the local industry and in the circumstance entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd to expand the existing dolerite quarry into the proposed 4. 9 ha mining permit area.

It is proposed that the existing labour component (of Queenstown Quarry) will be involved in the mining activity. Including, but not limited, to site management, administration, supervisors, operators, cleaners and general labourers. The proposed operation will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area.

The dolerite mined from the earmarked area will be sold to the building, construction and road maintenance industry in the vicinity of the property. The mining of the aggregate from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.

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

The proposed site earmarked for the mining of dolerite aggregate will entail the expansion of the existing Queenstown quarry pit within the boundaries of the proposed GPS coordinates (listed earlier). As no permanent infrastructure will be established, the production rate will dictate the layout of the proposed footprint area.

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

- The Queenstown Quarry dolerite pit cannot be expanded without crossing over the approved mining right boundaries. In the circumstance the Komani Quarry proposal allows for the continued winning of dolerite from the area, expanding the existing pit into the proposed 4.9 ha mining footprint.

- The Komani Quarry footprint cannot be moved to the north-west as it will then enter into the existing mining right area of Queenstown Quarry.

- The position of the MP area is believed to be the most practical alternative as the overburden layer is relatively shallow, the dolerite is of good grade, and the area can be accessed from the existing mining area. Moving the mining area to the east or west takes it from the optimal dolerite source and into areas with deeper overburden.

- In light of the mining and offset agreement between the Applicant and Raumix Aggregates (Pty) Ltd the proposed operation can be implemented without the need for a separate processing- and stockpiling area. The existing infrastructure, within close proximity to the MP area, can be used.

- Should the Applicant adhere to the proposed 20 m no-go buffer zone from the boundary of the critical biodiversity area (CBA), the activity will not affect any biodiversity sensitive areas. In the circumstance the presence of the CBA creates a mandatory no-go area, and therefore the mining area cannot be moved to the south, south-east.

- The cycads, and other protected plant species, present in the proposed footprint will be relocated (as far as possible) by a suitably qualified contractor upon receipt of the destruction/relocation plant permit from DEDEAT-EC.

During the environmental impact assessment process the feasibility of the proposed site alternative was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant a site or project alternative. The outcome of the

assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

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

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

i) Details of the development footprint alternatives considered.

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

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

Site Alternative 1 (S1) (Preferred Site Alternative): Site Alternative 1 entails the expansion of the existing Queenstown Quarry dolerite pit within the GPS coordinates as listed in the table below.

Table 5: GPS Coordinates of Site Alternative 1 (preferred site alternative)

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	31º53'45.701"	26º47'41.399"	-31.896028º	26.794833º
B	31º53'44.686"	26º47'49.909"	-31.895746º	26.797197º
C	31º53'41.399"	26º47'54.802"	-31.894833º	26.798556º
D	31º53'38.000"	26º47'50.899"	-31.893889º	26.797472º
E	31º53'39.998"	26º47'48.001"	-31.894444º	26.796667º
F	31º53'40.999"	26º47'40.999"	-31.894722º	26.794722º

Figure 4: Satellite view showing the position of Site Alternative 1 (red polygon) within the surrounding landscape.

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

- The Queenstown Quarry dolerite pit cannot be expanded without crossing over the approved mining right boundaries. In the circumstance the Komani Quarry proposal allows for the continued winning of dolerite from the area, expanding the existing pit into the proposed 4.9 ha mining footprint.

- The Komani Quarry footprint cannot be moved to the north-west as it will then enter into the existing mining right area of Queenstown Quarry.

- The position of the MP area is believed to be the most practical alternative as the overburden layer is relatively shallow, the dolerite is of good grade, and the area can be access from the existing mining area. Moving the mining area to the east or west takes it from the optimal dolerite source and into areas with deeper overburden.

- In light of the mining and offset agreement between the Applicant and Raumix Aggregates (Pty) Ltd the proposed operation can be implemented without the need for a separate processing- and stockpiling area. The existing infrastructure, within close proximity to the MP area, can be used.

- Should the Applicant adhere to the proposed 20 m buffer no-go zone from the boundary of the critical biodiversity area (CBA), the activity will not affect any biodiversity sensitive areas. In the circumstance the presence of the CBA creates a mandatory no-go area, and therefore the mining area cannot be moved to the south, south-east.

- The cycads, and other protected plant species, present in the proposed footprint area will be relocated (as far as possible) by a suitably qualified contractor upon receipt of the destruction/relocation plant permit from DEDEAT-EC.

Project Alternative: The use of the existing infrastructure at Queenstown Quarry was compared to establishing crushing and screening infrastructure within the Komani Quarry footprint, during the planning phase of the project. The use of the existing Queenstown Quarry infrastructure will result in the following positive aspects:

- It will lower the initial setup- and production cost of the permit holder;
- Present the permit holder with a larger footprint for the mining of dolerite, as no area will be lost to infrastructure development;
- Lessen the impact on the receiving environment both directly (e.g. dust and noise generation, risk of pollution, visual impact), and indirectly (e.g. need for electricity, water and maintenance services);
- Processing related impacts will be contained to a designated area on the property (existing processing plant); and
- Without the need to decommission mining/processing related infrastructure, the rehabilitation of the Komani Quarry footprint upon closure will be less expansive.

In light of the above, the use of the existing crushing and screening infrastructure of Queenstown Quarry is deemed to be the most viable and preferred project alternative.

No-go Alternative: The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered. The hard rock to be crushed and screened on site will be used for building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant will not be able to expand the existing dolerite quarry and utilise the mineral resource.

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

- ❖ the Applicant will not be able to utilize the dolerite deposit available within the proposed mining area, or supply in the demand of the industry;
- ❖ the application, if approved, would allow the Applicant to legally expand the existing dolerite quarry, as well as provide continued employment opportunities to the Queenstown Quarry labour force. Should the no-go alternative be followed these opportunities will be lost to the Applicant, employees and clients.

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.

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents/pamphlets that were sent or hand delivered directly to the contact persons. A 30-days commenting period was allowed which expired on 12 April 2019. The following I&AP's and stakeholders were informed of the project:

Table 6: List of the I&AP's and stakeholders that were notified of the proposed Komani Quarry project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner: ❖ Department of Rural Development and Agrarian Reform care of the Department of Public Works. **Surrounding landowners & lawful occupiers:** ❖ Mr Greyvenstein (Portion 0 (Remaining Extent) of Doornhoek 177) ❖ Mr T Visser (Portion 0 (Remaining Extent) of Weltevreeden North 175) ❖ Mr I McEwan (Portion 44 (Remaining Extent) of Weltevreeden North 175) ❖ Mr M Green (Portion 31 of Weltevreeden North 175) ❖ Mr L Nel (Portion 46 of Weltevreeden North 175) ❖ Mr A Green (Portion 38 of Weltevreeden North 175) ❖ Mrs Y Edwards (Portion 8 of Adanja 174 ❖ Mr L Moorcroft (Portion 0 (Remaining Extent) of Providence 149) ❖ Department of Public Works (Portion 1 of Bombani 62 & Portion 0 (Remaining Extent) of Tabata 63) ❖ Lesseyton Community	❖ Chris Hani District Municipality, ❖ Department of Economic Development, Environmental Affairs and Tourism, ❖ Department of Education, ❖ Department of Labour, ❖ Department of Public Works, ❖ Department of Rural Development and Land Reform, ❖ Department of Transport, ❖ Department of Water and Sanitation, ❖ Enoch Mgijima Local Municipal Ward Councillor (Ward 10), ❖ Enoch Mgijima Local Municipal Ward Councillor (Ward 18), ❖ Enoch Mgijima Local Municipality, ❖ SANRAL, and ❖ South African Heritage Resources Agency.

I&AP'S AND STAKEHOLDERS THAT REGISTERED DURING THE INITIAL NOTIFICATION PERIOD
❖ SANRAL; and ❖ Mr I McEwan (Civil and General CC)

An advertisement was placed in The Rep on 8 March 2019 and on-site notices were placed on 8 March 2019 at the entrance to Queenstown Quarry (English notice), the municipal offices in Queenstown (English notice), and the community centre of Lesseyton (Xhosa notice). The advertisement, information pamphlet, background information document (BID) and on-site notices invited the recipients to register/comment on the project before 12 April 2019.

In accordance with the timeframes stipulated in the EIA Regulations of December 2014 (amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report (DBAR) was compiled and distributed for perusal by the I&AP's and stakeholders listed above. DBAR notices were sent to I&AP's and stakeholders with email access, posted or hand delivered to the persons without email, and a hard copy of the DBAR was delivered to the Lesseyton community representative. Electronic copies of the DBAR was sent to registered I&AP's and stakeholders. A 30-day commenting period, ending 20 May 2019, was allowed for perusal of the documentation and submission of comments. No additional comments were received on the DBAR that could be incorporated into the Final Basic Assessment Report (FBAR).

iii) Summary of issues raised by I&APs

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

Table 7: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**				
Landowner/s					
Department of Rural Development and Agrarian Reform care of the Department of Public Works.	X	To date no comments were received.			
Lawful occupier/s of the land					
Lesseyton Community care of the following community leaders or representatives: ❖ T Bongani ❖ L Buller ❖ A Christin ❖ M Joka ❖ X Joka ❖ Z Louw ❖ M Ma-Awu ❖ N Matyen ❖ A Mbalula ❖ K Mbalula ❖ T Natlanin ❖ N Nganjane ❖ F Ngonyama ❖ ZB Tonga ❖ TO Zibaya ❖ Z Zibaya	X	To date no comments were received.			
Landowners or lawful occupiers on adjacent properties	**X**				

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Mr Greyvenstein adjacent landowner of: ❖ Portion 0 (Remaining Extent) of the farm Doornhoek 177	X	No comments recevied	N/A	N/A	N/A
Mr T Visser adjacent landowner of: ❖ Portion 0 (Remaining Extent) of the farm Weltevreeden North 175	X	No comments recevied	N/A	N/A	N/A
Mr I McEwan adjacent landowner of: ❖ Portion 44 (Remaining Extent) of the farm Weltevreeden North 175	X	11 April 2019	Mr McEwan advised that they do not object to the proposed project, but submitted the following comments: ❖ Due to the proximity of the mining area to our offices all blasting should be done according to the limits of the USBM standards. This will limit the effects of the blasting on our office structures. ❖ A vibro recorder to be used to record all blasts. ❖ We must be notified in advance of any blasting to take place.	Greenmined acknowledged receipt of the comments on 11 April 2019 and incorporated Mr McEwan's comments into the DBAR.	Part A(1)(h)(viii) The possible mititgation measures that could be applied and the level of risk – management of health and safety risks. Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR. Part B(1)(d)(iv) Impacts to be mitigated in their respective phases.
Mr M Green adjacent landowner of: ❖ Portion 31 of the farm Weltevreeden North 175	X	No comments recevied	N/A	N/A	N/A
Mr L Nel adjacent landowner of ❖ Portion 46 of the farm Weltevreeden North 175	X	No comments recevied	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Mrs Y Edwards adjacent landowner of: ❖ Portion 8 of the farm Adanja 174	X	No comments recevied	N/A	N/A	N/A
Mr L Moorcroft adjacent landowner of: ❖ Portion 0 (Remaining Extent) of the farm Providence 149	X	No comments recevied	N/A	N/A	N/A
Department of Public Works adjacent landowner of: ❖ Portion 1 of the farm Bombani 62 ❖ Portion 0 (Remaining Extent) of the farm Tabata 63	X	No comments recevied	N/A	N/A	N/A
Lesseyton Community owner of various properties on/directly adjacent to the Lesseyton 81	X	No comments recevied	N/A	N/A	N/A
Transnet Ltd adjacent landowner of: ❖ Portion 0 of the farm Lesseytonrail 3 84	X	No comments recevied	N/A	N/A	N/A
Municipal councillor					
Cllr. JC de Wet (Ward 10)	X	11 March 2019	Mr De Wet responded that the proposed development falls within Ward 18 and not Ward 10.	Greenmined acknowledged receipt of the corresondence from Mr De Wet and confirmed that councillor Mlindazwe (Ward 18) has been informed of the project.	N/A
Cllr. UC Mlindazwe (Ward 18)	X	To date no comments were received.			
Municipality					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Enoch Mgijima Local Municipality	X	24 April 2019	Ms Fatuse requested a copy of the DBAR on behalf of the EMLM.	Greenmined sent an electronic copy of the DBAR to the EMLM on 24 April 2019, and Ms Fatuse confirmed that the document will be downloaded from the Greenmined website. To date no additional comments were received from EMLM.	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Education	X	No comments received	N/A	N/A	N/A
Department of Transport	X	No comments received	N/A	N/A	N/A
SANRAL	X	1 April 2019	Me Chumisa Njingana submitted the comments as listed below on behalf of SANRAL.	Greenmined acknowledged receipt of the comments on 2 April 2019 and responded as listed below.	Part A(1)(h)(viii) The possible mititgation measures that could be applied and the level of risk – mitigation measurs proposed by SANRAL. Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
					Part B(1)(d)(iv) Impacts to be mitigated in their respective phases.

Comments received from SANRAL on 1 April 2019:

"The South African Roads Agency SOC Limited (SANRAL) has the following comments with regards to the above:

- No structure shall be erected closer than 30 meters from the national road reserve fence and 500 metres from any point of intersection.
- If access is required from the National Road N6, an approval from SANRAL is required, otherwise access can be obtained from the nearest numbered route.
- The developer will accordingly be required to establish and maintain a pedestrian proof brick/concrete wall along the full extent of the development to prevent pedestrian access onto the N6.
- Only where drainage crossess the boundary wall, a non-solid boundary is accepted. Any future negative impacts in this regard will be considered to be the responsibility of the developer to correct.
- SANRAL shall not be held liable should it be found at any future time that noise emanating from the national road, presents a problem in the development adjacent to the national road.
- All storm water dischareged or diverted from the national road shall be received and disposed of. A drainage plan has to be submitted to this office for consideration.
- No adevertising shall be directed r displayed to be visible fro the national road during the development or construction othis development. All advertsing shall be subject to SANRAL's approval.
- A formal application together with the plans of the proposed estabment must be submitted to SANRAL for approval.
- Construction of all work may only commenc after a writen approval has been obtained by SANRAL."

Response from Greenmined to SANRAL on 2 April 2019:

Greenmined acknowledged receipt of the comments and confirmed that SANRAL was registered as an I&AP on the project. Further to this Greenmined asked Me Njingana to clarify some of the above listed conditions:

"With reference to the Komani Quarry SANRAL comments, can you please provide clarity on the following points:

- *The developer will accordingly be required to establish and maintain a pedestrian proof brick/concrete wall along the full extent of the development to prevent pedestrian access onto the N6.*

  The proposed mining area lays ±580 m south-west from the N6, and due to the topography of the landscape direct access to the proposed mining area from the N6 is highly unlikely. The current mining area of Queenstown Quarry is fenced from the road (N6) by an existing cattle fence. Access to the proposed mining area will be from the existing turnoff from the N6 into Queenstown Quarry (existing formal access) and no new access will be required (see satellite image attached). In light of this, can you please clarify whether, and if so why, the above listed comment is applicable to this specific project?

- *A formal application together with the plans of the proposed establishment must be submitted to SANRAL for approval.*

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
In light of the above, and the fact that the mining area will be reached via an existing entrance from the N6 can you please indicate what application this comment refers to? And if applicable to this application, can you please provide me with a copy of the application form? We look forward to your response. Please do not hesitate to contact me in the event of any uncertainties."				
Response from SANRAL on 12 April 2019: "With regards to the access from an existing access, then the wall will not apply, however an application needs to be submitted as the already existing access was not made to accommodate the proposed quarry."				
Communities	No community other than the Lesseyton Community were identified within the study area.			
Dept. Land Affairs				
Department of Rural Development and Land Reform	X	No comments received	N/A	N/A	N/A
Traditional Leaders	N/A				
Dept. Environmental Affairs				
Department of Economic Development, Environmental Affairs and Tourism.	X	No comments received	N/A	N/A	N/A
Other Competent Authorities affected				
Chris Hani District Municipality	X	No comments received	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Department of Labour	X	No comments received	N/A	N/A	N/A
Department of Rural Development and Land Reform	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A
OTHER AFFECTED PARTIES					
N/A					
INTERESTED PARTIES					
Mr A Green landowner of: ❖ Portion 38 of the farm Weltevreeden North 175		No comments received	N/A	N/A	N/A

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

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

PHYSICAL ENVIRONMENT

CLIMATE

According to the saexplorer website, Queenstown normally receives about 399 mm of rain per year, with most rainfall occurring mainly during summer. The chart below (lower left) shows the average rainfall values for Queenstown per month. It receives the lowest rainfall (3 mm) in July and the highest (67 mm) in March. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Queenstown range from 16.8°C in June to 27.6°C in January. The region is the coldest during July when the mercury drops to -2°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures.

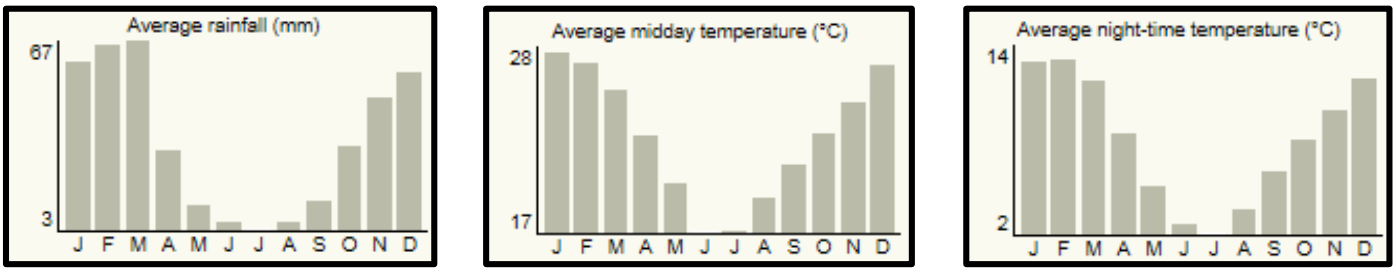

Figure 5: Statistical representation of the average rainfall, midday temperatures and night-time temperatures for the Queenstown region (Chart obtained from saexplorer).

The wind patterns in Queenstown are highly influenced by seasonal variations. According to the wind statistics as presented on Windfinder.com the prevalent wind direction distribution of Queenstown is in an eastern direction from December to March. From April the wind changes direction from due east to west-north-west until September when it gradually returns to its eastern trend. The figures below presents the wind direction distribution in % for the greater Queenstown area.

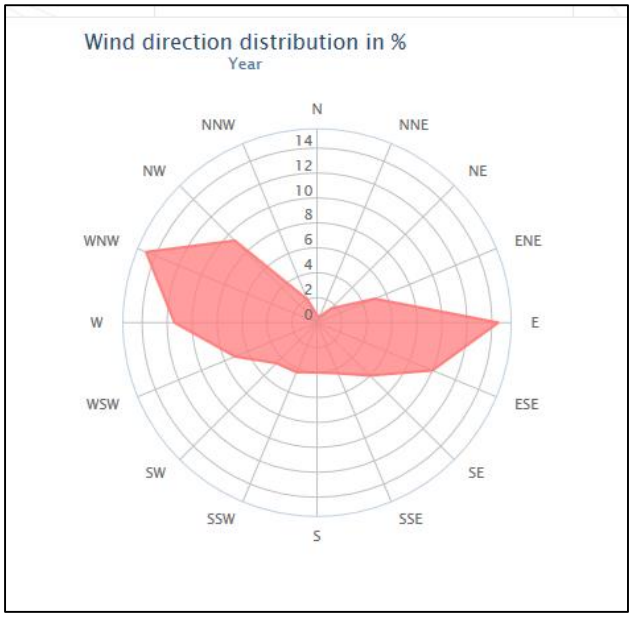

Figure 6: Annual wind direction distribution in % for the Queenstown area, where the furthest point to the west-north-west indicates 14.8%/year, and the furthest point to the east indicates 14.5%/year. *(Image obtained from www.windfinder.com/windstatistics/queenstown)*

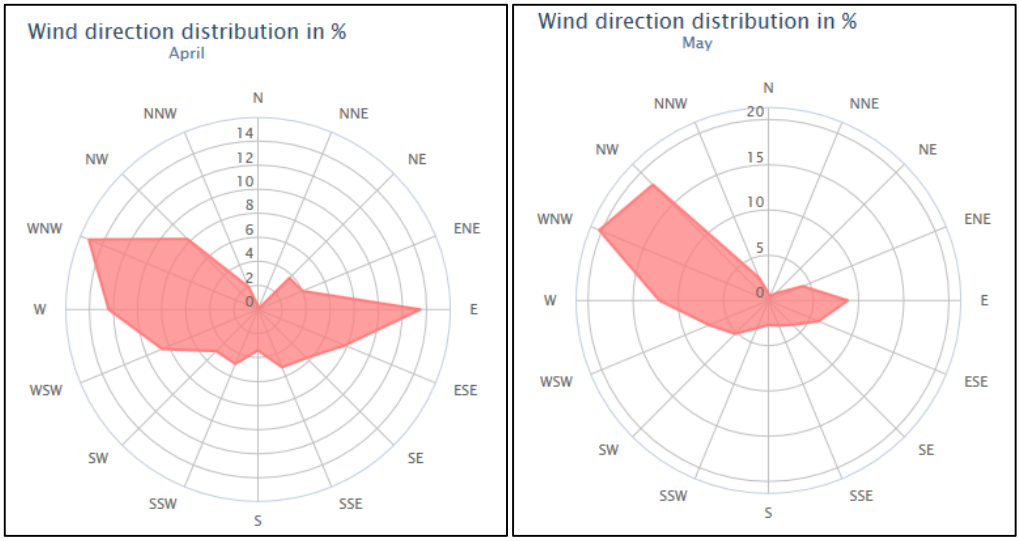

Figure 7: Wind direction distribution in % for the Queenstown area where the first wind rose shows the data for the month of April (15.2% WNW; 13.5% E), and the second frame indicates the data of May (20.3% WNW; 18.1% NW; 8.8% E).
(Images obtained from www.windfinder.com/windstatistics/queenstown)

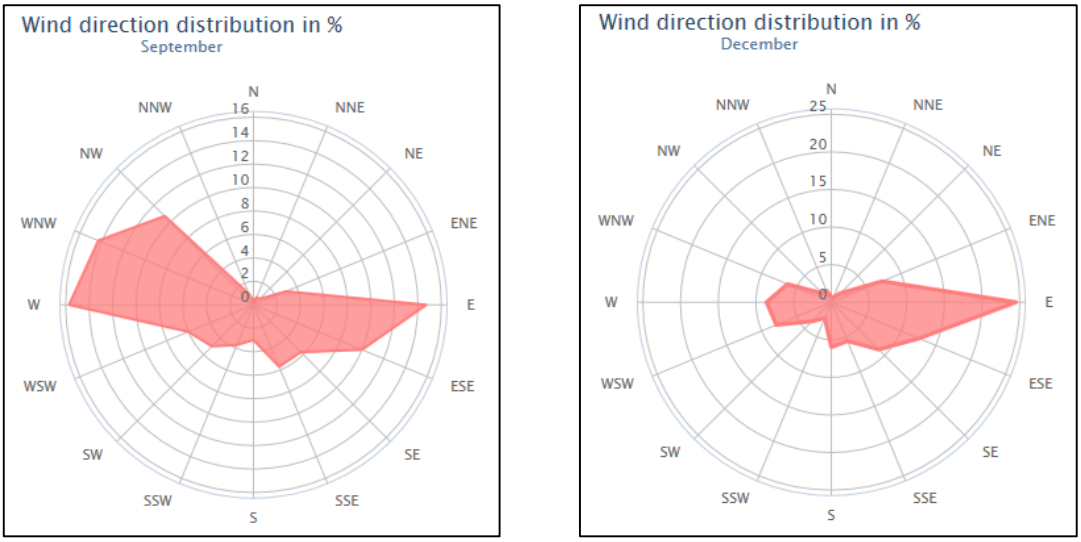

Figure 8: Wind direction distribution in % for the Queenstown area where the first frame shows the wind data of September (15.7% W; 14.4% WNW; 10.7% NW; 14.7% E), and the second image depicts the data of December (24.5% E; 8.6% W).
(Images obtained from www.windfinder.com/windstatistics/queenstown)

TOPOGRAPHY

The natural topography of the area surrounding Queenstown Quarry can be described as undulating hills with marked doleritic outcrops “koppies”.

The topography at Queenstown Quarry (existing operation) varies between 1 207 mamsl in the south-east (being the highest point) and 1 138 mamsl in the north-west (the lowest point being in the vicinity of the main entrance to the quarry). The current topography is largely unnatural as a result of the mining activities that resulted in steep gradients; most obvious on the sides of the pits.

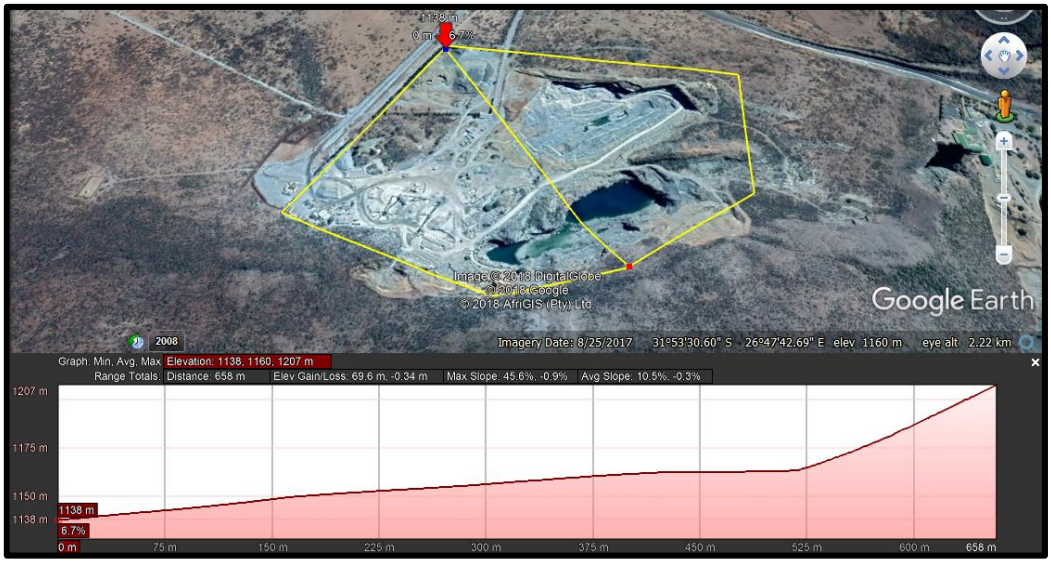

Figure 9: Elevation profile of the existing operation at Queenstown Quarry (Image obtained from Google Earth).

VISUAL CHARACTERISTICS

The visual character of the surrounding areas mainly comprises of an agricultural setting, intersected by road, rail and electricity infrastructure and transformed by the Lesseyton residential area (north-west from the quarry).

It is important to note that Queenstown Quarry has been operating since 1970. The description of the receiving environmental therefore describes the current environment present on the site. Queenstown Quarry is visible from the N6 national road travelling in a north-western as well as south-eastern direction. Adjacent and to the east of the mining area a hard rock quarry is operated as well as the manufacturing of civil and engineering concrete products (Civil and General CC). Further to the east and south from the mining area small agricultural holdings forms part of the Hillcrest and Amberdale small holdings.

AIR AND NOISE QUALITY

(Information extracted from the Updated Environmental Impact Assessment & Environmental Management Programme of Queenstown Quarry, October 2011.)

The air quality and noise ambiance of the study area was historically representative of an agricultural environment in which farming equipment operated with occasional high dust emissions from denuded areas. The surrounding area has since been transformed with the construction of the N6 national road, the railway line, the quarry and more recently the Lesseyton residential area.

According to the Queenstown Quarry EMPR (2011) the dust levels on site increase significantly during the dry season. The EMPR (2011) notes that the ambient noise levels are very low (classified as ambient rural / pastoral) and many existing noise impacts is the result of traffic on the N6.

GEOLOGY AND SOIL

(Information extracted from the Updated Environmental Impact Assessment & Environmental Management Programme of Queenstown Quarry, October 2011.)

The geology of the study area comprises mostly sedimentary rock intersected by dolerite and overlain by a veneer of colluvial and alluvial soils. The main sedimentary units consist of red, purple, grey and bluegreen mudstone with subordinate sandstone in areas of high cut. The mudstone forms part of the Adelaide Subgroup, Beaufort Group, Karoo Sequence. This group of rocks forms part of the Katberg Formation, Tarkastad Subgroup, Beaufort Group, Karoo Sequence. The geological units everywhere are overlain by a veneer of clayey and silty colluvial and alluvial deposits.

The soils of the study area consist:

- mainly of soils of the Swartland-Adelaide soil form; and
- of shallow to absent Mispah-Camavon soil form.

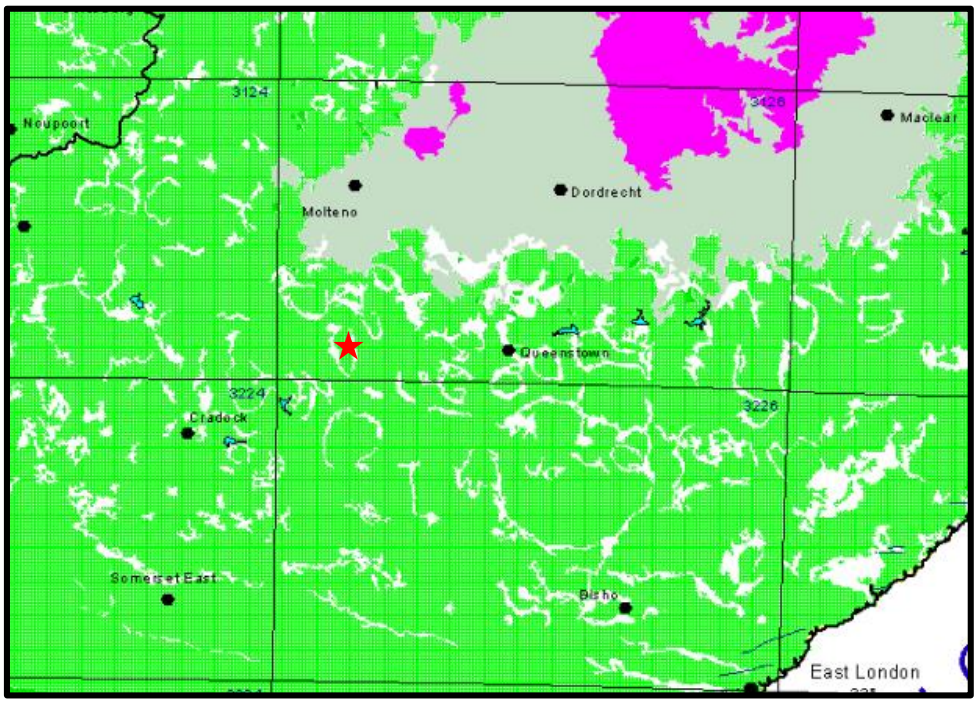

Figure 10: Indication of the simplified geology of the study area, where green represents Beaufort Group deposits (Karoo Supergroup), white shows dolerite intrusions, grey the Molteno, Elliot and Clarens Formations, and pink the Drakensberg and Lebombo Groups. The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience)

HYDROLOGY

The proposed mining area is situated in the Kei sub-water management area that forms part of the greater Mzimvubu to Kieskamma Water Management Area (ID 21). According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, the NFEPA status of the study area is classified as a no priority area.

The Klaas Smits River passes the study area approximately 1.8 km to the west, but no rivers or other natural open water sources were identified in close proximity to the mining area. The figure below shows the position of the known wetlands that occurs within the surrounding area. As depicted in the figure there are no rivers, streams or wetlands within the proposed mining area.

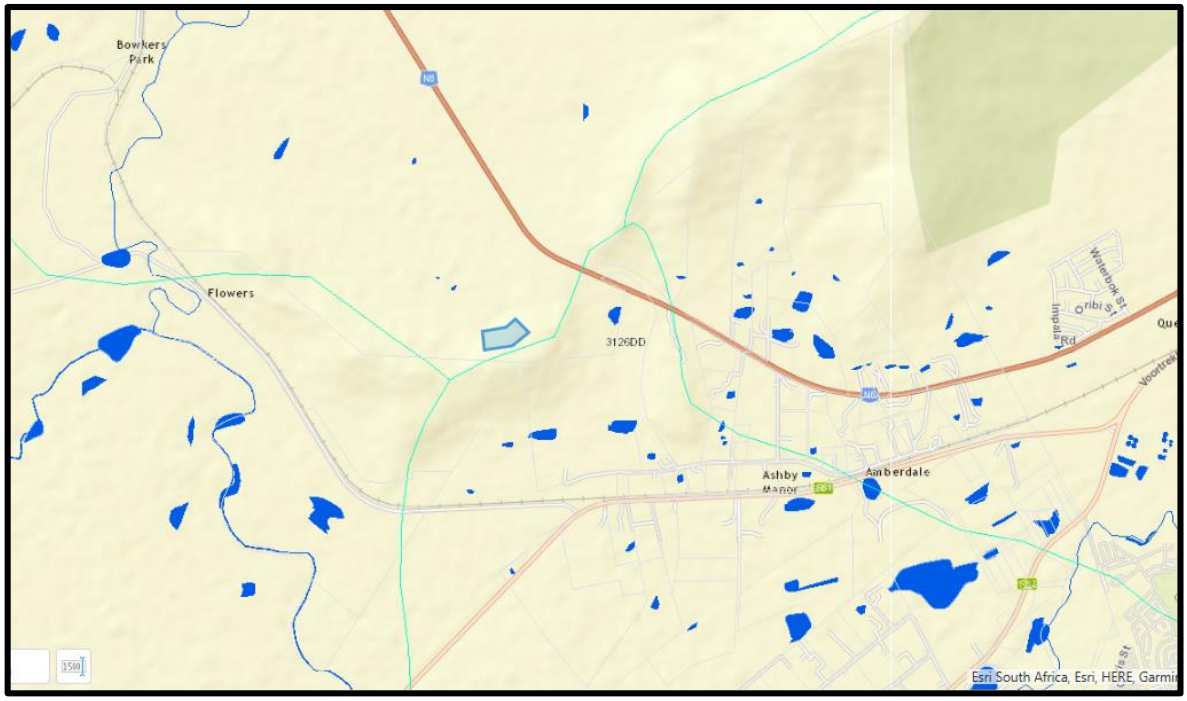

Figure 11: Map showing the position of know wetlands with relation to the study area (blue polygon). The Klaas Smits River is shown to the west of the proposed mining area. (Image obtained from the BGIS Map Viewer – Eastern Cape Biodiversity Conservation Plan)

According to Vegter (1995b), the mean depth to the water table in the region of the site is 10 m to 20 m below surface, with a standard deviation of 8 m to 15 m.

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 proposed mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, the southern corner of the earmarked area extends into an area of high biodiversity importance with a corresponding rating of high risk for mining. The Mining and Biodiversity Guideline's definition for areas of high biodiversity importance stipulates that: "*these areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for particular communities or the country as a whole*".

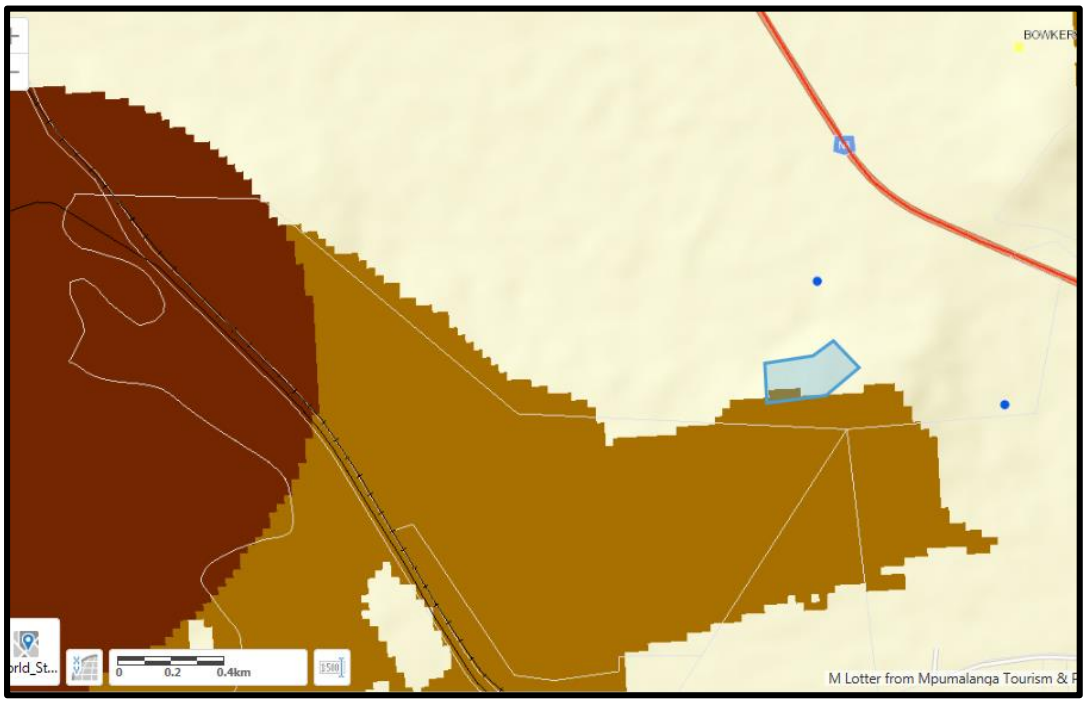

Figure 12: The Mining and Biodiversity importance map with the proposed mining footprint indicated by the blue polygon. Light Brown – High Biodiversity Importance, high risk for mining; Dark Brown – Highest biodiversity importance, highest risk for mining. The blue dots indicate the existing quarries in the study area.

BIODIVERSITY CONSERVATION AREAS

The Eastern Cape Biodiversity Conservation Plan shows that a Critical Biodiversity Area (CBA 2) was identified along the southern boundary of the proposed mining area. The Lexicon of Biodiversity Planning in South Africa defines a CBA as "*an area that must be maintained in a good ecological condition (natural or near-natural state) in order to meet biodiversity targets. CBAs 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*".

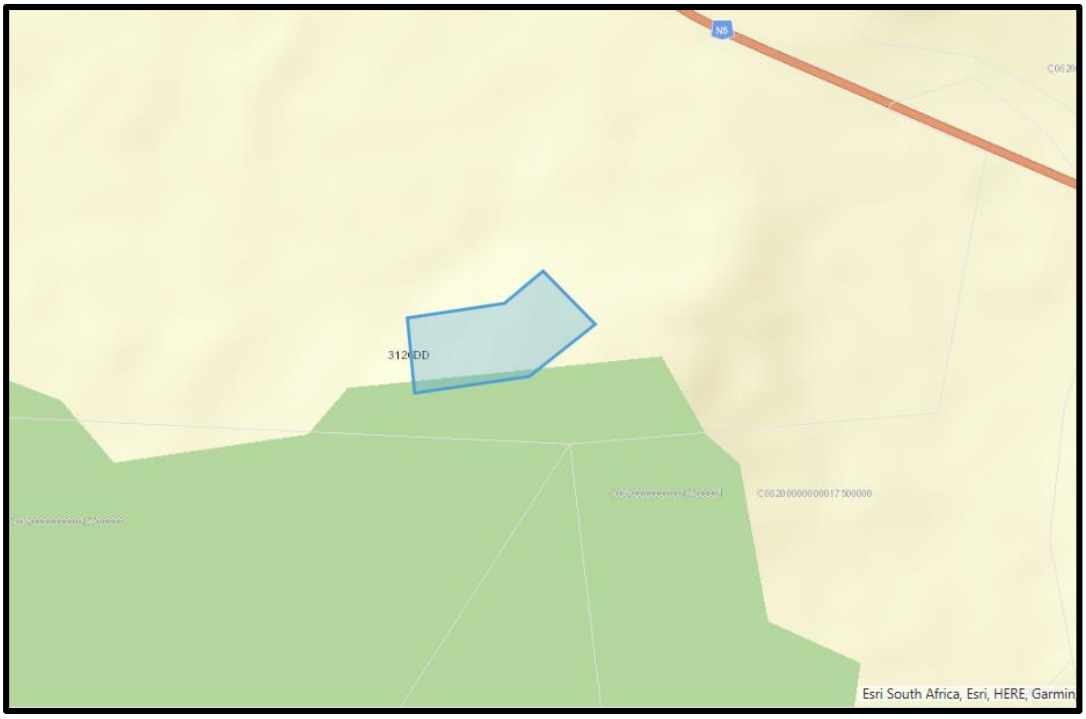

Figure 13: Eastern Cape Biodiversity Conservation Plan showing the proposed mining area blue polygon) that extends over a CBA 2 area (image obtained from BGIS Map Viewer – Eastern Cape Biodiversity Conservation Plan).

GROUNDCOVER

According to Mucina and Rutherford (2012) the vegetation type of the study area is classified as Tarkstad Montane Shrubland (Gs 17). The vegetation and landscape features of this vegetation type mainly consist of ridges, hills and isolated mountain slopes, characterised by high surface rock cover that often consist of large, round boulders. The vegetation is classified as low, semi-open, mixed shrubland with "white" grasses and dwarf shrubs forming a prominent component of the vegetation.

Some of the important taxa found in this vegetation type include succulent trees such as *Aloe ferox*, trees such as *Acacia karroo*, shrubs – *Diospyros austro-africana*, *Cadaba aphylla, Ehretia rigida*, *Searsia burchelli, Tarchonanthus minor*. Woody Climbers: *Asparagus racemosus*, with Low Shrubs: Eur*yops annae, Aptosimum elongatum, Blepharis mitrata, Chrysocoma 50frican, Eriocephalus ericoides,* and *Felicia filifolia*.

The vegetation type is classified as Least Threatened although only 1 – 2% of it has been included in statuary conservation areas such as Commando Drift, and Tsolwana Nature Reserves, as well as the Mountain Zebra National Park. Mucina and Rutherford (2012) reported that about 2% of the vegetation type has been transformed for cultivation or by the building of dams (Kommandodrif), and a conservation target of 28% was set for the vegetation type.

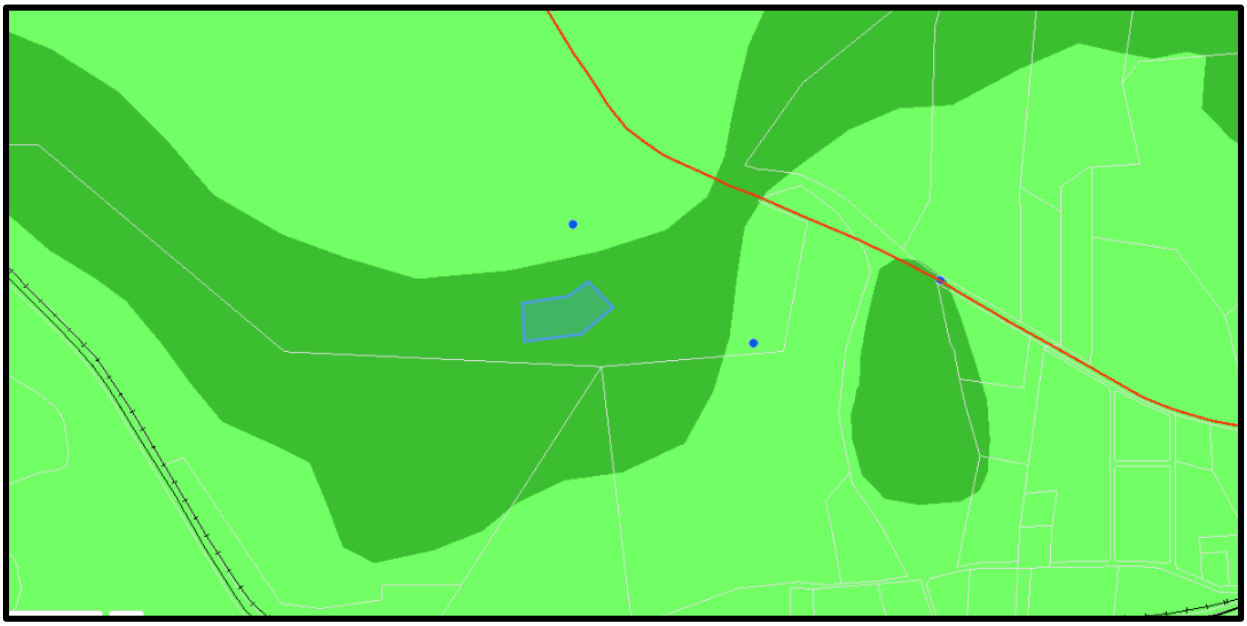

Figure 14: National vegetation cover map for Gs 17 Tarkastad Montane Shrubland (dark green). The light green shows the position of the Queenstown Thornveld (Gs 16) vegetation type (Image obtained from BGIS Map Viewer – National Vegetation Map).

FAUNA

As Queenstown Quarry has been in existence for numerous years the fauna resident in the area has become accustomed to the mining operations and co-exist with the activities. The following species are known to exist within, or visit the study area on occasion (non-exhaustive list):

Birds:

Black Crow	Black Eagle	Blackeyed Bulbul
Cape Wagtail	Cardinal Woodpecker	Egyptian Goose
Fish Eagle	Glossy Starling	Great White Egret
Grey Heron	Hadeda	Helmeted Guinefowl
Hoopoe	House Martin	Laughing Dove
Pied Crow	Redwinged Starling	Rock Pigeon
Speckled Mousebird	Spotted Eagle	Owl

Mammals:

Blesbok	Cape Hare	Caracal
Chacma Baboon	Dassie	Grey Duiker
House Mouse	Leopard	Red Rock Rabbit

Reptiles:

Brown House Snake	Cape Cobra	Puff Adder
Rinkhals	Spotted Skaapsteker	

Leopard Tortoise	Monitor Lizard	Southern Rock Agama
Platanna	Raucous Toad	

No protected or red data listed species were found to be resident within the boundaries of the Komani mining area.

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

(Information extracted from the Updated Environmental Impact Assessment & Environmental Management Programme of Queenstown Quarry, October 2011.)

According to the EIA & EMPR of Queenstown Quarry "…*there are no know sites of archaeological or cultural importance that have been noted on-site and throughout the mining history no sites of archaeological or cultural importance have been identified.*"

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

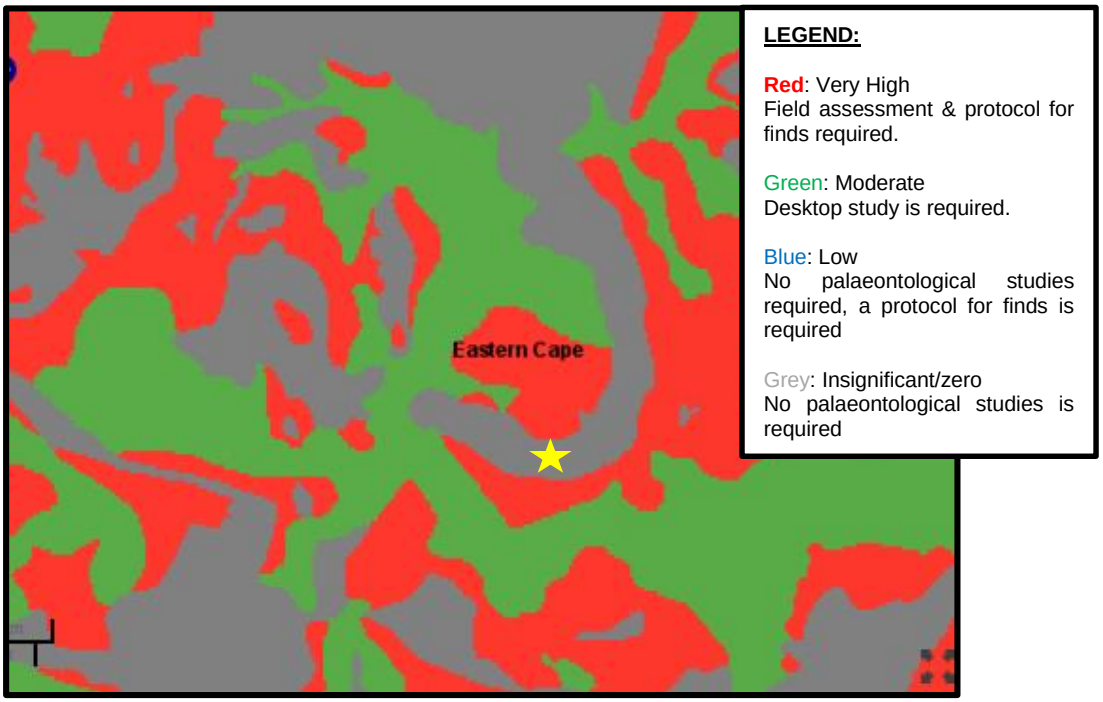

Figure 15: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (yellow star) falls in an area of Insignificant/Zero concern.

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Integrated Development Plan of Enoch Mgijima Local Municipality, 2017 – 2022)

The proposed mining area is located on the border of ward 10 and 18 of the Enoch Mgijima Local Municipality (EMLM). The Enoch Mgijima local municipality is a Category B municipality located within the Chris Hani district in the Eastern Cape Province.

The following table (obtained from the Enoch Mgijima IDP 2017 – 2022) is a summary of key datasets for the municipal area:

Table 8: Summary of key datasets for Enoch Mgijima Municipality (obtained from the Enoch Mgijima IDP 2017 – 2022)

DATASET	VALUE
Total population	245 975
Young (0-14)	32%
Working age (15-64)	61%
Elderly (65+)	21.60%
Dependency ratio	63.4
Sex ratio	91.27
Population growth rate	1.53% (2001 – 2011)
Population density	61 persons/km²
Unemployment rate	38%
Youth unemployment rate	47%
No schooling aged 20+	37.20%
Higher education aged 20+	23.60%
Matric aged 20+	51.20%
Number of households	66 895
Number of agricultural households	20 329
Average household size	10.4
Female headed households	47%
Formal dwellings	91%
Housing owned / paying off	58%
Flush toilet connected to sewerage	56%

DATASET	VALUE
Weekly refuse removal	56%
Piped water inside dwelling	32%
Electricity for lighting	90%
Source: Statistics South Africa 2011 Population Census.	

Population Dynamics

According to STATS (2011), the Enoch Mgiima Local Municipality consists of a total of 245 975 people, of which 91% is black 54frican, 5% is coloured, and 4% is white.

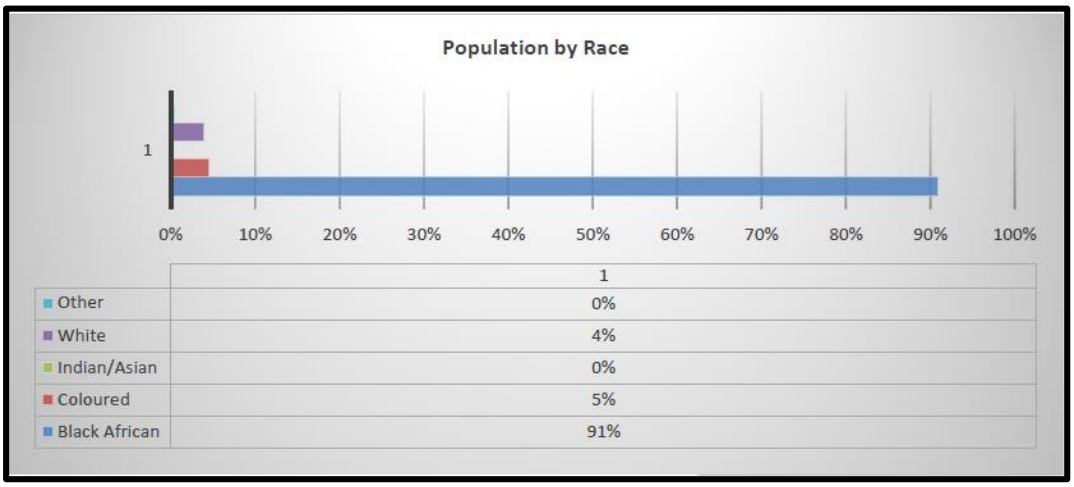

Figure 16: Indication of the population groups of the Enoch Mgijima municipal area (image obtained from the Enoch Mgijima IDP 2017 – 2022).

The Enoch Mgijima population is predominantly female dominated at 51% with males constituting 49% of the population. The following figure suggest that the population of the municipal area has a predominantly young and youthful population, with the highest population concentration being between the ages of 0 – 4.

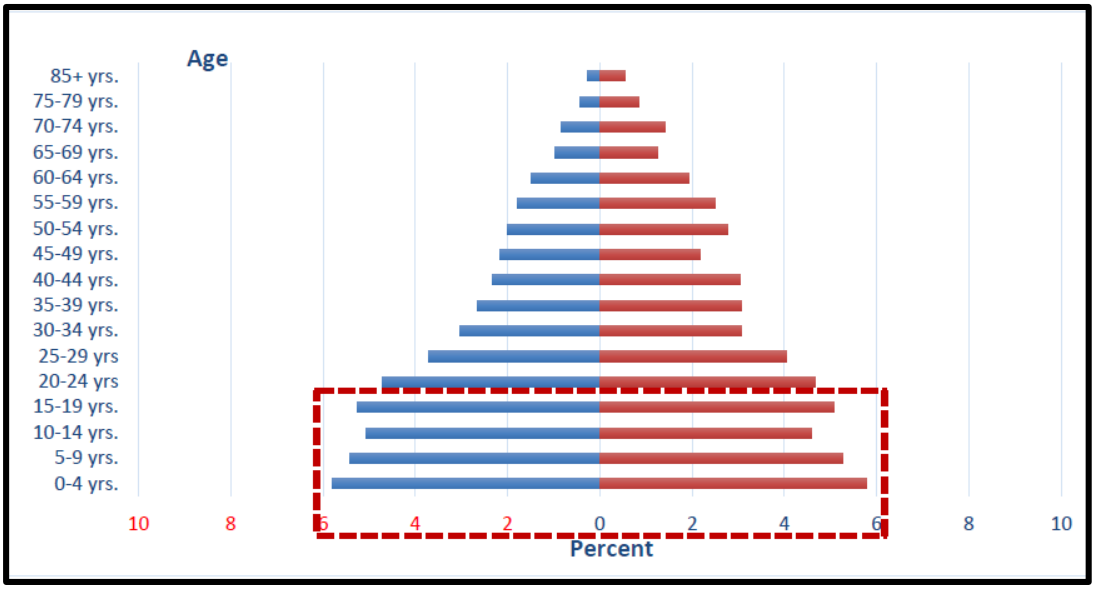

Figure 17: Age profile of the Enoch Mgijima municipal area (image obtained from the Enoch Mgijima IDP 2017 – 2022).

Economic Profile

Approximately 28% of the combined population is employed, whilst 16% is unemployed, and 47% is not actively involved in any job search as they have either lost hope and/or are unemployable.

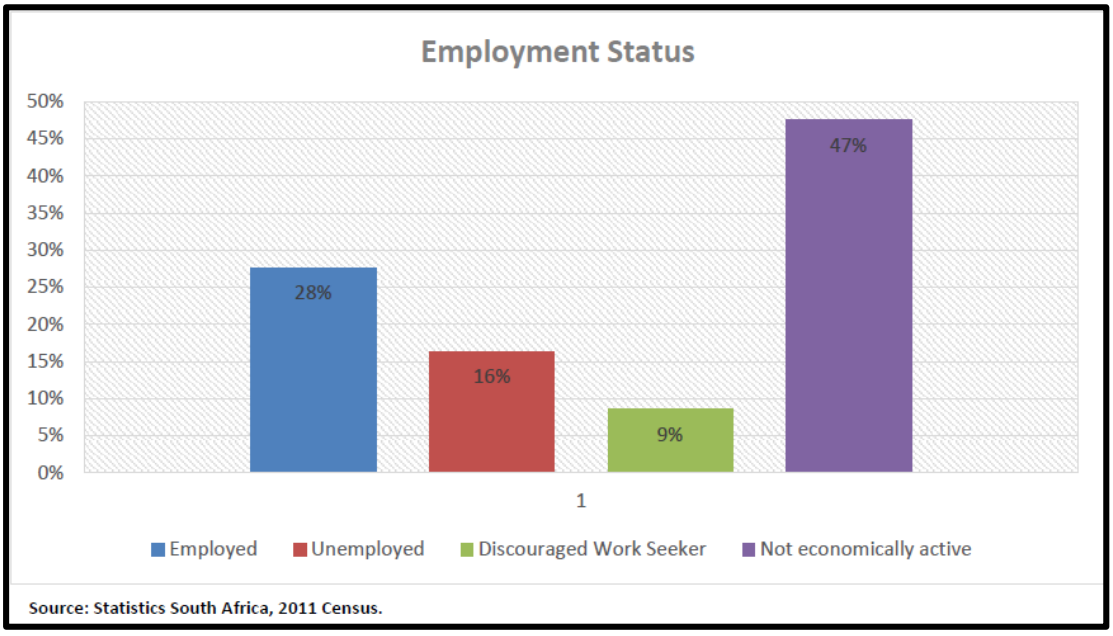

Figure 18: Employment status of the Enoch Mgijima municipal area (image obtained from the Enoch Mgijima IDP 2017 – 2022).

The figure below summarises the number of people who are economically active within the municipal area. This includes both people whom are self-employed as well as people who are seeking employment from Queenstown and the surrounding areas. The data shows that only 31.16% of the EMLM population is economically active.

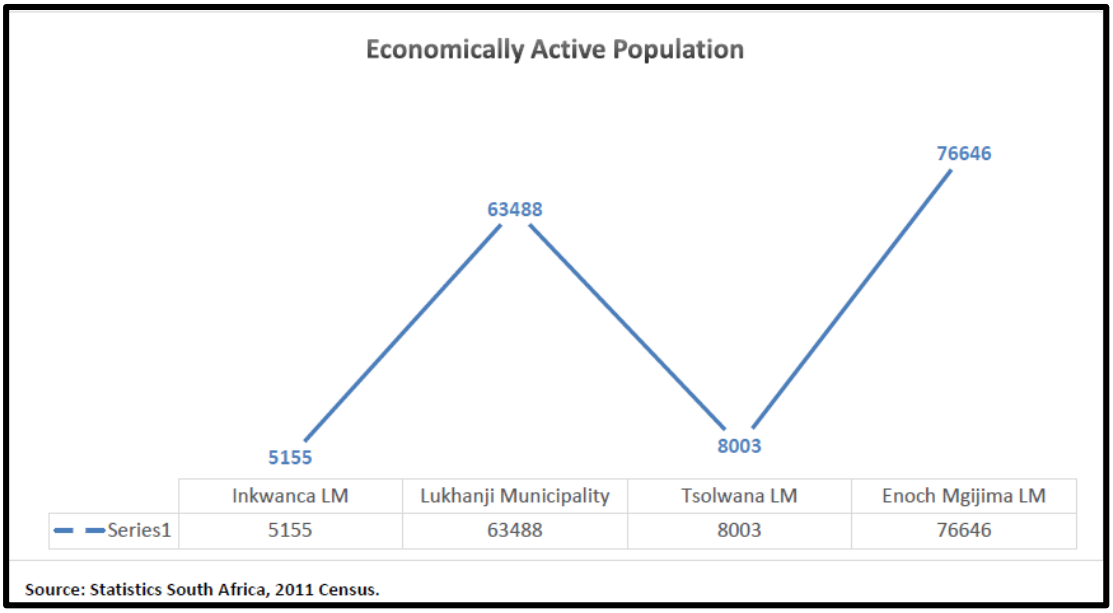

Figure 19: Economically active population (image obtained from the Enoch Mgijima IDP 2017 – 2022).

The GDP (gross domestic product) contribution of the EMLM to the Chris Hani District Municipality's GDP was at R 5 072 million, using 2011 constant prices.

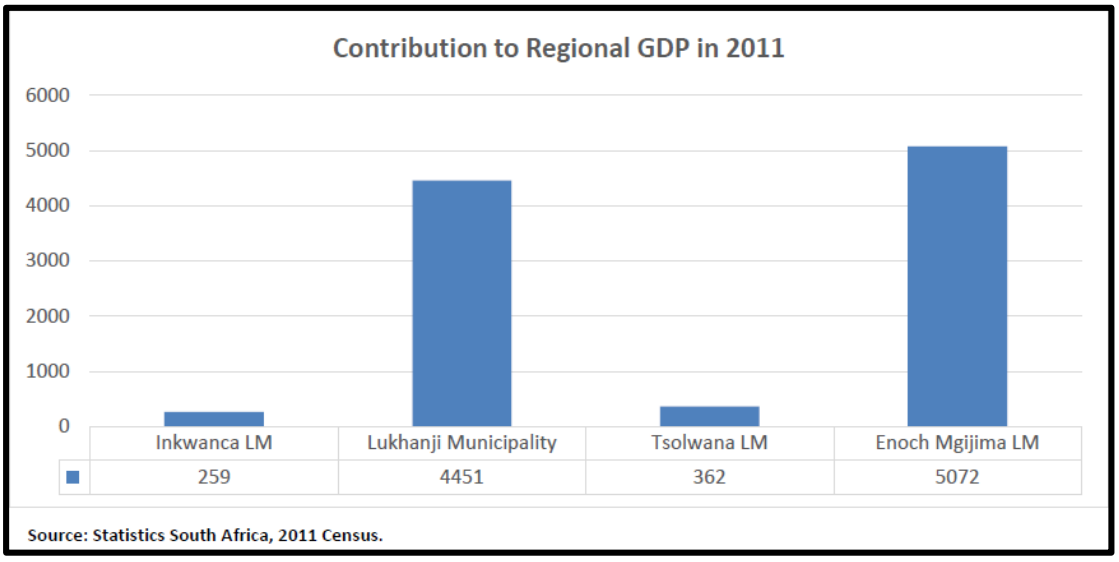

Figure 20: EMLM contribution profile to the regional GDP in 2011 (image obtained from the Enoch Mgijima IDP 2017 – 2022)

The IDP notes that the shape and form of local economic development within the EMLM will adopt a corridor approach. Four corridors were identified namely the N6 Corridor – Komani; R61 Corridor – Komani, Tarkastad, Hofmeyer; N6-R397 Development Corridor, Queenstown, Sterkstroom, Molteno; and the N6-R67 Development Corridor, Queenstown, Whittlesea. The proposed mining footprint falls within the N6 Corridor – Komani classified as, amongst others, an industrial business hub, with hives, quarries, and the Ezibeleni industrial park. The development of the Komani Quarry on the farm Lesseyton 81 therefore fits within the current corridor classification of the area.

(b) Description of the current land uses.

The farm Lesseyton No 81 is situated in a rural setting intersected by road, rail and electrical infrastructure. Historically, the property was exclusively used for agricultural purposes, upon which the land use gradually changed to include both mining (at Queenstown Quarry) as well as the development of Lesseyton residential area (±3.8 km from the proposed mining area).

The main land use of the surrounding properties is for agricultural purposes. On the Remaining Extent of Portion 44 of the farm Weltevreeden North No 175, adjacent and to the east of the proposed mining area, a hard rock quarry is operated as well as the manufacturing of civil and engineering concrete products takes place (Civil and General CC). Further to the east and south from the mining area small agricultural holdings form part of the Hillcrest and Amberdale small holdings.

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

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

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The proposed mining site is surrounded by natural areas used for agricultural purposes.
Low density residential	-	**NO**	
Medium density residential	-	**NO**	
High density residential	-	**NO**	The Lesseyton community is ±3.8 km from the mining area.
Informal residential	-	**NO**	
Retail commercial & warehousing	-	**NO**	
Light industrial	**YES**	-	The property adjacent and to the east of the proposed mining area is used for the manufacturing of civil and engineering concrete products.
Medium industrial	-	**NO**	
Heavy industrial	-	**NO**	
Power station	-	**NO**	
High voltage power line	-	**NO**	
Office/consulting room	**YES**	-	The offices of Queenstown Quarry is ±320 m from the mining area.
Military or police base / station / compound	-	**NO**	
Spoil heap or slimes dam	**YES**	-	The spoil heaps and settling pond of Queenstown Quarry is within 500 m from the earmarked footprint.
Quarry, sand or borrow pit	**YES**	-	This application is for the extension of the existing dolerite quarry of Queenstown Quarry. A hard rock quarry also operates to the east of the proposed mining area.
Dam or reservoir	**YES**	-	The settling pond and reservoir of Queenstown quarry is within 500 m of the earmarked footprint.
Hospital/medical centre	-	**NO**	
School/ crèche	-	**NO**	
Tertiary education facility	-	**NO**	
Church	-	**NO**	

LAND USE CHARACTER	YES	NO	DESCRIPTION
Old age home	-	**NO**	
Sewage treatment plant	-	**NO**	
Train station or shunting yard	-	**NO**	
Railway line	-	**NO**	The railway line is approximately 1.4 km south-west of the proposed site.
Major road (4 lanes or more)	-	**NO**	The N6 pass the proposed site ±550 m to the north, north-east.
Airport	-	**NO**	
Harbour	-	**NO**	
Sport facilities	-	**NO**	
Golf course	-	**NO**	
Polo fields	-	**NO**	
Filling station	-	**NO**	
Landfill or waste treatment site	-	**NO**	
Plantation	-	**NO**	
Agriculture	**YES**	-	As mentioned earlier the proposed mining area is situated within an area used for grazing purposes.
River, stream or wetland	-	**NO**	
Nature conservation area	-	**NO**	
Mountain, hill or ridge	**YES**	-	The proposed mining area is situated against the side of the hill on the property.
Museum		**NO**	
Historical building		**NO**	
Protected Area		**NO**	
Graveyard		**NO**	
Archaeological site		**NO**	
Other land uses (describe)		**NO**	

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The natural topography of the proposed Komani Quarry mining area is moderate to steep, with an average slope of 22.7% from 1 188 mamsl in the north-western corner (being the lowest point) to 1 259 mamsl in the southern corner (being the highest point) as shown in the figure below.

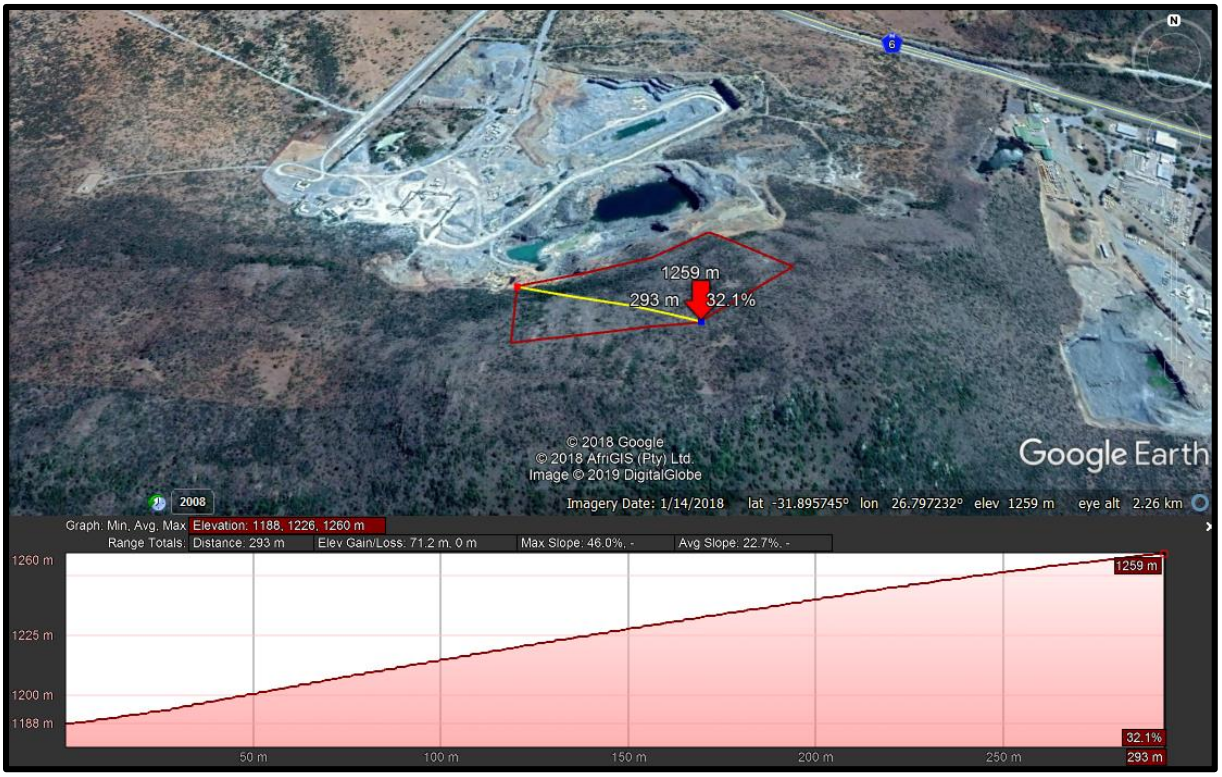

Figure 21: Elevation profile of the proposed Komani Quarry mining area (Image obtained from Google Earth).

Komani quarry will be cut into the northern slope of the hill. Due to the nature of the activity, the topography of the hill will be altered in that a depression will be created with stepped side walls as mining progress.

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

SITE SPECIFIC VISUAL CHARACTERISTICS

The proposed expansion of the dolerite quarry will be visible from the north, north-west, and north-east due to its position against the rise of the hill. To the south, south-west and south-east the excavation will be screened by the hill.

The figure below shows the viewshed analysis of the study area for a ±10 km radius around the proposed mining area. The green shaded areas indicates the positions from where the mining area will be visible. The analysis shows that the proposed visual impact will be high towards the north, north-west and north-east due to the elevation of the earmarked area. It is therefore anticipated that the proposed mine will be highly visible within the short to medium distance zone; however, as the distance between the proposed development and the observer increases the visual impact will decrease. To the south, south-west and south-east the visual impact will be negligible as the mining area will be screened by the hill.

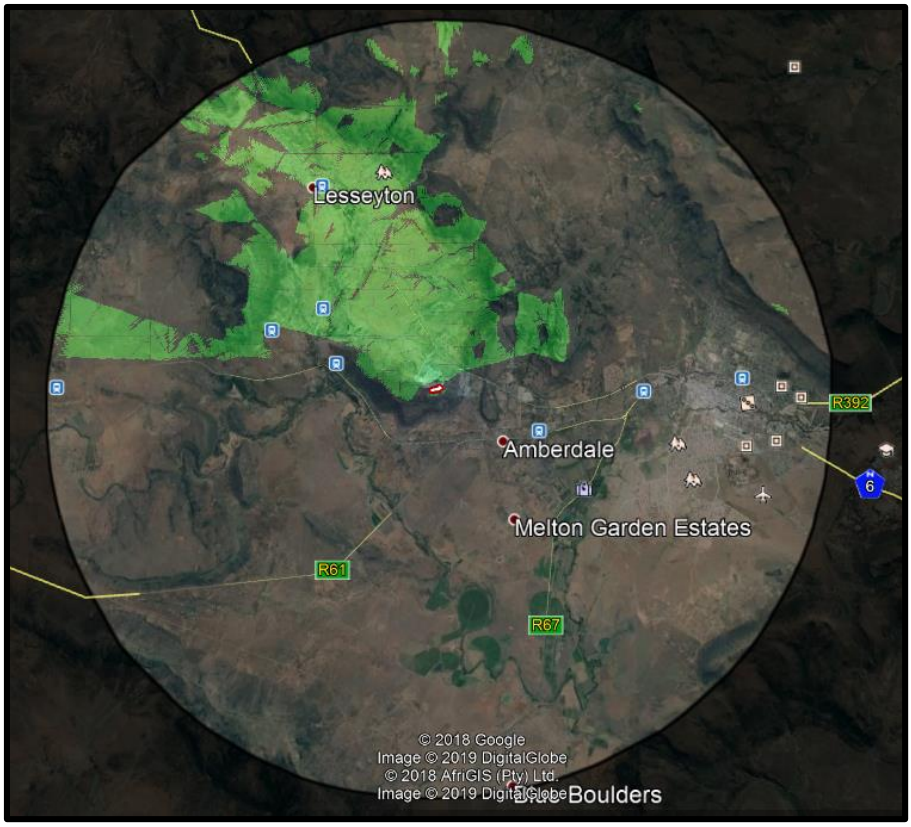

Figure 22: Viewshed of the proposed mining area where the green shaded areas indicate the positions from where the mining area (red polygon) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The nearest residential dwelling to the proposed mining area is that of the small holding opposite the hill (south-east of the quarry) at ±800 m. The Civil and General quarry is ±370 m to the east of the earmarked area (also opposite the hill), and the first houses of the Lesseyton Community ±3.5 km from the proposed development area. As mentioned earlier, the prevalent wind direction of the study area is in an eastern direction from December to March, changing from April from due east to west-north-west until September when it gradually returns to its eastern trend. Currently the air quality of the study area is impacted on by the operations of Queenstown Quarry, the N6 road users, the Civil and General Quarry, and to a lesser extend agricultural practices.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act, and emissions to be generated is expected to mainly entail dust due to the displacement of soil and transport of material on gravel roads. As the prevalent wind direction is in an easterly direction the hill will screen dust generated at Komani quarry from the operations/residents on the opposite side. Should the Applicant however implement the mitigation measures proposed in this

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

As with air quality, the current activities on the property and surrounding environment already impact the noise ambiance of the study area. Traffic along the N6, as well as the mining operations of Queenstown Quarry and the Civil and General Quarry on the adjacent property increase the natural noise levels of the receiving environment. The noise to be generated at the Komani quarry will contribute to these daily noise levels. The proposed activity will contribute noise generated as a result of blasting, as well as loading, and transporting of material. The nuisance value of noise generated by heavy earthmoving equipment, to residence in the near vicinity is deemed to be of low significance, as the hill will act as a sound barrier to the nearest occupants, with the residents of Lesseyton being more than 3 km from the operation. The noise caused by blasting will be instantaneous and of short duration.

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

SITE SPECIFIC GEOLOGY AND SOIL

The site specific geology resembles the geology as described under *Part A(h)(iv)(1)(a) Type of Environment Affected by the Proposed Activity – Geology and Soil*. The geology of the study area is intersected by dolerite and overlain by a veneer of colluvial and alluvial soils. This application is for the mining of dolerite to be crushed to various sized aggregates before sold to clients.

SITE SPECIFIC HYDROLOGY

(Information extracted from the Updated Environmental Impact Assessment & Environmental Management Programme of Queenstown Quarry, October 2011.)

As mentioned earlier, there are no rivers, streams or wetlands within close proximity of the mining area.

The EMPR of Queenstown Quarry mentioned that the quarry is located over the Ciskeian Coastal Foreland and Middleveld Ground Water Region (Region 43): *"This region consists mainly of secondary water-bearing formations, with the water-bearing rock being predominantly composite in nature, meaning no major rock type is dominant, several lithostratigraphic units are involved and there are more extensive primary aquifers than alluvial deposits"* (Vegter, 2001). As mentioned earlier the depth to the water table in the region of the site is 10 – 20 m below surface. As Komani Quarry will be positioned against the rise of the hill the depth to the water table (below

the surface) increases considerably, and the proposed activity is not expected to impact on the groundwater of the study area.

Queenstown Quarry has been granted with a water use licence to extract water from a borehole on the property, and applied for water use authorisation to use the water that accumulates in the quarries. As Komani Quarry (Pty) Ltd entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd any water to be used at the proposed mining area (mainly for dust suppression purposes) will be obtained from Queenstown Quarry in accordance with their water use licence.

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

As mentioned earlier, when the proposed mining footprint is layered over the Mining and Biodiversity Map, the southern corner of the earmarked area extends into an area of high biodiversity importance with a corresponding rating of high risk for mining. The High Biodiversity Importance area (in terms of the Mining and Biodiversity Guideline) corresponds with the boundaries of the CBA identified in terms of the Eastern Cape Biodiversity Conservation Plan.

Critical biodiversity areas are terrestrial (and aquatic where applicable) features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services. According to the guidelines for bioregional plans, three basic CBA categories can be identified based on three high-level and management objectives (table below).

Table 10: Definition and framework for linking CBA's to land-use planning and decision making guidelines based on a set of high-level land biodiversity management objectives (Adapted from the guidelines for bioregional plans (Anon 2008)).

CBA CATEGORY	DESCRIPTION
Critical Biodiversity Areas (CBAs) Definition: CBAs are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses.	
Protected Area (PA) & CBA1	**Natural Landscape:** Ecosystem and species are fully intact and undisturbed. These are areas with high irreplaceability or low flexibility in terms of meeting biodiversity pattern targets. If the biodiversity features targeted in these areas are lost then targets will not be met. These are landscapes that are at or past their limits of acceptable change.

CBA CATEGORY	DESCRIPTION
CBA 2	**Near-natural Landscape:** Ecosystems and species are largely intact and undisturbed. Areas with intermediate irreplaceability or some flexibility in terms of the area required to meet biodiversity targets. There are options for loss of some components of biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising the ability to achieve targets. These are landscapes that are approaching but have not passed their limits of acceptable change.
Ecologically Support Areas (ESAs) Definition: ESAs are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and / or in delivering ecosystem services that support socio-economic development, such as water provision, food mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas.	
ESA	**Functional Landscapes:** Ecosystem is moderately to significantly disturb but still able to maintain basic functionality. Individual species or other biodiversity indicators may be severely disturbed or reduced. These are areas with a low irreplaceability with respect to biodiversity pattern targets only.

The figure below shows the location of the CBA 2 area (green line) (corresponding with the High Biodiversity Importance area in terms of the Mining and Biodiversity Guidelines) in relation to the proposed mining footprint (red polygon). In order to preserve the CBA and prevent mining having a negative impact on the biodiversity sensitive area, it is proposed that a 20 m no-go buffer be set from the border of the CBA line in which no mining may take place. The buffer area will reduce the mineable footprint from 4.9 ha to ±3.7 ha.

Figure 23: Satellite view of the proposed mining area (red polygon) in relation to the CBA 2 area (green line). The white shaded polygon represents the mineable area when the 20 m no-go buffer area is omitted.

Should the Applicant adhere to the proposed 20 m no-go buffer area from the border of the CBA the impact on the biodiversity sensitive area is deemed to be insignificant.

SITE SPECIFIC GROUNDCOVER

The site specific groundcover of the proposed mining footprint is in a natural to near-natural state with a well-established plant layer that represents the dominant vegetation of the Tarkastad Montane Shrubland (Gs17) as classified by Mucina and Rutherford (2012).

Figure 24: Pictures showing the vegetation cover of the proposed footprint area.

The grass component mainly consist of *Eragrostis*- and *Aristida* spp, with *Fingerhuthia africana*, *Sporobolus fimbriatus*, *Heteropogon contortus*, and *Tragus racemosus* also present. Sweet Thorn trees (*Acacia karroo*) and Resin Bush (*Euryops* spp) (yellow bush in the above pictures) invaded disturbed areas with numerous *Aloe ferox* trees

found throughout the site. *Aloe ferox* is protected in terms of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

During the site inspection cycads (most likely white-haired cycads *Encephalartos friderici-guilielmi*) were noted within the proposed mining footprint.

Figure 25: Cycads (most likely white-haired cycads Encephalartos friderici-guilielmi) present within the footprint of the proposed mining area.

In South Africa, the indigenous *Encephalartos* cycad species is protected under provincial legislation and/or the National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004). The conservation status of *Encephalartos friderici-guilielmi* is listed as Near Threatened (NT) on the IUCN (International Union for Conservation of Nature) Red List of Threatened Species. The IUCN definition of NT is assigned to a species that is likely to become endangered in the near future.

The Eastern Cape Nature and Environmental Ordinance 19 of 1974 lists all *Encephalartos* species as endangered and section 63 (as amended) of the said ordinance states:

63. (1) No person shall—

(a) uproot the plant in the process of picking the flower of any flora;

Para. (a) substituted by s. 17 of Ord. 26 of 1986.]

(b) without a permit—

(i) pick any endangered or protected flora, or

(ii) pick any flora on a public road or on the land on either side of such road within a distance of ninety metres from the centre of such road, or

(c) pick any protected or indigenous unprotected flora on land of which he is not the owner, without the permission of the owner of such land or of any person authorised by such owner to grant such permission.

63. (2) No permission granted in terms of subsection (1) (c) shall be valid unless it is reduced to writing and reflects—

(a) the full names and address of the owner of the land concerned or of the person authorised to grant such permission;

(b) the full names and address of the person to whom permission is granted, and

(c) the number and species of flora, the date or dates on which such flora may be picked and the land in respect of which permission is granted, and is signed and dated by such owner or the person authorised by him.

The above implies that the Applicant has to apply for a permit for the removal and relocation of all protected plants to be affected, and has to obtain written permission of the landowner to do so.

In light of this, upon receipt of the EA and prior to site establishment, it is proposed that a qualified botanist conduct a plant identification walkthrough with site management to identify the plants (*Encephalartos* spp, *Aloe* spp, as well as other plants of importance) in need of a destruction/removal permit. As part of the permit application, the botanist report has to give an estimate of the number of specimens per species or species group to be removed/destroyed. Bush clearance must be delayed until the DEDEAT-EC issue the plant permits and the recommendations of the specialist has been implemented. The environmental control officer (ECO) must assess the compliance of the permit holder with the conditions of the plant permit and botanist's recommendations.

SITE SPECIFIC FAUNA

The site specific fauna of the study area represents the fauna of the surrounding environment, and no protected or red data species were identified to be resident within the proposed footprint area.

The fauna at the site will not be impacted on by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers must be educated and managed to ensure that no fauna at the site is harmed.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

No sites of archaeological or cultural importance were identified during the site inspection. Consultation with the interested and affected parties did not identify any potential area of concern and the SAHRA palaeontological sensitivity map shows that

the area is of insignificant concern. The potential impact of the proposed mining activities on the cultural and/or heritage environment is therefore deemed insignificant.

SITE SPECIFIC INFRASTRUCTURE

As the proposed mining area will be developed in a greenfield area as extension of the existing dolerite quarry, no infrastructure exist on site that will be impacted on.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

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

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

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

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT:

Visual intrusion as a result of site establishment

Rating: High **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	4	4	5	5	5	**20**

Potential negative impact on the nearby critical biodiversity area

Rating: High **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	4	4	5	5	5	**20**

Potential loss of protected or red data plant species

Rating: Medium-High **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
5	4	1	3.3	5	5	5	**16.5**

Potential impact on fauna within the footprint area

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	3	1	2	**4.6**

Potential impact on areas/infrastructure of heritage or cultural concern

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
5	5	5	5	1	1	1	**5**

STRIPPING AND STOCKPILING OF TOPSOIL:

Dust nuisance caused by the disturbance of soil

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	2	3	4	2	3	**9**

Noise nuisance generated by earthmoving machinery

Rating: Low-Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	2	2	3	1	5	2.5	**7.5**

Loss/contamination of stockpiled topsoil

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	5	1	3	4	2	3	**9**

Potential infestation of the topsoil heaps with weeds or invader plant species

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	5	3	3.6	4	2	3	**10.8**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	5	2	3.3	4	2	3	**9.9**

Potential erosion of denuded areas

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	5	2	3.3	4	3	3.5	**11.6**

DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	3	3	3	**9**

Dust nuisance caused by blasting activities

Rating: Low-Medium **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	1	2	2	5	3	4	**8**

Noise nuisance as a result of blasting

Rating: Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	1	4	2.6	5	3	4	**10.4**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT OF QUEENSTOWN QUARRY

Visual intrusion associated with the excavation activities

Rating: High **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	4	4	5	5	5	**20**

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

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	4	5	4.5	**11.7**

Noise nuisance generated by excavation equipment and earthmoving machinery

Rating: Low-Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	2	2	3	1	5	2.5	**7.5**

Unsafe working environment for employees

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	4	5	4.5	**13.5**

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	2	3.3	4	3	3.5	**11.6**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	5	1	3.3	4	5	4.5	**14.9**

Soil erosion

Rating: Medium-High **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	5	5	5	**15**

Dust nuisance due to landscaping activities

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	4	5	4.5	**9**

Noise nuisance generated during the landscaping phase

Rating: Low-Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	3	1	2	3	5	4	**8**

Loss of reinstated topsoil from denuded areas

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	4	2	3	**6.9**

Potential infestation of the reinstated areas by weeds and invader plant species

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	3	2	2.6	5	5	5	**13**

Potential contamination of environment as a result of improper waste disposal

Rating: Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	4	5	4.5	**11.7**

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

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

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

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

Table 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/	Low cost to mitigate	Substantial cost to mitigate/	High cost to mitigate	Prohibitive cost to mitigate/

Type of criteria	Rating				
	1	2	3	4	5
	High potential to mitigate impacts to level of insignificance/ Easily reversible		Potential to mitigate impacts/ Potential to reverse impact		Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

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

Table 12: Criteria for the rating of duration.

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

Determination of Extent/Spatial Scale

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

Table 13: Criteria for the rating of extent / spatial scale.

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

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

Table 14: Example of calculating overall consequence.

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

Determination of Likelihood:

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

Determination of Frequency

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

Table 15: Criteria for the rating of frequency.

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

Determination of Probability

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

Table 16: Criteria for the rating of probability.

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

Overall Likelihood

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

Table 17: Example of calculating overall likelihood.

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

Determination of Overall Environmental Significance:

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

Table 18: Determination of overall environmental significance.

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

Qualitative description or magnitude of Environmental Significance

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

Table 19: Description of environmental significance and related action required.

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

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

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

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

Medium — Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive

impacts; other means of achieving these benefits would be about equal in time, cost and effort.

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

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

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

The preferred site alternative identified by the Applicant, and named Site Alternative 1 (SA1) in this document, entails the expansion of the existing Queenstown Quarry dolerite pit. SA1 was identified during the planning phase by the Applicant and project team, as the preferred and only viable site alternative based on the the following:

- The Queenstown Quarry dolerite pit cannot be expanded without crossing over the approved mining right boundaries. In the circumstance the Komani Quarry proposal allows for the continued winning of dolerite from the area, expanding the existing pit into the proposed 4.9 ha mining footprint.
- The Komani Quarry footprint cannot be moved to the north-west as it will then enter into the existing mining right area of Queenstown Quarry.
- The position of the MP area is believed to be the most practical alternative as the overburden layer is relatively shallow, the dolerite is of good grade, and the area can be access from the existing mining area. Moving the mining area to the east or west takes it from the optimal dolerite source and into areas with deeper overburden.
- In light of the mining and offset agreement between the Applicant and Raumix Aggregates (Pty) Ltd the proposed operation can be implemented without the need for a separate processing- and stockpiling area. The existing infrastructure, within close proximity to the MP area, can be used.
- Should the Applicant adhere to the proposed 20 m buffer no-go zone from the boundary of the critical biodiversity area (CBA), the activity will not affect any biodiversity sensitive

areas. In the circumstance the presence of the CBA creates a mandatory no-go area, and therefore the mining area cannot be moved to the south, south-east.

- The cycads, and other protected plant species (if applicable), present in the proposed footprint area will be relocated (as far as possible) by a suitably qualified contractor upon receipt of the destruction/relocation plant permit from DEDEAT-EC.

The use of the existing infrastructure at Queenstown Quarry was compared to the establishment of crushing and screening infrastructure within the Komani Quarry footprint, as a project alternative during the planning phase of the project. The assessment showed that the use of the existing crushing and screening infrastructure of Queenstown Quarry is deemed to be the most viable and preferred project alternative.

The following potential impacts were identified that may have a negative impact on the receiving environment:

- Visual intrusion as a result of the mining activities;
- Potential negative impact on the nearby critical biodiversity area;
- Potential loss of protected or red data plant species;
- Potential impact on fauna within the footprint area;
- Potential impact on areas/infrastructure of heritage or cultural concern;
- Dust nuisance due to the mining activities;
- Noise nuisance generated by the proposed activity;
- Loss/contamination of stockpiled topsoil;
- Potential infestation of the topsoil heaps with weeds or invader plant species;
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages;
- Potential erosion of denuded areas;
- Health and safety risk posed by blasting;
- Unsafe working environment for employees; and
- Safety risk posed by un-sloped areas.

Potential positive impacts associated with the project includes:

- The available dolerite can be mined and the Applicant will be able to supply in the demand of the industry; and
- The existing dolerite quarry can be legally expanded and the project will present continued employment opportunities to the existing workforce of Queenstown Quarry.

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:

Visual Mitigation:

As the proposed mining area is situated against the northern slope of the hill, the project will have a high visual impact on the surrounding environment. The visual mitigation measures therefore relate more to management practices, and housekeeping than the riddance of the actual impact.

- The site must have a neat appearance and be kept in good condition at all times.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

Impact on Critical Biodiversity Area:

The following mitigation measures are proposed to prevent the mining activity impacting on the nearby CBA, and subsequently lower the significance of the potential impact from High to Low:

- The Applicant must demarcate a 20 m no-go buffer zone from the boundary of the critical biodiversity area (CBA), and no mining must be allowed behind the demarcation.
- Measures must be implemented to limit flyrock falling in this area. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.
- Employees must be informed of the no-go buffer area and no unauthorised entrance may be allowed.

Loss of Protected / Red Data Plant Species:

The risk of the proposed mining activities having a negative impact on protected / red data plant species can be reduced to a Low-Medium significance through the implementation of the mitigation measures listed below:

- The Applicant must arrange that a botanist conduct a plant rescue walk-through of the mining footprint, prior to any bush-clearance, to identify the plants in need of a destruction/removal permit.

- The Applicant must then apply for a permit for the removal or destruction of all protected and red listed plants that will be affected. This application must be made to the Department of Economic Development, Environmental Affairs and Tourism – Eastern Cape Province (DEDEAT-EC).
- Bush-clearance may only commence once the recommendations of the specialist has been implemented.
- No plants may be removed without the approval of the ECO.

Protection of Fauna:

The risk resulting from the proposed mining activity on the terrestrial fauna of the footprint area as well as the surrounding environment, can be reduced to Low through the implementation of the mitigation measures listed below:

- The site manager must ensure no fauna is caught, killed, harmed, sold or played with.
- Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.

Archaeological, Heritage and Palaeontological Aspects:

The impact on archaeological, heritage and palaeontological aspects, as a result of the proposed mining activities, can be reduced to being negligible through the implementation of the mitigation measures listed below:

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

Fugitive Dust Emission Mitigation Measures:

The risk of dust, generated from the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being Low-Medium through the implementation of the mitigation measures listed below:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust.
- Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- The fallout dust monitoring system, already in place at Queenstown Quarry, must be extended to include the proposed Komani Quarry mining area.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

Noise Handling:

The risk of noise, generated as a result of the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being Low through the implementation of the mitigation measures listed below:

- The Applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior to each blasting occasion.
- Best practice measures shall be implemented in order to minimize potential noise impacts.
- 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.

Topsoil Handling:

The following mitigation measures are proposed in order to ensure proper topsoil management and lower the significance of the potential impact from Low-Medium to Low:

- The upper 500 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 have to be such that topsoil is stockpiled for the minimum possible time.
- The permit holder must consider the stockpiling of topsoil at the existing topsoil storage area of Queenstown Quarry (upon mutual agreement thereto), alternatively the topsoil must be placed on a levelled area, within the mining footprint area, and measures must be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water. No topsoil may be stockpiled in undisturbed areas.
- Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- The stockpiled topsoil must be evenly spread over the rehabilitated area upon closure of the site.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.
- Run-off water must be controlled via temporary banks during mining, 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.

Management of Invasive Plant Species:

The risk of weeds or invader plants invading the disturbed area can be reduced to being Low through the implementation of the mitigation measures listed below:

- An invasive plant species management plan (Appendix J) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- 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) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

Waste Management:

The risk of uncontrolled waste generation having a negative impact on the surrounding environment can be reduced to being Low through the implementation of the mitigation measures listed below:

- Regular vehicle maintenance, repairs and services may only take place at the off-site workshop and service area of Queenstown Quarry. 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 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal.
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every 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.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. The hazardous waste generated at the Komani mining area can be incorporated (upon mutual agreement thereto) into the existing hazardous waste handling system at Queenstown Quarry.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMR) by removing the spillage together with the polluted soil

and incorporating it into the existing hazardous waste handling system of Queenstown Quarry (if possible), or by disposing it at a recognised facility. Proof must be filed.

- All general waste must be contained within the site vehicles and daily be removed from the mining area to the general waste storage area of Queenstown Quarry (upon mutual agreement thereto).
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- The permit holder must ensure that employees make use of the formal ablution facilities of Queenstown Quarry, alternatively the employees must be provided with a chemical toilet that must be serviced at least once a week by an accredited liquid waste handling contractor.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the waste water and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.

Erosion Control and Storm Water Handling:

The erosion potential can be reduced to being Low-Medium through the implementation of the mitigation measures listed below:

- The runoff from compacted surfaces must be slowed down and dispersed sufficiently to prevent accelerated erosion.
- Erosion control measure must be put in place to minimise erosion along the proposed mining area. Extra precautions must be taken in areas where the soils are deemed highly erodible. Erosion control measures could include the use of sand bags, hessian sheets, retention or replacement of vegetation.
- Stockpiling of soil must not be allowed on or near steep slopes. This is to prevent pollution or the impediment of surface run-off.
- Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to infrastructure downstream or any storm water discharge points.

- ❖ 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.

Management of health and safety risks:

The health and safety risk, posed by the proposed mining activities can be reduced to being Low through the implementation of the mitigation measures listed below:

- ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law.
- ❖ 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 and communities must be informed in writing ahead of any 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.

Mitigation measures proposed by SANRAL:

SANRAL commented on the project (refer to *Part A(1)(h)(iii) Summary of issues raised by I&AP's*) and submitted a list of comments. The following comments were deemed applicable

to this project and are proposed as mitigation measures to be implemented during the site establishment-, operational-, and decommissioning phases:

- No structure shall be erected closer than 30 meters from the national road reserve fence and 500 meters from any point of intersection.
- If access is required from the National Road N6, an approval from SANRAL is required.
- SANRAL shall not be held liable should it be found at any future time that noise emanating from the national road, presents a problem in the development adjacent to the national road.
- All storm water discharged or diverted from the national road shall be received and disposed of.
- No advertising shall be directed or displayed to be visible from the national road during the development or construction of this development. All advertising shall be subject to SANRAL's approval.
- A formal application together with the plans of the proposed establishment must be submitted to SANRAL for approval. Construction of all work may only commence after a written approval has been obtained by SANRAL.

Rehabilitation of the Excavated Area:

The risk of unsloped and unrehabilitated areas posing a safety risk can be reduced to being Low through the implementation of the mitigation measures listed below:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order 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:

Final rehabilitation of the mining area must adhere to the mitigation measures listed below:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.
- All infrastructure, equipment, temporary 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 may not be permitted to be buried or burned on the site.
- Invasive plant species clearing must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a or b invasive species in terms the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004) and the Alien and Invasive Species list, 2016 need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).

ix) Motivation where no alternative sites were considered.

As mentioned previously Site Alternative 1 is deemed to be the preferred and only viable site as it allows for the extension of the existing Queenstown Quarry dolerite pit.

The proposed mining area cannot be moved to the north-west as it will then enter into the existing mining right area of Queenstown Quarry. Moving the mining area to the east or west takes it from the optimal dolerite source and into areas with deeper overburden. The presence of the CBA creates a mandatory no-go area, and therefore the mining area cannot be moved to the south, south-east.

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

As mentioned earlier the proposed site earmarked for the mining of dolerite aggregate will entail the expansion of the existing Queenstown Quarry dolerite pit within the boundaries of the proposed GPS coordinates. As no infrastructure will be established, the production rate will dictate the layout of the proposed footprint area.

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

- The Queenstown Quarry dolerite pit cannot be expanded without crossing over the approved mining right boundaries. In the circumstance the Komani Quarry proposal allows for the continued winning of dolerite from the area, expanding the existing pit into the proposed 4.9 ha mining footprint.

- ❖ The position of the MP area is believed to be the most practical alternative as the overburden layer is relatively shallow, the dolerite is of good grade, and the area can be access from the existing mining area.

- ❖ In light of the mining and offset agreement between the Applicant and Raumix Aggregates (Pty) Ltd the proposed operation can be implemented without the need for a separate processing- and stockpiling area. The existing infrastructure, within close proximity to the MP area, can be used.

- ❖ Should the Applicant adhere to the proposed 20 m buffer no-go zone from the boundary of the critical biodiversity area (CBA), the activity will not affect any biodiversity sensitive areas.

- ❖ The cycads, and other protected plant species, present in the proposed footprint area will be relocated (as far as possible) by a suitably qualified contractor upon receipt of the destruction/relocation plant permit from DEDEAT-EC.

The use of the existing Queenstown Quarry infrastructure will result in the following positive aspects:

- ❖ It will lower the initial setup- and production cost of the permit holder;
- ❖ Present the permit holder with a larger footprint for the mining of dolerite, as no area will be lost to infrastructure development;
- ❖ Lessen the impact on the receiving environment both directly (e.g. dust and noise generation, risk of pollution, visual impact), and indirectly (e.g. need for electricity, water and maintenance services);
- ❖ Processing related impacts will be contained to a designated area on the property (existing processing plant); and
- ❖ Without the need to decommission mining/processing related infrastructure, the rehabilitation of the Komani Quarry footprint upon closure will be less expansive.

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

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

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

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

SITE ESTABLISHMENT:

Visual intrusion as a result of site establishment

Rating: High **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	4	4	5	5	5	**20**

Potential negative impact on the nearby critical biodiversity area

Rating: Low **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	2	1	1.5	**4.5**

Potential loss of protected or red data plant species

Rating: Low-Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
5	4	1	3.3	3	1	2	**6.6**

Potential impact on fauna within the footprint area

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	2	1	1.5	**3.4**

Potential impact on areas/infrastructure of heritage or cultural concern

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
5	4	5	4.6	1	1	1	**4.6**

STRIPPING AND STOCKPILING OF TOPSOIL:

Dust nuisance caused by the disturbance of soil

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	2	3	3	2	2.5	**7.5**

Noise nuisance generated by earthmoving machinery

Rating: Low **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	2	1	1.3	1	5	2.5	**3.2**

Loss/contamination of stockpiled topsoil

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	5	1	3	2	1	1.5	**4.5**

Potential infestation of the topsoil heaps with weeds or invader plant species

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	2	2	2.3	2	2	2	**4.6**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	1	1	1.6	2	2	2	**3.2**

Potential erosion of denuded areas

Rating: Low-Medium **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	2	1	2	3	2	2.5	**5**

DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	1	1	2	2	1	1.5	**3**

Dust nuisance caused by blasting activities

Rating: Low-Medium **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	1	2	2	5	3	4	**8**

Noise nuisance as a result of blasting

Rating: Low-Medium **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	4	2.3	4	3	3.5	**8**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT OF QUEENSTOWN QUARRY

Visual intrusion associated with the excavation activities

Rating: Medium **Degree of Mitigation: No Mitigation**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	4	4	5	5	5	**20**

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

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	3	3	3	**4.8**

Noise nuisance generated by excavation equipment and earthmoving machinery

Rating: Low **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	2	1	1.3	1	5	2.5	**3.2**

Unsafe working environment for employees

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	1	1	2	2	1	1.5	**3**

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	1	1	2	2	2	2	**4**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	1	2.6	2	1	1.5	**3.9**

Soil erosion

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	2	2	2	**2.6**

Dust nuisance due to landscaping activities

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	1	1.6	2	2	2	**3.2**

Noise nuisance generated during the landscaping phase

Rating: Low **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	1	1.6	2	2	2	**3.2**

Loss of reinstated topsoil from denuded areas

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	2	2	2	**2.6**

Potential infestation of the reinstated areas by weeds and invader plant species

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	3	2	2.5	**3.2**

Potential contamination of environment as a result of improper waste disposal

Rating: Low **Degree of Mitigation: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	2	1	1.5	**1.9**

j) Assessment of each identified potentially significant impact and risk

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

Table 20: Assessment of each identified potentially significant impact and risk

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	N/A	Control through management and monitoring.	N/A
❖ Site establishment ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion associated with the excavation activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	❖ High ❖ High	<u>Control:</u> Implementing proper housekeeping.	❖ High ❖ High
❖ Site establishment	❖ Potential negative impact on the nearby critical biodiversity area.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	❖ High	<u>Control:</u> Adherence to the 20 m no-go buffer zone.	❖ Low

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
❖ Site establishment	❖ Potential loss of protected or red data plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	❖ Medium-High	<u>Control & Stop:</u> Implementing good management practices and adhering to the recommendations of the botanist.	❖ Low-Medium
❖ Site establishment	❖ Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	❖ Low	<u>Control & Stop:</u> Implementing good management practices.	❖ Low
❖ Site establishment	❖ Potential impact on areas/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment phase	❖ Low-Medium	<u>Control & Stop:</u> Implementing good management practices.	❖ Low
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry;	❖ Dust nuisance caused by the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low-Medium ❖ Low-Medium ❖ Medium ❖ Low-Medium	<u>Control:</u> Dust suppression methods and proper housekeeping.	❖ Low-Medium ❖ Low-Medium ❖ Low ❖ Low

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
❖ Sloping and landscaping during rehabilitation.	❖ Dust nuisance due to landscaping activities.					
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance as a result of blasting. ❖ Noise nuisance generated by excavation equipment and earthmoving machinery. ❖ Noise nuisance generated during the landscaping phase.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low-Medium ❖ Medium ❖ Low-Medium ❖ Low-Medium	<u>Control:</u> Noise suppression methods and proper housekeeping.	❖ Low ❖ Low-Medium ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Loss/contamination of stockpiled topsoil. ❖ Loss of reinstated topsoil from denuded areas.	The loss/contamination of topsoil will affect the rehabilitation of the excavation upon closure of the site.	Site Establishment-, and Decommissioning Phase	❖ Low-Medium ❖ Low-Medium	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil;	❖ Potential infestation of the topsoil heaps with weeds or invader plant species.	Infestation of the footprint by invader plant species may affect	Site Establishment-, and	❖ Medium ❖ Medium	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	❖ Low ❖ Low

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If not mitigated.
❖ Sloping and landscaping during rehabilitation.	❖ Potential infestation of the reinstated areas by weeds and invader plant species.	the biodiversity of the receiving environment.	Decommissioning Phase			
❖ Stripping and stockpiling of topsoil; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ❖ Contamination of area with hydrocarbon or hazardous waste material. ❖ Potential contamination of environment as a result of improper waste disposal.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	❖ Low-Medium ❖ Medium ❖ Medium	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	❖ Low ❖ Low ❖ Low
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Potential erosion of denuded areas. ❖ Soil erosion.	Erosion of the footprint causes an increase in sedimentation of surface runoff, loss of topsoil (natural areas), and additional cost to the permit holder.	Site Establishment-, and Decommissioning Phase	❖ Medium ❖ Medium-High	<u>Control & Remedy:</u> Control of storm water runoff and implementation of a closure plan with erosion protection aspects.	❖ Low-Medium ❖ Low

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	❖ Low-Medium ❖ Medium ❖ Medium	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	❖ Low ❖ Low ❖ Low

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

k) Summary of specialist reports.

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

Table 21: 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
No specialist studies were deemed necessary as the project entails the expansion of the existing dolerite quarry of Queenstown Quarry. The permit holder will however appoint a botanist to conduct a walk-through of the mining footprint prior to any bush-clearance in order to identify protected and/or red data plant species for which a destruction/removal permit is required.			

I) Environmental impact statement

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

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

Project proposal:

- The project entails the mining of dolerite aggregate through the expansion of the existing Queenstown Quarry dolerite pit on a portion of Lesseyton Farm No 81, Queenstown District, Eastern Cape Province. The mining application area is 4.9 ha and the aggregate to be generated through conventional opencast mining methods will be sold to the construction, building and road maintenance industry.

- The Applicant entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd, and in light of the said agreement, Raumix Aggregates (Pty) Ltd was appointed as the entity responsible for the financial and technical aspects of the proposed project. In accordance with the agreement the proposed mining operation will make use of the existing infrastructure at Queenstown Quarry and no infrastructure will be established within the mining permit footprint.

Mining and Biodiversity Conservation Areas:

- The environmental impact assessment identified a critical biodiversity area (CBA 2) that extends through the southern boundary of the proposed mining area. This area is also highlighted in terms of the Mining and Biodiversity Guideline as an area of high biodiversity importance with a corresponding rating of high risk for mining.

- In order to preserve the CBA and prevent mining having a negative impact on the biodiversity sensitive area, it is proposed that a 20 m no-go buffer be set from the border of the CBA line in which no mining may take place. The buffer area will reduce the mineable footprint from 4.9 ha to ±3.7 ha. Should the Applicant adhere to the proposed 20 m no-go buffer area (from the border of the CBA) the impact on the biodiversity sensitive area is deemed to be insignificant.

Protected and/or Red Listed Plant Species:

- Numerous *Aloe ferox* trees are found throughout the site that are protected in terms of CITES.

- Cycads (most likely white-haired cycads *Encephalartos friderici-guilielmi*) were noted within the proposed mining footprint.

- The Applicant will have to apply for a permit for the removal and relocation of all protected plants that will be affected, and will have to obtain the written permission of the landowner to do so as well.

- It is proposed that a qualified botanist conduct a plant identification walkthrough with site management to identify the plants (*Encephalartos* spp, *Aloe* spp, as well as other plants of importance) in need of a destruction/removal permit. Bush clearance must be delayed until the DEDEAT-EC issue the plant permits and the recommendations of the specialist has been implemented.

- The environmental control officer (ECO) must assess the compliance of the permit holder with the conditions of the plant permit and botanist recommendations.

Other Site Specific Environmental Aspects:

- Komani quarry will be cut into the northern slope of the hill. Due to the nature of the activity, the topography of the hill will be altered in that a depression will be created with stepped side walls as mining progress. The rehabilitation option (upon closure) is to render the quarry safe and leave it as a minor landscape feature.

- The viewshed analysis showed that the proposed visual impact will be high towards the north, north-west and north-east due to the elevation of the earmarked area. It is therefore anticipated that the proposed mine will be highly visible within the short to medium distance zone; however, as the distance between the proposed development and the observer increases the visual impact will decrease. To the south, south-west and south-east the visual impact will be negligible as the mining area will be screened by the hill.

- As the prevalent wind direction is in an easterly direction the hill will screen dust generated at Komani quarry from the operations/residents on the opposite side. Should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low-medium significance.

- Although the proposed activity will have a cumulative impact on the ambient noise levels, the development will not take place in a pristine environment, and the

impact is therefore deemed compatible with the current operations and of low significance.

- There are no rivers, streams or wetlands within close proximity of the mining area. As Komani Quarry (Pty) Ltd entered into a mining and offtake agreement with Raumix Aggregates (Pty) Ltd any water to be used at the proposed mining area (mainly for dust suppression purposes) will be obtained from Queenstown Quarry in accordance with their water use licence.

- The fauna at the site will not be impacted on by the proposed mining activity as they will be able to move away or through the site, without being harmed.

- No sites of archaeological or cultural importance were identified during the site inspection.

- As the proposed mining area will be developed in a greenfield area, as extension of the existing dolerite quarry, no infrastructure exist on site that will be impacted on.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the project include:

- The available dolerite can be mined and the Applicant will be able to supply in the demand of the industry; and
- The existing dolerite quarry can be legally expanded and the project will present continued employment opportunities to the existing workforce of Queenstown Quarry.

The negative impacts associated with the project that was deemed to have a Low-Medium or Medium significance includes:

- Visual intrusion as a result of site establishment **High**
- Visual intrusion associated with the excavation activities **High**
- Potential loss of protected or red data plant species **Low – Medium**
- Dust nuisance caused by the disturbance of soil **Low – Medium**

- ❖ Dust nuisance caused by blasting activities **Low – Medium**
- ❖ Noise nuisance caused by blasting activities **Low – Medium**
- ❖ Potential erosion of denuded area **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 22: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that the site have a neat appearance and is kept in good condition at all times. ❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area. ❖ Remove all equipment upon rehabilitation of the mining area and return the area to its prior status.
Management of CBA	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Demarcate a 20 m no-go buffer zone from the boundary of the CBA, and do not allow any mining within this area. ❖ Implement measures to limit flyrock falling in this area. Collect and remove all flyrock (diameter 150 mm and larger) which falls in the buffer area together with rock spill. ❖ Inform employees of the no-go buffer area and prevent unauthorised entry.
Conservation of protected/red data plant species.	Permit holder to apply for a destruction/removal plant permit from DEDEAT-EC. Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Arrange for a botanist to do a plant rescue walk-through of the mining footprint prior to any bush-clearance. Only commence with bush-clearance once the recommendations of the specialist has been implemented. ❖ Apply for a destruction/removal plant permit, for the removal and/or relocation of all protected plants to be affected, prior to bush-clearance. ❖ Only commence with bush-clearance once the recommendations of the specialist has been implemented. ❖ Do not remove any plants without the approval of the ECO.
Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure no fauna (aquatic and terrestrial) is caught, killed, harmed, sold or played with. ❖ Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Archaeological, heritage and palaeontological aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Confine all mining to the development footprint area. ❖ Implement the following change find procedure when discoveries are made on site: ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. ❖ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA.
Dust handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ❖ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ❖ Limit speed on the haul roads to 20 km/h to prevent the generation of excess dust. ❖ Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. ❖ Extend the fallout dust monitoring system, already in place at Queenstown Quarry, to the Komani Quarry mining area. ❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.
Noise handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
		❖ Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion. ❖ Implement best practice measures to minimise potential noise impacts. ❖ 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.
Topsoil management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Strip and stockpile the upper 500 mm of the soil before mining. ❖ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ❖ Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ❖ Consider stockpiling the topsoil at the existing topsoil storage area of Queenstown Quarry (upon mutual agreement thereto), alternatively place topsoil heaps on a levelled area within the mining footprint area and implement measures to safeguard the piles from being washed away. Do not stockpile topsoil in undisturbed areas. ❖ Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ Divert storm- and runoff water around the stockpile area to prevent erosion. ❖ Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Spread the topsoil evenly over the rehabilitated area upon closure of the site. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ❖ Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Management of invasive plant species	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. ❖ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas.
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure regular vehicle maintenance, repairs and services are done at the off-site workshop and service area of Queenstown Quarry. Make sure drip trays are used when emergency repairs have to be done on equipment not able to move to the workshop. ❖ Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling. ❖ Clean drip trays after use. Do not use dirty drip trays. ❖ Collect all hazardous waste products in a suitable receptacle and remove from the site, either for resale or for appropriate disposal at a recognised facility. Incorporate the hazardous waste generated at Komani mining area (upon mutual agreement thereto) into the existing hazardous waste handling system of Queenstown Quarry. ❖ Clean spills immediately, within 2 hours of occurrence, to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and disposing it into the existing hazardous waste handling system of Queenstown Quarry (if possible), or at a recognised facility. File proof. ❖ Contain all general waste within the site vehicles and daily remove it from the mining area to the general waste storage area of Queenstown Quarry (upon mutual agreement thereto). ❖ Encourage re-use or recycling of waste products. ❖ Prevent the burning or burying of waste on site. ❖ Ensure employees make use of the formal ablution facilities of Queenstown Quarry, alternatively provide them with a chemical toil that is serviced at least once a week by an accredited liquid waste handling contractor. ❖ Ensure that the use of temporary, chemical toilet facility do not cause pollution of water sources, or pose a health hazard. In addition prevent any form of secondary pollution from the disposal of refuse or sewage. Address any pollution problems immediately. ❖ Contain waste water and safely dispose thereof when small volumes of wastewater is generated during the life of the mine. No discharge into the natural environment allowed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Storm water handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Slow the runoff from compacted surfaces down and disperse it sufficiently to prevent accelerated erosion. ❖ Put erosion control measures in place to minimise erosion along the proposed mining area. Take extra precautions in areas where the soils are deemed highly erodible. ❖ Do not stockpile soil on or near steep slopes. ❖ Control all drainage from the project area to prevent off-site pollution, flooding or damage to infrastructure downstream of any storm water discharge points. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure that workers have access to the correct PPE as required by law. ❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity. ❖ Inform the surrounding landowners and communities in writing ahead of any blasting event. ❖ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ❖ Record all blasts with a vibro recorder. ❖ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ❖ Limit fly rock, and collect and remove flyrock and rock spill that falls beyond the working area.
SANRAL related mitigation measures.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Do not erected any structure closer than 30 meters from the national road reserve fence and 500 meters from any point of intersection. ❖ Submit an application to SANRAL if access is required from the National Road N6. ❖ SANRAL shall not be held liable should it be found at any future time that noise emanating from the national road, presents a problem in the development adjacent to the national road. ❖ Receive and dispose all storm water discharged or diverted from the national road. ❖ Do not direct or display any advertising to be visible from the national road during the development or construction of this development. Ensure all advertising is subject to SANRAL's approval. ❖ Submit a formal application together with the plans of the proposed establishment to SANRAL for approval. Only commence with construction work after a written approval has been obtained by SANRAL.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT OUTCOMES
Rehabilitation Excavated Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Use the excavated area as a final depositing are for the placement of overburden. ❖ Dump rocks and coarse material removed from the excavation into the pit. ❖ Prevent the deposition of any waste into the excavation. ❖ Return the topsoil previously stored to its original depth over the area once overburden, rocks and coarse natural material have been added to the excavation and it was profiled with acceptable contours and erosion control measures. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix should natural vegetation not re-establish within 6 months from closure.
Final Rehabilitation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	❖ Ensure rehabilitation entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing. ❖ Remove all infrastructure, equipment, temporary equipment and other items used during the mining period. ❖ Remove waste material of any description, including receptacles, scrap, rubble and tyres, and dispose of it at a recognized landfill facility. No waste may be burned/buried on site. ❖ Implement invasive plant species clearing during the life of the mine. Eradicate species regarded as Category 1a or b invasive species in terms of the NEM;BA, 2004 and AIS list, 2016. ❖ Complete final rehabilitation within a period specified by the Regional Manager (DMR).

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, and background information gathering.

Uncertainty exists on the number of protected and/or red data listed plant species that are present within the proposed mining footprint. Should the Applicant however appoint the

botanist to conduct the plant rescue walk-through prior to bush clearance this matter will be addressed in the specialists report.

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

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

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

ii) Conditions that must be included in the authorisation

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

q) Period for which the Environmental Authorisation is required.

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

r) Undertaking

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

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be R 1 697 000. Please see the explanation as to how this amount was derived at attached as Appendix H – Financial and Technical Competence Report.

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

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

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

t) Specific Information required by the competent Authority

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

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

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

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

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

  It is anticipated that the proposed mine will be highly visible within the short to medium distance zone; however, as the distance between the proposed development and the observer increases the visual impact will decrease. To the south, south-west and south-east the visual impact will be negligible as the mining area will be screened by the hill.

  As the proposed mining area is situated against the northern slope of the hill, the project will have a high visual impact on the surrounding environment. It is believed that the residual impact of the activity will be medium upon rehabilitation of the footprint area.

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

  The proposed activity will generate dust as a result of blasting, the movement of earthmoving equipment, and the loading and transporting of material. The Applicant will have to implement dust suppression measures in order to control dust generation and prevent a dust nuisance to surrounding landowners/residents. The impact on the surrounding environment is deemed

to be of low-medium significance. There will be no residual impact after closure.

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

  Due to the nature of the proposed activity, noise will be generated as a result of blasting, as well as loading and transporting of material. The nuisance value of noise generated by heavy earthmoving equipment, to residence in the near vicinity is deemed to be of low significance. The noise caused by blasting will be instantaneous and of short duration. The Applicant will timeously inform all the surrounding residents of each blasting event. All vehicles associated with the proposed activity will also be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). There will be no residual impact after closure.

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

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

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

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

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

As mentioned previously Site Alternative 1 is deemed to be the preferred and only viable site as it allows for the extension of the existing Queenstown Quarry dolerite pit.

The proposed mining area cannot be moved to the north-west as it will then enter into the existing mining right area of Queenstown Quarry. Moving the mining area to the east or west takes it from the optimal dolerite source and into areas with deeper overburden. The presence of the CBA creates a mandatory no-go area, and therefore the mining area cannot be moved to the south, south-east.

The use of the existing Queenstown Quarry infrastructure will result in the following positive aspects:

- It will lower the initial setup- and production cost of the permit holder;
- Present the permit holder with a larger footprint for the mining of dolerite, as no area will be lost to infrastructure development;
- Lessen the impact on the receiving environment both directly (e.g. dust and noise generation, risk of pollution, visual impact), and indirectly (e.g. need for electricity, water and maintenance services);
- Processing related impacts will be contained to a designated area on the property (existing processing plant); and
- Without the need to decommission mining/processing related infrastructure, the rehabilitation of the Komani Quarry footprint upon closure will be less expansive.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

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

The details and expertise of Christine Fouché of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix L as required.

b) Description of the Aspects of the Activity

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

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

c) Composite Map

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

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

d) Description of impact management objectives including management statements

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

The decommissioning phase will entail the rehabilitation of the mining site. Upon cessation of the mining activities, the area will be fully rehabilitated. The perimeter walls of the opencast pit will either be sloped at 1:3 to the pit floor, to prevent soil erosion, or be stepped by creating benches of not more than 3 meters high. Due to the nature of the project, no buildings/infrastructure will have to be removed. The applicant will comply with the minimum closure objectives as prescribed by DMR and detailed below:

Rehabilitation of the excavated area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order 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 (DMR) may require that the soil be analyzed 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), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).

Control of invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management must implement an invasive plant species management plan (see Appendix J) during the 12 months' aftercare period to address germination of problem plants in the area.

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

The water need of the proposed activity will mainly stem from the need for dust suppression within the excavation and along the haul roads. It is proposed that ±14 000 m³ water/annum will be need for dust suppression measures at the quarry. As mentioned previously any water to be used at the proposed mining will be obtained from Queenstown Quarry in accordance with their water use licence

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

Raumix Aggregates (Pty) Ltd will use water from Queenstown Quarry in terms of their current water use licence, and therefore the proposed project does not trigger the NWA, 1998 and no additional water use licence is needed.

iv) Impacts to be mitigated in their respective phases

Table 23: Impact to be mitigated in their respective phases

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons.	Site Establishment phase	4.9 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining of the dolerite aggregate is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998	Beacons need to be in place throughout the life of the activity.
Site Establishment	Site Establishment phase	4.9 ha	**<u>Mitigation Measures Proposed by SANRAL:</u>** ❖ No structure shall be erected closer than 30 meters from the national road reserve fence and 500 meters from any point of intersection. ❖ If access is required from the National Road N6, an approval from SANRAL is required. ❖ SANRAL shall not be held liable should it be found at any future time that noise emanating from the national road, presents a problem in	Management of the mining activities must be in accordance with the: ❖ NRTA, 1996 ❖ SANRAL standards	Throughout the site establishment-, operational- and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			the development adjacent to the national road. ❖ All storm water discharged or diverted from the national road shall be received and disposed of. ❖ No advertising shall be directed or displayed to be visible from the national road during the development or construction of this development. All advertising shall be subject to SANRAL's approval. ❖ A formal application together with the plans of the proposed establishment must be submitted to SANRAL for approval. Construction of all work may only commence after a written approval has been obtained by SANRAL.		
❖ Site Establishment; and ❖ Excavation, loading and hauling to the processing plant of	Site Establishment phase & Operational phase	±3.7 ha	**<u>Visual Mitigation:</u>** ❖ The site must have a neat appearance and be kept in good condition at all times. ❖ Mining equipment must be stored neatly in dedicated areas when not in use. ❖ The permit holder must limit vegetation removal, and stripping of topsoil may only be	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998	Throughout the site establishment- and operational phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Queenstown Quarry.			done immediately prior to the mining/use of a specific area. ❖ The excavation must be contained within the approved footprint of the permitted area. ❖ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum		
❖ Site Establishment	Site Establishment phase	±1 ha	**<u>Impact on CBA:</u>** ❖ The Applicant must demarcate a 20 m no-go buffer zone from the boundary of the critical biodiversity area (CBA), and no mining must be allowed behind the demarcation. ❖ Measures must be implemented to limit flyrock falling in this area. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed. ❖ Employees must be informed of the no-go buffer area and no unauthorised entrance may be allowed.	Management of the CBA no-go buffer must be in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974	The no-go buffer must be demarcated during the site establishment phase and maintained throughout the operational- and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Site Establishment	Site Establishment phase	±3.7 ha	**<u>Loss of Protected / Red Data Plant Species:</u>** ❖ The Applicant must arrange that a botanist conduct a plant rescue walk-through of the mining footprint, prior to any bush-clearance, to identify the plants in need of a destruction/removal permit. ❖ The Applicant must then apply for a permit for the removal or destruction of all protected and red listed plants that will be affected. This application must be made to the Department of Economic Development, Environmental Affairs and Tourism – Eastern Cape Province (DEDEAT-EC). ❖ Bush-clearance may only commence once the recommendations of the specialist has been implemented. ❖ No plants may be removed without the approval of the ECO.	Protected and/or red data species must be protected in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974	Plant permits must be obtained prior to site establishment.
❖ Site Establishment	Site Establishment phase	±3.7 ha	**<u>Protection of Fauna:</u>** ❖ The site manager must ensure no fauna is caught, killed, harmed, sold or played with.	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004	Throughout operational phase.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			❖ 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.		
❖ Site Establishment	Site Establishment phase	±3.7 ha	**<u>Archaeological, Heritage and Palaeontological Aspects:</u>** ❖ All mining must be confined to the development footprint area. ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			extent of the find, and confirm the extent of the work stoppage in that area. ❖ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA.		
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; and	Operational phase & Decommissioning phase	±3.7 ha	**<u>Fugitive Dust Emission Mitigation Measures:</u>** ❖ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents that contains no PCB's (e.g. DAS products). ❖ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ❖ Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Sloping and landscaping during rehabilitation.			❖ Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ❖ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. ❖ The fallout dust monitoring system, already in place at Queenstown Quarry, must be extended to include the proposed Komani Quarry mining area. ❖ 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.		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; and ❖ Sloping and landscaping during rehabilitation.	Operational phase & Decommissioning phase	±3.7 ha	**<u>Noise Handling:</u>** ❖ The Applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). ❖ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior to each blasting occasion. ❖ Best practice measures shall be implemented in order to minimize potential noise impacts. ❖ 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	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.		
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	Operational phase & Decommissioning phase	±3.7 ha	**<u>Topsoil Handling:</u>** ❖ The upper 500 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 have to be such that topsoil is stockpiled for the minimum possible time. ❖ The permit holder must consider the stockpiling of topsoil at the existing topsoil storage area of Queenstown Quarry (upon mutual agreement thereto), alternatively the topsoil must be placed on a levelled area, within the mining footprint area, and measures must be implemented to	Topsoil must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			safeguard the piles from being washed away in the event of heavy rains/storm water. No topsoil may be stockpiled in undisturbed areas. ❖ Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ The temporary topsoil stockpiles must be kept free of invasive plant species. ❖ Storm- and runoff water must be diverted around the stockpile area to prevent erosion. ❖ Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ The stockpiled topsoil must be evenly spread over the rehabilitated area upon closure of the site. ❖ The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. ❖ A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. ❖ Run-off water must be controlled via temporary banks during mining, where necessary on the slopes, to ensure that accumulation of run-off does not cause down-slope erosion. ❖ The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	Operational phase & Decommissioning phase	±3.7 ha	**<u>Management of Invasive Plant Species:</u>** ❖ The upper 500 mm of the soil must be stripped and stockpiled before mining. ❖ An invasive plant species management plan must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. ❖ 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)	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
❖ Stripping and stockpiling of topsoil; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; and ❖ Sloping and landscaping during rehabilitation.	Operational phase & Decommissioning phase	±3.7 ha	**<u>Waste Management:</u>** ❖ Regular vehicle maintenance, repairs and services may only take place at the off-site workshop and service area of Queenstown Quarry. 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 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. ❖ If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			❖ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. ❖ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. The hazardous waste generated at the Komani mining area can be incorporated (upon mutual agreement thereto) into the existing hazardous waste handling system at Queenstown Quarry. ❖ Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMR) by removing the spillage together with the polluted soil and incorporating it into the existing hazardous waste handling system of Queenstown Quarry (if possible), or by disposing it at a recognised facility. Proof must be filed. ❖ All general waste must be contained within the site vehicles and daily be removed from		

ACTIVITIES (as listed in 2.11.1)	**PHASE** of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	**SIZE AND SCALE OF DISTURBANCE** (volumes, tonnages and hectares or m^2)	**MITIGATION MEASURES** (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			the mining area to the general waste storage area of Queenstown Quarry (upon mutual agreement thereto). ❖ Re-use or recycling of waste products must be encouraged on site. ❖ No waste may be buried or burned on the site. ❖ The permit holder must ensure that employees make use of the formal ablution facilities of Queenstown Quarry, alternatively the employees must be provided with a chemical toilet that must be serviced at least once a week by an accredited liquid waste handling contractor. ❖ The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			❖ When small volumes of wastewater are generated during the life of the mine the following is applicable: ▪ Water containing waste must not be discharged into the natural environment. ▪ Measures to contain the waste water and safely dispose thereof must be implemented. ❖ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	Operational phase & Decommissioning phase	±3.7 ha	**<u>Erosion Control and Storm Water Handling:</u>** ❖ The runoff from compacted surfaces must be slowed down and dispersed sufficiently to prevent accelerated erosion. ❖ Erosion control measure must be put in place to minimise erosion along the proposed mining area. Extra precautions must be taken in areas where the soils are deemed highly erodible. Erosion control measures	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			could include the use of sand bags, hessian sheets, retention or replacement of vegetation. ❖ Stockpiling of soil must not be allowed on or near steep slopes. This is to prevent pollution or the impediment of surface run-off. ❖ Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to infrastructure downstream or any storm water discharge points. ❖ 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		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			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.		
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of	Operational phase &	±3.7 ha	**<u>Management of health and safety risks:</u>** ❖ Workers must have access to the correct personal protection equipment (PPE) as required by law.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001	Throughout operational and decommissioning phases.

ACTIVITIES (as listed in 2.11.1)	**PHASE** of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	**SIZE AND SCALE OF DISTURBANCE** (volumes, tonnages and hectares or m^2)	**MITIGATION MEASURES** (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Queenstown Quarry; and ❖ Sloping and landscaping during rehabilitation.	Decommissioning phase		❖ 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 and communities must be informed in writing ahead of any 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.	❖ USBM standards	

e) Impact Management Outcomes

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

Table 24: Impact Management Outcomes

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through** **(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining of the dolerite aggregate is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion associated with the excavation activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment	❖ Potential negative impact on the nearby critical biodiversity area.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	<u>Control:</u> Adherence to the 20 m no-go buffer zone.	Management of the CBA no-go buffer must be in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
❖ Site establishment	❖ Potential loss of protected or red data plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	Control & Stop: Implementing good management practices and adhering to the recommendations of the botanist.	Protected and/or red data species must be protected in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974
❖ Site establishment	❖ Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	Control & Stop: Implementing good management practices.	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Site establishment	❖ Potential impact on areas/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment phase	Control & Stop: Implementing good management practices.	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Dust nuisance caused by the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
	loading and vehicles transporting the material. ❖ Dust nuisance due to landscaping activities.				
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance as a result of blasting. ❖ Noise nuisance generated by excavation equipment and earthmoving machinery. ❖ Noise nuisance generated during the landscaping phase.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Loss/contamination of stockpiled topsoil. ❖ Loss of reinstated topsoil from denuded areas.	The loss/contamination of topsoil will affect the rehabilitation of the	Site Establishment-, and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	Topsoil must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
		excavation upon closure of the site.			
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Potential infestation of the topsoil heaps with weeds or invader plant species. ❖ Potential infestation of the reinstated areas by weeds and invader plant species.	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Site Establishment-, and Decommissioning Phase	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ❖ Contamination of area with hydrocarbon or hazardous waste material. ❖ Potential contamination of environment as a	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through** **(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
	result of improper waste disposal.				
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Potential erosion of denuded areas. ❖ Soil erosion.	Erosion of the footprint causes an increase in sedimentation of surface runoff, loss of topsoil (natural areas), and additional cost to the permit holder.	Site Establishment-, and Decommissioning Phase	Control & Remedy: Control of storm water runoff and implementation of a closure plan with erosion protection aspects.	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards

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 25: Impact Management Actions

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Demarcation of site with visible beacons.	❖ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Control through management and monitoring.	Beacons need to be in place throughout the life of the mine.	Mining of the dolerite aggregate is only allowed within the boundaries of the approved area. ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry.	❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion associated with the excavation activities.	Control: Implementing proper housekeeping.	Throughout site establishment- and operational phases.	Management of the mining activities must be in accordance with the: ❖ MPRDA, 2008 ❖ NEMA, 1998
❖ Site establishment	❖ Potential negative impact on the nearby critical biodiversity area.	Control: Adherence to the 20 m no-go buffer zone.	Applicable during the site establishment phase, and to be managed throughout the operational and decommissioning phases.	Management of the CBA no-go buffer must be in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Site establishment	❖ Potential loss of protected or red data plant species.	Control & Stop: Implementing good management practices and adhering to the recommendations of the botanist.	Throughout site establishment phase.	Protected and/or red data species must be protected in accordance with the: ❖ NEM:BA, 2004 ❖ ECNEO, 1974
❖ Site establishment	❖ Potential impact on fauna within the footprint area.	Control & Stop: Implementing good management practices.	Throughout operational- and decommissioning phases.	Site specific fauna must be managed in accordance with the: ❖ NEM:BA, 2004
❖ Site establishment	❖ Potential impact on areas/infrastructure of heritage or cultural concern.	Control & Stop: Implementing good management practices.	Throughout site establishment phase.	Cultural/heritage aspects on site must be managed in accordance with the: ❖ NHRA, 1999
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry;	❖ Dust nuisance caused by the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material.	Control: Dust suppression methods and proper housekeeping.	Throughout operational- and decommissioning phases.	Dust generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ National Dust Control Regulations, GN No R827 ❖ ASTM D1739 (SANS 1137:2012)

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Sloping and landscaping during rehabilitation.	❖ Dust nuisance due to landscaping activities.			
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance as a result of blasting. ❖ Noise nuisance generated by excavation equipment and earthmoving machinery. ❖ Noise nuisance generated during the landscaping phase.	<u>Control:</u> Noise suppression methods and proper housekeeping.	Throughout operational- and decommissioning phases.	Noise generation on site must be managed in accordance with the: ❖ NEM:AQA, 2004 Regulation 6(1) ❖ NRTA, 1996
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Loss/contamination of stockpiled topsoil. ❖ Loss of reinstated topsoil from denuded areas.	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	Throughout operational- and decommissioning phases.	Topsoil must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Potential infestation of the topsoil heaps with weeds or invader plant species. ❖ Potential infestation of the reinstated areas by weeds and invader plant species.	<u>Control & Remedy:</u> Implementation of an invasive plant species management plan.	Throughout operational- and decommissioning phases.	Weeds and invader plants on site must be managed in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004
❖ Stripping and stockpiling of topsoil; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ❖ Contamination of area with hydrocarbon or hazardous waste material. ❖ Potential contamination of environment as a result of improper waste disposal.	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Throughout operational- and decommissioning phases.	Mining related waste must be managed in accordance with the: ❖ NWA, 1998 ❖ NEM:WA, 2008

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	❖ Potential erosion of denuded areas. ❖ Soil erosion.	<u>Control & Remedy:</u> Control of storm water runoff and implementation of a closure plan with erosion protection aspects.	Throughout operational- and decommissioning phases.	Erosion and storm water must be managed in accordance with the: ❖ CARA, 1983 ❖ NEMA, 1998 ❖ NWA, 1998
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	<u>Stop & Control:</u> Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Throughout operational- and decommissioning phases.	Health and safety aspects on site must be managed in accordance with the: ❖ MHSA, 1996 ❖ OHSA, 1993 ❖ OHSAS 18001 ❖ USBM standards

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.

Upon cessation of the mining activities, the area will be fully rehabilitated. The perimeter walls of the opencast pit will either be sloped at 1:3 to the pit floor, to prevent soil erosion, or be stepped by creating benches of not more than 3 meters high.

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

(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, 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.

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

The requested rehabilitation plan is attached as Appendix E.

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

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

Rehabilitation of the excavated area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order 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 (DMR) may require that the soil be analyzed 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), maintenance, and clearing of invasive plant species.
- All equipment, plant, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).

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

The calculation of the quantum for financial provision was according to Section B of the working manual.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Dolerite Aggregate
Saleable mineral by-product	None

Risk ranking

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

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

Unit rates for closure components

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

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	238 697	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	-	-

Component No.	Main description	Master rate	Multiplication factor
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	16 776	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.20
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 26: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Komani Quarry			**Location:**	Queenstown		
Evaluators:	C Fouché			**Date:**	14 March 2019		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^2	0	16	1.00	1.20	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	228	1.00	1.20	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	336	1.00	1.20	R 0.00
3	Rehabilitation of access roads	m^2	0	41	1.00	1.20	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	395	1.00	1.20	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	216	1.00	1.20	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	455	1.00	1.20	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	3.7	238 697	0.04	1.20	R 42 392.59
7	Sealing of shaft, audits and inclines	m^3	0	122	1.00	1.20	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	159 131	1.00	1.20	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	198 195	1.00	1.20	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	575 653	0.51	1.20	R 0.00
9	Rehabilitation of subsided areas	ha	0	133 249	1.00	1.20	R 0.00
10	General surface rehabilitation	ha	0	126 059	1.00	1.20	R 0.00
11	River diversions	ha	0	126 059	1.00	1.20	R 0.00
12	Fencing	m	0	144	1.00	1.20	R 0.00

13	Water Management	ha	0	47 931	0.17	1.20	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	3.7	16 776	1.00	1.20	R 74 485.44
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 116 878.03
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 116 878.03		**Sub Total 1**	R 122 721.93

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 7 363.32
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 12 272.19
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 142 357.43
		Vat (15%)	R 21 353.62
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 163 711.05**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 163 711.05.**

(f) Confirm that the financial provision will be provided as determined.

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the Applicant 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 27: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation of site with visible beacons	Maintenance of beacons	❖ Visible beacons need to be placed at the corners of the mining area. ❖ The 20 m no-go buffer area from the CBA needs to be demarcated.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry.	Visual Characteristics: ❖ Visual intrusion as a result of site establishment. ❖ Visual intrusion associated with the excavation activities.	❖ Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Ensure that the site have a neat appearance and is kept in good condition at all times.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an

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
			❖ Store mining equipment in a dedicated area when not in use. ❖ Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. ❖ Contain excavations to the approved footprint of the permitted area. ❖ Remove all equipment upon rehabilitation of the mining area and return the area to its prior status.	Environmental Control Officer.
❖ Site establishment	<u>Critical Biodiversity Area:</u> ❖ Potential negative impact on the nearby critical biodiversity area	❖ The 20 m no-go buffer area from the CBA needs to be demarcated with visible beacons.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Demarcate a 20 m no-go buffer zone from the boundary of the CBA, and do not allow any mining within this area. ❖ Implement measures to limit flyrock falling in this area. Collect and remove all flyrock (diameter 150 mm and larger) which falls in the buffer area together with rock spill. ❖ Inform employees of the no-go buffer area and prevent unauthorised entry.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment	<u>Groundcover:</u> ❖ Potential loss of protected or red data plant species.	❖ Botanist plant rescue walk-through report. ❖ Destruction/removal plant permit issued by DEDEAT-EC. ❖ Proof of implementation of the specialist recommendations.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Botanist to identify plants of importance. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u>	Applicable throughout site establishment phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Arrange for a botanist to do a plant rescue walk-through of the mining footprint prior to any bush-clearance. Only commence with bush-clearance once the recommendations of the specialist has been implemented. ❖ Apply for a destruction/removal plant permit, for the removal and/or relocation of all protected plants to be affected, prior to bush-clearance. ❖ Only commence with bush-clearance once the recommendations of the specialist has been implemented. ❖ Do not remove any plants without the approval of the ECO.	
❖ Site establishment	<u>Fauna:</u> ❖ Potential impact on fauna within the footprint area.	❖ Toolbox talks to educate employees how to handle fauna that enter the work areas.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure no fauna (aquatic and terrestrial) is caught, killed, harmed, sold or played with. ❖ Instruct workers to report any animals that may be trapped in the working area. ❖ Ensure no snares are set or nests raided for eggs or young.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Site establishment	<u>Cultural and Heritage Aspects:</u> ❖ Potential impact on areas/infrastructure of heritage or cultural concern.	❖ Contact number of an archaeologist that can be contacted when a discovery is made on site.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Confine all mining to the development footprint area. ❖ Implement the following change find procedure when discoveries are made on site: ❖ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ❖ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. ❖ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. ❖ Work may only continue once the go-ahead was issued by SAHRA.	❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	<u>Air Quality:</u> ❖ Dust nuisance caused by the disturbance of soil. ❖ Dust nuisance caused by blasting activities. ❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Dust nuisance due to landscaping activities.	❖ Fallout dust monitoring equipment. ❖ Gravimetric dust monitoring equipment. ❖ Dust suppression equipment such as a water car, water dispenser and sprayers on the crusher plant. ❖ Signage that clearly reduce the speed on the access roads.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ❖ Limit speed on the haul roads to 20 km/h to prevent the generation of excess dust. ❖ Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ❖ Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. ❖ Extend the fallout dust monitoring system, already in place at Queenstown Quarry, to the Komani Quarry mining area. ❖ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ❖ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	
❖ Stripping and stockpiling of topsoil; ❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	<u>Noise Ambiance:</u> ❖ Noise nuisance generated by earthmoving machinery. ❖ Noise nuisance as a result of blasting. ❖ Noise nuisance generated by excavation equipment and earthmoving machinery. ❖ Noise nuisance generated during the landscaping phase.	❖ Personal noise exposure monitoring equipment. ❖ Signage indicating noise zones. ❖ Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ❖ No loud music may be permitted at the mining area. ❖ Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion. ❖ Implement best practice measures to minimise potential noise impacts. ❖ 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.	
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	<u>Geology and Soil:</u> ❖ Loss/contamination of stockpiled topsoil. ❖ Loss of reinstated topsoil from denuded areas.	❖ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Strip and stockpile the upper 500 mm of the soil before mining. ❖ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ❖ Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ❖ Consider stockpiling the topsoil at the existing topsoil storage area of Queenstown Quarry (upon mutual agreement thereto), alternatively place topsoil heaps on a levelled area within the mining footprint area and implement measures to safeguard the piles from being washed away. Do not stockpile topsoil in undisturbed areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ❖ Divert storm- and runoff water around the stockpile area to prevent erosion. ❖ Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ❖ Spread the topsoil evenly over the rehabilitated area upon closure of the site. ❖ Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. ❖ Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. ❖ Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. ❖ Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	<u>Groundcover:</u> ❖ Potential infestation of the topsoil heaps with weeds or invader plant species. ❖ Potential infestation of the reinstated areas by weeds and invader plant species.	❖ Designated team to cut or pull out invasive plant species that germinated on site. ❖ Herbicide application equipment.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			❖ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. ❖ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ❖ Control declared invader or exotic species on the rehabilitated areas.	❖ Annual compliance monitoring of site by an Environmental Control Officer.
❖ Stripping and stockpiling of topsoil; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	<u>Waste Management:</u> ❖ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages. ❖ Contamination of area with hydrocarbon or hazardous waste material. ❖ Potential contamination of environment as a result of improper waste disposal.	❖ Oil spill kit. ❖ Sealed drip trays. ❖ Formal waste disposal system with waste registers, or access to the waste registers of Queenstown Quarry.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure regular vehicle maintenance, repairs and services are done at the off-site workshop and service area of Queenstown Quarry. Make sure drip trays are used when emergency repairs have to be done on equipment not able to move to the workshop. ❖ Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling. ❖ Clean drip trays after use. Do not use dirty drip trays. ❖ Collect all hazardous waste products in a suitable receptacle and remove from the site, either for resale or for appropriate disposal at a recognised facility. Incorporate the hazardous waste generated at Komani mining area (upon mutual agreement thereto) into the existing hazardous waste handling system of Queenstown Quarry. ❖ Clean spills immediately, within 2 hours of occurrence, to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and disposing it into the existing hazardous waste handling system of Queenstown	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Quarry (if possible), or at a recognised facility. File proof. ❖ Contain all general waste within the site vehicles and daily remove it from the mining area to the general waste storage area of Queenstown Quarry (upon mutual agreement thereto). ❖ Encourage re-use or recycling of waste products. ❖ Prevent the burning or burying of waste on site. ❖ Ensure employees make use of the formal ablution facilities of Queenstown Quarry, alternatively provide them with a chemical toil that is serviced at least once a week by an accredited liquid waste handling contractor. ❖ Ensure that the use of temporary, chemical toilet facility do not cause pollution of water sources, or pose a health hazard. In addition prevent any form of secondary pollution from the disposal of refuse or sewage. Address any pollution problems immediately. ❖ Contain waste water and safely dispose thereof when small volumes of wastewater is generated during the life of the mine. No discharge into the natural environment allowed.	
❖ Stripping and stockpiling of topsoil; ❖ Sloping and landscaping during rehabilitation.	<u>Geology and Soil:</u> ❖ Potential erosion of denuded areas. ❖ Soil erosion.	❖ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Slow the runoff from compacted surfaces down and disperse it sufficiently to prevent accelerated erosion. ❖ Put erosion control measures in place to minimise erosion along the proposed mining area. Take extra	Applicable throughout site establishment-, operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			precautions in areas where the soils are deemed highly erodible. ❖ Do not stockpile soil on or near steep slopes. ❖ Control all drainage from the project area to prevent off-site pollution, flooding or damage to infrastructure downstream of any storm water discharge points. ❖ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	
❖ Drilling and blasting; ❖ Excavation, loading and hauling to the processing plant of Queenstown Quarry; ❖ Sloping and landscaping during rehabilitation.	<u>Health and Safety:</u> ❖ Health and safety risk posed by blasting activities. ❖ Unsafe working environment for employees. ❖ Safety risk posed by un-sloped areas.	❖ Stocked first aid box. ❖ Level 1 certified first aider. ❖ All appointments in terms of the Mine Health and Safety Act, 1996. ❖ Vibro recorder.	<u>Responsibility:</u> ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Role:</u> ❖ Ensure that workers have access to the correct PPE as required by law. ❖ Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). ❖ Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity. ❖ Inform the surrounding landowners and communities in writing ahead of any blasting event. ❖ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ❖ Record all blasts with a vibro recorder. ❖ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ❖ Limit fly rock, and collect and remove flyrock and rock spill that falls beyond the working area.	Applicable throughout operational-, and decommissioning phases. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
❖ Sloping and landscaping during rehabilitation.	Rehabilitation of Mining Area: ❖ Rehabilitation of excavation. ❖ Final rehabilitation.	❖ Earthmoving equipment to reinstate mined-out areas. ❖ Cover crop to be established on reinstated area. ❖ Erosion control infrastructure (when needed).	Responsibility: ❖ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ❖ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Role: ❖ Use the excavated area as a final depositing are for the placement of overburden. ❖ Dump rocks and coarse material removed from the excavation into the pit. ❖ Prevent the deposition of any waste into the excavation. ❖ Return the topsoil previously stored to its original depth over the area once overburden, rocks and coarse natural material have been added to the excavation and it was profiled with acceptable contours and erosion control measures. ❖ If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix should natural vegetation not re-establish within 6 months from closure. ❖ Ensure rehabilitation entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing. ❖ Remove all infrastructure, equipment, temporary equipment and other items used during the mining period. ❖ Remove waste material of any description, including receptacles, scrap, rubble and tyres, and dispose of it at a recognized landfill facility. No waste may be burned/buried on site. ❖ Implement invasive plant species clearing during the life of the mine. Eradicate species regarded as	Applicable throughout decommissioning phase. ❖ Daily compliance monitoring by site management. ❖ Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Category 1a or b invasive species in terms of the NEM;BA, 2004 and AIS list, 2016. ❖ Complete final rehabilitation within a period specified by the Regional Manager (DMR).	

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

m) Environmental Awareness Plan

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

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and hazardous waste handling will be discussed.

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

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

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

- **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 Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMR for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports **X**
b) the inclusion of comments and inputs from stakeholders and I&AP's **X**
c) the inclusion of inputs and recommendations from the specialist reports where relevant, a **X**
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein **X**

Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

21 May 2019

Date:

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B
1:250 000 LOCALITY MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

LAND USE MAP

APPENDIX E
REHABILITATION PLAN

APPENDIX F1 & F2

COMMENTS AND RESPONSE REPORT

&

PROOF OF PUBLIC PARTICIPATION

APPENDIX F3

MINING AND OFFTAKE AGREEMENT

APPENDIX G

SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

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

ENVIRONMENTAL IMPACT STATEMENT			
TYPE OF IMPACT	**DURATION**	**LIKELIHOOD**	**SIGNIFICANCE**
Site Establishment:			
❖ Visual intrusion as a result of site establishment.	**Duration of site establishment phase (±1 month)**	**Definite**	**High Concern**
❖ Potential negative impact on the nearby critical biodiversity area.		**Low Possibility**	**Low Concern**
❖ Potential loss of protected or red data plant species.		**Possible**	**Low-Medium Concern**
❖ Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern**
❖ Potential impact on areas/infrastructure of heritage or cultural concern.		**Low Possibility**	**Low Concern**
Stripping and Stockpiling of Topsoil:		**LIKELIHOOD**	**SIGNIFICANCE**
❖ Dust nuisance caused by the disturbance of soil.	**Duration of site establishment phase (±1 month)**	**Low Possibility**	**Low-Medium Concern**
❖ Noise nuisance generated by earthmoving machinery.		**Low Possibility**	**Low Concern**
❖ Loss/contamination of stockpiled topsoil.		**Low Possibility**	**Low Concern**
❖ Potential infestation of the topsoil heaps with weeds or invader plant species.		**Possible**	**Low Concern**
❖ Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages.		**Low Possibility**	**Low Concern**
❖ Potential erosion of denuded areas.		**Low Possibility**	**Low-Medium Concern**
Drilling and Blasting:		**LIKELIHOOD**	**SIGNIFICANCE**
❖ Health and safety risk posed by blasting activities.	**Duration of operational phase (5 years maximum)**	**Low Possibility**	**Low Concern**
❖ Dust nuisance caused by blasting activities.		**Definite**	**Low-Medium Concern**
❖ Noise nuisance as a result of blasting.		**Definite**	**Low-Medium Concern**
Excavation, Loading and Hauling to the Processing Plant of Queenstown Quarry:		**LIKELIHOOD**	**SIGNIFICANCE**
❖ Visual intrusion associated with the excavation activities.	**Duration of operational phase (5 years maximum)**	**Definite**	**High Concern**

❖ Dust nuisance due to excavation and from loading and vehicles transporting the material. ❖ Noise nuisance generated by excavation equipment and earthmoving machinery. ❖ Unsafe working environment for employees. ❖ Contamination of area with hydrocarbons or hazardous waste materials.		**Possible** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Concern** **Low Concern** **Low Concern** **Low Concern**
<u>Sloping and Landscaping during Rehabilitation:</u> ❖ Safety risk posed by un-sloped areas. ❖ Soil erosion. ❖ Dust nuisance due to landscaping activities. ❖ Noise nuisance generated during the landscaping phase. ❖ Loss of reinstated topsoil from denuded areas. ❖ Potential infestation of the reinstated areas by weeds and invader plant species. ❖ Potential contamination of environment as a result of improper waste disposal.	**Duration of operational phase** **(5 years maximum)**	**<u>LIKELIHOOD</u>** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**<u>SIGNIFICANCE</u>** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**

APPENDIX H
FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX I

CLOSURE PLAN

APPENDIX J

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX K

PHOTOGRAPHS OF THE PROPOSED SITE

PHOTOGRAPHS OF THE PROPOSED SITE

PROPOSED MINING AREA THAT BORDERS THE EXISTING DOLERITE PIT OF QUEENSTOWN QUARRY

EXISTING PROCESSING PLANT OF QUEENSTOWN QUARRY WHERE THE MATERIAL WILL BE PROCESSED

EXISTING DOLERITE PIT TO BE EXPANDED BY THE KOMANI QUARRY APPLICATION

PHOTOGRAPHS OF THE PROPOSED SITE	
	
EXISTING ACCESS TO QUEENSTOWN QUARRY THAT WILL ALSO BE USED TO ACCESS THE KOMANI QUARRY	

APPENDIX L

CV AND EXPERIENCE RECORD OF EAP