



LEFATSE

Environmental Planning Services (PTY) Ltd

Draft Basic Assessment and Environmental Management Programme Report

Proposed rock quarry and associated activities on the farm Mimosa
Glen 885/9 (of 6), District Bloemfontein, Free State Province

July 2019

Reference: FS 30/5/1/3/2/10277MP

Lefatse Environmental Planning Services (Pty) Ltd. (Reg no. 2016/047456/07)

BLOEMFONTEIN OFFICE

Hanri van Jaarsveld
Director
079 499 7999
hanri@lefatsemail.co.za
PO Box 11945, Universitas, 9321

HERMANUS OFFICE

Johann du Preez
Director
082 376 4404
johann@lefatsemail.co.za
Postnet Suite 208, Private Bag X16,
Hermanus, 7200
(Pr Sci Nat. 400271/07)

PRETORIA OFFICE

Frank van der Kooy
Project Manager
082 890 1918
frank@lefatsemail.co.za
PO Box 32497, Totiusdal, 0134
(Pr Sci Nat. 400126/00)



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Environmental Planning Services (PTY) Ltd

Draft Basic Assessment and Environmental Management Programme Report

EAP details

Lefatse EPS (Pty) Ltd
P.O. Box 11945
Universitas
Bloemfontein
9321

Contact: Mrs Hanri van Jaarsveld
Tel: 079 499 7999
Email: Hanri@lefatsemail.co.za

Client details

AMC Umsenge Quarry (Pty) Ltd
2 Venter Street
Bloemfontein
9310

Contact: Mr Zane Murray
Tel: 051 451 2604
Email: zane@africanmc.co.za

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT And ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: AMC Umsenge Quarry (Pty) Ltd.

TEL NO: 051 451 2604

FAX NO: 051 451 2622

POSTAL ADDRESS: 2 Venter Street, Bainsvlei, Bloemfontein, 9310

PHYSICAL ADDRESS: 2 Venter Street, Bainsvlei, Bloemfontein, 9310

FILE REFERENCE NUMBER SAMRAD ID: 193637

FILE REFERENCE NUMBER SAMRAD: FS 30/5/1/3/2/10277 MP

1. IMPORTANT NOTICE

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

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

In terms of section 16(3)(b) of the EIA 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.

2. 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, significance, 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

3. Contact Person and correspondence address:

a) Details of

i) Details of the EAP

Name of The Practitioner: Hanri van Jaarsveld
Tel No.: 079 499 7999
Fax No.: -
e-mail address: Hanri@lefatsemail.co.za

ii) Expertise of the EAP

(1) The qualifications of the EAP

(with evidence). Refer to Annexure 1.

B.Sc. (Natural Sciences)
B.Sc. Hons. (Zoology)
Masters in Environmental Management

(2) Summary of the EAP's past experience.

(In carrying out the Environmental Impact Assessment Procedure) Refer to Annexure 1.

The EAP has been involved in environmental management since 2007 with a good knowledge of environmental legislation and its implementation. Personal experience includes amongst other: Coordination of environmental management courses presented at the Centre for Environmental Management, UFS; Project management; Applications for Environmental Authorisation in terms of NEMA (Act 107 of 1998) and related sub-regulations, e.g. waste licences and atmospheric emission licenses; Application for Integrated Water Use Licenses in terms of the NWA (Act 36 of 1998); Environmental compliance auditing; Environmental Management Framework (EMF).

b) Location of the overall Activity

Farm Name:	Portion 9 (of 6) of the farm Mimosa Glen 885
Application area (Ha)	Approximately 4.9 Ha mining permit; Additional 3 Ha associated development including offices, etc.

Magisterial district:	Bloemfontein
Distance and direction from nearest town	Approximately 10 km north of Bloemfontein
21 digit Surveyor General Code for each farm portion	F00300000000088500009

c) Locality map

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

Refer to Annexure 2 for the locality map.

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

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

Refer to Annexure 2 for the proposed site layout plan(s).

i) Listed and specified activities

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, 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 m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
Decommissioning and transfer of liabilities of the existing operation under an existing mining permit (which has lapsed).	4.9 ha		MPRDA (Act 28 of 2002)
Surface mining of dolerite (stone aggregate) for commercial use in construction and road building. Activities that will be associated with the operation include: Excavation; Stockpiling of topsoil, product and overburden, Loading, hauling and transport; Blasting; Rehabilitation activities	4.9 ha	X	Listing Notice 1, No. 21 of GNR 327 (EIA Regulations, 2014 as amended)

Phased clearance of vegetation as mining proceeds and with site establishment.	8 ha	X	Listing Notice 1, No. 27 of GNR 327 (EIA Regulations, 2014 as amended)
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ii) Description of the activities to be undertaken

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

The type of commodity to be mined will be aggregate stone (dolerite) on an area 4.9 ha in extent and to an estimated depth of approximately 20m – 30m.

The mining methodology will be surface mining with earthmoving equipment, e.g. front end loaders and excavators. Blasting will be undertaken during mining in order to loosen material. Blasting will be undertaken by a certified blast operator. The energy load to be used during a blasting event will be dependent on the local geology and volume of material to be loosened. All the necessary and regulated measures will be implemented during blasting and the company’s Safe Operating Procedure for blasting will be adopted for this operation.

The oversized material will be crushed and screened with a crushing plant on site. The plant to be used is based on the latest technology that enhance production rate and reduce dust generation. The different product grades will be stockpiled on site for sale to commercial buyers for use in construction. Product will be loaded onto tripper trucks with front end loaders and hauled offsite by clients.

Strip mining is recommended and will be undertaken systematically from east to west. The extent of disturbed and exposed areas will be limited to active operational areas as far as possible. Any topsoil will be removed prior to disturbance or mining of new areas. Topsoil and overburden will be stockpiled separately on a dedicated area not prone to erosion. The overburden will be used as backfill material during concurrent rehabilitation of mined out areas and the topsoil will be used as cover material. Where landscaping is not possible, acceptable bench heights will be kept and the mined areas will be made safe and/or fenced with final rehabilitation.

The removal of topsoil and vegetation will be limited to the strips actively being mined; stockpile- and loading areas; offices; plant area; and access roads. Dust suppression will be undertaken through water spraying, enforcing speed limits on transport vehicles, implementation of operational procedures and limiting activities during high wind conditions. Water for dust suppression will be abstracted from the existing registered borehole.

e) Policy and Legislative Context

<p>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</p> <p>(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)</p>	<p>REFERENCE WHERE APPLIED</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</p> <p>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p>National Environmental Management Act (Act 107 of 1998) and related regulations</p>	<p>Chapters 5 & 90</p>	<p>In terms of the EIA Regulations, 2014 as amended, an Environmental Authorisation is required for an activity that requires a mining permit in terms of Section 27 of the MPRDA (Act 28 of 2002) and for the clearance of vegetation of an area larger than 1 ha but smaller than 20 ha. A Basic Assessment process in terms of Regulations 19 & 20 of the EIA Regulations, 2014 as amended, is herewith undertaken.</p> <p>The financial provisioning will be determined and subsequent reporting thereof and environmental performance assessments will be in accordance with the NEMA Financial Provision Regulations, 2015.</p>
<p>National Environmental Management: Biodiversity Act (Act 10 of 2004)</p>	<p>Sections 52 & 56</p>	<p>An ecological and wetland survey for the proposed operation was conducted by an ecologist. A permit in terms of the NEM:BA, 2004, for the relocation of protected plant species within the proposed operational area may be required.</p>
<p>National Water Act (Act 36 of 1998)</p>	<p>Section 21</p>	<p>There is an existing Water Use Registration for the abstraction of groundwater for use as dust suppression. The study area is within 500m of a drainage line.</p>

National Heritage Resources Act (Act 25 of 1999)	Sections 34 – 36; 38	A Phase 1 Archaeological- and Palaeontological Assessment for the same study area was undertaken with the application of the previous mining permit in 2015. A desktop assessment conducted August 2019 included the additional 3 ha applicable to the new application for Environmental Authorisation. No potential sensitive objects were identified. A “Chance Find Protocol” was developed as part of the Impact Assessment attached under Annexure 8. SAHRA will be notified if any artefacts or object with potential heritage importance are unearthed during the Life of Mine.
Conservation of Agricultural Resources Act (Act 43 of 1983)	Section 15E	Invader and weed plant species that have established on the site due to the disturbance by mining and associated activities will be managed in terms of Section 15E of the Act.
National Veld and Forest Fire Act (Act 101 of 1998)	Sections 12 – 13; 17 - 18	The permit holder should adhere to the management of fires and/or development of firebreaks in accordance with this Act.
Mineral and Petroleum Resources Development Act (Act 28 of 2002)	Section 27	An application for a mining permit is applied for under the MPRDA, 2002 as part of this Environmental Authorisation in terms of NEMA, 1998.
Mine Health and Safety Act (Act 29 of 1996)	Chapter 2	The permit holder will comply with this Act to ensure the health and safety of persons working on site. The standard AMC Code of Practises (COPs) will be adopted and implemented on site (Annexure 5).
Occupation Health and Safety Act (Act 85 of 1993)	Sections 8 – 9; 12 - 14	The permit holder will adhere to this Act in terms of the health and safety of the persons working on site and working with construction and mining equipment. Management will also be undertaken in accordance with the company’s COPs (Annexure 5).

Explosives Act (Act 15 of 2003)	Chapters 1 & 3	A certified blast operator will undertake the blasting in accordance with the Act at all times. Blasting will also be undertaken in accordance with the company's Safe Operating Procedures (SOPs) (Annexure 5).
National Environmental Management: Air Quality Act (Act 39 of 2004)	Sections 21; 32 – 34; 37	An Atmospheric Emission License is not required. However, management on the quarry will be undertaken in terms of the relevant sections of the Act. Dust monitoring and management will be undertaken in accordance with the company's COPs (Annexure 5).
National Environmental Management: Waste Management Act (Act 59 of 2008)	Sections 7; 16; 19; 21; 23; 27	No activities that would require a Waste Management License in terms of Section 19 of the Act was expected to be undertaken during the writing of this report. The permit holder will implement waste management measures in accordance with Section 16 of the Act throughout the life of the operation. All waste that will be disposed off at a landfill site will be undertaken in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of Section 7(1) of the Act. Management will also be undertaken in accordance with the company's COPs (Annexure 5).

f) Need and desirability of the proposed activities.

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

African Mining and Crushing (Pty) Ltd. (AMC) is a well established mining and crushing company with its head office in Bloemfontein. One of the company's core operating principles is employee development. AMC has identified the need to provide their employees with onsite training on mining equipment from where they can be placed on other operational mines. An operational rock quarry in close vicinity to Bloemfontein would allow AMC with the opportunity to train their employees and also deliver commercial material to address the need for construction material in Bloemfontein and surroundings used to upgrade infrastructure and accommodation

due to the constant influx of people from rural areas (Mangaung Metropolitan IDP, 2013-2014; Stats SA, 2011).

AMC Property (Pty) Ltd. is the owner of the property and the specific site was previously used for rock mining. The grade of material available on site is known and suitable for use in construction. As mentioned, the property is in close proximity of Bloemfontein, being the head office of the company, thus making it economically and practically feasible for the company to develop an onsite training facility while also having a market for the specific product.

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

Preferred site:

The preferred site is situated on Portion 9 (of 6) of the farm Mimosa Glen 885, Bloemfontein, property of AMC. The specific site is on an existing mining permit area (which has lapsed) and the area has therefore already been impacted upon. According to desktop studies by a geologist and drilling conducted during the period of the previous mining permit, the site has dolerite intrusions of a depth of up to 80m, making it economically feasible to mine.

Preferred activities and technology:

Due to the type of commodity to be mined (i.e. dolerite/stone aggregate) and the shallow topsoil layer, surface mining with earthmoving equipment, e.g. front end loaders and excavators will be undertaken. Strip mining will progress systematically from east to west while undertaking concurrent rehabilitation of mined out areas where possible.

Blast holes will be charged up with Pentolite boosters, Shocktube assemblies, electronic detonators and emulsion. The minimum blasting depth will be 9m benches and the energy load to be used will be dependent on the local geology and volume of material to be loosened. A certified blast operator will conduct the drilling and blasting in accordance with the company's SOP for blasting.

Material will be crushed and screened on site with crushing plants equipped with new technology, making it more effective and reducing dust generation. Crushed material will be screened and transported to product stockpiles via conveyor and/or tipper trucks. By conveying product less dust is generated and less fuel is used by vehicles.

From the product stockpiles, the processed product will be loaded on tipper trucks by front end loaders and sold directly to the commercial market.

Infrastructure proposed to be established on site includes:

- Offices
- Ablution facilities
- Weighbridge point

No employees will reside on the property but will commute to site daily. There will be a 24/7 security at the access gate to control entrance to the operational site.

Also refer to Part A, Section 3(d)(ii) of this document for information on the activities to be related with the operation and to Part A, Sections 3(h) and (i) for a description of the alternatives that were considered for this project.

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.

As previously mentioned, AMC Property is the landowner of the property with its head office in Bloemfontein. AMC has identified the need to provide their employees with onsite training on mining equipment and the proposed project site in close proximity to Bloemfontein would allow AMC with this opportunity and also deliver commercial material to Bloemfontein and surroundings. This therefore makes it economically and practically feasible for the company to develop an onsite training facility while also having a market for the specific product.

Apart from the vicinity, the specific site was previously used for rock mining and has therefore already been transformed and impacted on. The grade of material available on site is known and suitable for use in construction.

The preferred site and layout was also determined by the property boundaries, existing mining permit area, the general topography of the site and planned method of operation.

A baseline site assessment was undertaken by the EAP. Specialist assessments of the study area include an Ecological and Wetland assessment (2019), Phase 1 Archaeological and Palaeontological Assessment (2015), Desktop Palaeontological Impact Assessment and Protocol for Finds (2019) and Pump Tests (2016) on the

borehole used for dust suppression onsite. Refer to Annexure 8 for the respective specialist reports.

A public consultation process was followed during which identified I&APs and stakeholders were consulted and their comments reported. The results of the specialist studies and the comments from I&APs were also considered during the recommendation towards the preferred site locality and layout and will also inform the recommended environmental management measures to be implemented throughout all the phases of the proposed operation. Refer to Annexure 3 of this report for copies of the public consultation process.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 2 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.

a) Property/locality

Preferred property/locality

- The proposed development of a rock quarry on Portion 9 (of 6) on the farm Mimosa Glen 885, situated in the Magisterial District of Bloemfontein, Free State Province (Annexure 2).
- A company associated with the applicant is the property owner.
- Results from a desktop geological review and previous mining on site indicated that a good resource of dolerite is present on the property.
- The property is in close proximity of Bloemfontein, which is also the head quarters of AMC, thus making it financially and practically viable to invest in the proposed project.
- The proposed mining area is situated on an existing mining area. The site has therefore already been impacted upon.

Alternative property/locality

- There is no other alternative property considered.

- An alternative site boundary is to move the site approximately 60m to the east and 30m to the north of the existing mining permit area, as it is expected that the topsoil is shallower, hence reducing operational costs.

b) Activity type

Preferred activity type

- The activity type applied for is surface mining of dolerite aggregate.
- The proposed operation will be associated with onsite operational training of employees.

Alternative activity type

- There is no alternative type of activity considered for this application.

c) Activity layout

Preferred layout

- The layout was determined by the property boundaries and existing mining permit area, the general topography of the site and planned method of operation.
- Refer to the Site plan attached under Annexure 2 of this report for details of the proposed site layout on approximately 8 ha in total. Mining and excavation will be limited to the 4.9 ha mining permit area. An area of approximately 3 ha outside the mining permit area will be cleared for establishment of offices and used as stockpile area.
- Excavation is proposed to systematically progress from east to west.
- The crushing and screening plant will be situated in the north-western corner of the site where the terrain is more level and not directly exposed by blasting.
- A reservoir for the storage of water to be used for dust suppression will be situated to a higher elevation on the ridge in order to allow gravitational flow to the plant.
- The existing access road will be used and extended towards the stockpile area to ensure traffic flow for heavy transport vehicles.

Alternative layout

- The alternative layout will be to keep the crushing and screening plant where it is currently situated.

- All associated activities will be undertaken within the mining permit area, i.e. 4.9 ha.

d) Technology

Preferred technology

- As the proposed mining operation will also be used for training and skill upliftment of employees at AMC, the aim would be to make use of a crushing and screening plant equipped with the latest technology.
- Blasting will be undertaken to loosen material. Electronic detonators will be used. This allows the load and intervals to be controlled effectively, also limiting fire risks.
- Earthmoving equipment such as excavators, front end loaders and tipper trucks will be used.

Alternative technology

- There is no alternative technology considered for this application.

e) Operational aspects

Preferred operation method

- Commence with mining activities with no need to first rehabilitate the previous mining area.
- Blasting to loosen material for excavation.
- Surface mining through excavation with earthmoving equipment, e.g. front end loader and excavators.
- Excavation is proposed to systematically progress from east to west.
- Oversize material will be crushed and screened at the plant on site, from where processed material will be conveyed to the different product stockpiles.
- Dust suppression on the access roads and at the plant will be undertaken by means of water spraying.
- Water for dust suppression will be sourced from the proposed reservoir which will be filled with groundwater from an existing registered borehole.
- Product will be sold directly to commercial buyers. Product will be loaded on tipper trucks with front end loaders and hauled on the gravel access road.

- Concurrent rehabilitation of mined out areas will be undertaken as far as possible. However, final rehabilitation will be undertaken with decommissioning of the operation.
- Activities to be associated with the operation will include offices, security and general maintenance on site.
- The applicant is a well established mining and crushing company with existing policies in place. These policies will be implemented throughout all the phases of the proposed mining operation. Also refer to Annexure 5 of this report for copies of standard Safe Operating Procedures (SOPs) and Code of Practices (COPs) that will be adopted for implementation at the proposed operation.

Alternative operation method

- Rehabilitate and close the previous mining permit area before commencing with mining activities in accordance with the methodology summarised above.

f) Not implementing the activity / No-go option

The 'no-go' alternative was considered throughout the project application. Should the proposed operation not be implemented, the following may be expected:

- Final rehabilitation of the previous mining permit area currently not fully rehabilitated.
- No additional impacts on the aesthetics of the area.
- No further impact on vegetation and topography.
- No generation of dust and noise.
- Loss of the opportunity for commercial development and income.
- Loss of potentially addressing the need for resources for construction and upgrading of infrastructure in Bloemfontein and surroundings.
- Loss of job opportunities.
- Loss of skill upliftment through the planned onsite training.

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.

Refer to Annexure 3 for copies of notifications, minutes of meetings, comments and response, etc.

The public participation process undertaken in terms of regulations 41 – 44 of the EIA Regulations, 2014 as amended as part of the Environmental Authorisation process to date included the following:

- Placement of an onsite notice at the entrance to the site.
- Placement of an advertisement in the local newspaper.
- Small group meeting with the neighbours.
- Consultation with the landowner.
- Written notice with background information to the neighbours and identified I&APs.
- Written notice with background information to identified stakeholders (including amongst other DESTEA FS, DWS, DARD, Free State SAHRA and Municipality).
- Written notice and enquiry on any possible land claims to the Free State Department of Rural Development and Land Reform.

All notified parties were provided with 30 days to register as I&AP and/or submit any comments to the Environmental Assessment Practitioner. The draft Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) was made available for comment to registered I&APs and stakeholders. The comments received during the process will be noted in the “Response on consultation report” which will form part of the final BAR to be submitted to the competent authority for processing.

iii) Summary of issues raised by I&APs

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

Interested and Affected Parties		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.
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.					
<u>AFFECTED PARTIES</u>					
Landowner/s	X				
AMC Property (Pty) Ltd. Attention: Mr. Z. Murray	X	Letter: 07/02/2019	The landowner gave consent to AMC Umsenge (Pty) Ltd. to carry out mining activities on the said property.	No response required.	Annexure 3
Lawful occupier/s of the land					
N/A					
Landowners or lawful occupiers on adjacent properties					
Lups Trust Attention: Mr. C.J. Lups	X	Letter: 07/02/2019 Meeting: 19/02/2019	Meeting (19/02/2019): - Concerned about where water will be obtained for dust suppression as there is limited groundwater in the region that needs to be used conservatively. - Concerned about the cumulative visual impact of the proposed	There is an existing borehole registered for the abstraction of use at the operation that will be used. AMC is aware of the limited groundwater in the region and additional and/or alternative water resources are currently being considered. The EAP confirmed during the meeting	Annexure 3

			operation with the current status quo of the previously mined borrow pit on Portion 10 of the farm Mimosa Glen 885.	that an application for Closure Certificate for the borrow pit on the said farm is currently underway. With final rehabilitation of the mined borrow pit, it is expected that the cumulative visual impact will be reduced, although some impact will remain even after rehabilitation.	
Mr. Chris Kleynhans	X	Letter: 07/02/2019 Meeting: 19/02/2019	Meeting (19/02/2019): - Concerned about the potential impact on the groundwater, visual impact and effect of blasting.	The existing registered borehole will be used and AMC is also looking into additional and/or alternative water resources for use. The cumulative visual impact will be reduced with final rehabilitation of the previously mined borrow pit on the adjacent property, although some impacts may remain. AMC Umsenge will make use of a registered blast operator, namely African Drilling and Blasting, which has vast experience in the mining industry.	Annexure 3
Raymond Diedericks Trust Attention: Mr. R. Diedericks	X	Letter: 07/02/2019 Meeting: 19/02/2019	Comment sheet (07/02/2019): - Excessive dust on pastures. - Risk of blasting for fires and noise. - Maintenance of the gravel road. - Negative visual impact of an open mine. Meeting (19/02/2019): - Purpose of the mining site. - Water is limited in the region and formal town water connection stops at Ribblesdale. - Risk of blasting for fires and	The cumulative visual impact will be reduced with final rehabilitation of the previously mined borrow pit on the adjacent property, although some impacts may remain. The operation will provide AMC with an opportunity to address the need for onsite training to employees for future work on mines. Training will be the main drive, although product will also be sold commercially to cover costs. The company's standard operating procedures will be adopted and	Annexure 3

			<p>infrastructure damage.</p> <ul style="list-style-type: none"> - Maintenance of the gravel road. - Potential safety risks 	<p>implemented.</p> <p>As excessive dust also negatively affect the equipment, all possible management measures will be implemented to reduce dust generation at the plant and on site.</p> <p>The existing registered borehole will be used and AMC is also looking into additional and/or alternative water resources for use.</p> <p>Blasting will be undertaken in accordance with USB standards and are also aimed at shock waves less than the standard specified in order to limit any potential risks. This will also be monitored.</p> <p>The explosions will be detonated electronically, thus limiting fire risks.</p> <p>AMC will maintain the access road to the site as and when necessary.</p> <p>There will be security at the access gate to the site 24/7. This is anticipated to also prevent illegal dumping and access to neighbouring property.</p>	
Methodist Church SA Attention: Mrs. Mnumzana	X	Email & telephonic: 30/01/2019 Letter: 07/02/2019	No comments received to date.	No response required.	Annexure 3
Albrmax Trust Attention: Mr. F. Albertse / Mr. J. Albertse	X	Meeting: 31/10/2018 Letter: 07/02/2019	Meeting (31/10/2018): - Concerned about the potential impact on the groundwater, visual impact and effect of blasting.	The existing registered borehole will be used and AMC is also looking into additional and/or alternative water resources for use.	Annexure 3

		Telephonic: 18/02/2019		The cumulative visual impact will be reduced with final rehabilitation of the previously mined borrow pit on the adjacent property, although some impacts may remain. AMC Umsenge will make use of a registered blast operator, namely African Drilling and Blasting. Blasting will be undertaken in accordance with USB standards and are also aimed at shock waves less than the standard specified in order to limit any potential risks. This will also be monitored.	
Municipal councillor	X	Letter: 18/02/2019	No comments received to date.	No response required.	Annexure 3
Municipality	X	Letter: 18/02/2019 Draft BAR: 20/08/2019	Email (07/03/2019): - Request a copy of the draft BAR	The draft BAR was made available for comment.	Annexure 3
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc.)	X				Annexure 3
Eskom Attention: R. de Bruin	X	Letter & draft BAR: 20/08/2019	No comments received to date.	The draft BAR was made available for comment.	Annexure 3 Part B: EMPr
Communities					
N/A					
Dept. Land Affairs	X				
Department of Rural Development and Land	X	Letter: 14/02/2019	Letter (19/02/2019): - Written confirmation that at the	No response required.	Annexure 3

Reform: Land Restitution Support Free State Attention: Ms. Lezzane Naran			time of the request there was no land claims on the said property.		
Traditional Leaders					
N/A					
Dept. of Environmental Affairs	X				
Department of Economic, Small Business development, Tourism and Environmental Affairs Attention: Mrs. G. Mkhosana	X	Letter: 14/02/2019 Draft BAR: 20/08/2019	No comments received to date.	The draft BAR was made available for comment.	Annexure 3 Part B: EMPr
Other Competent Authorities affected	X				
Department Water and Sanitation Attention: L. Moremi	X	Letter: 14/02/2019 Draft BAR: 20/08/2019	Email (12/03/2019): - Request a copy of the draft BAR	The draft BAR was made available for comment.	Annexure 3 Part B: EMPr
Free State Department of Agriculture and Rural Development Attention: Mr J.A.S.	X	Letter: 14/02/2019 Draft BAR: 20/08/2019	Telephonic (19/02/2019): - Enquiry whether the proposed site is situated on a previous mining permit area.	Telephonic (19/02/2019): The EAP confirmed that the proposed operation will be on the footprint of the previous mining permit. The draft BAR was made available for comment.	Annexure 3 Part B: EMPr
Department of Agriculture, Forestry and Fisheries Attention: Mr J. Zeelie	X	Letter: 14/02/2019 Draft BAR: 20/08/2019	No comments received to date.	The draft BAR was made available for comment.	Annexure 3 Part B: EMPr
Free State Heritage Resources Authority	X	Telephonic: 14/02/2019	No comments received to date.	The Phase 1 Heritage Impact Assessment was submitted on SAHRIS	Annexure 3 Part B: EMPr

Attention: Loudine Philip		Letter: 18/02/2019 Draft BAR: 20/08/2019		for comment. The draft BAR was made available for comment.	
<u>OTHER AFFECTED PARTIES</u>					
N/A					
<u>INTERESTED PARTIES</u>					
N/A					

DRAFT

- iv) **The Environmental attributes associated with the alternatives.(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)**

(1) Baseline Environment

(a) Type of environment affected by the proposed activity

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

A desktop study of the region with its known environment and socio-economic status was conducted by the EAP. Please refer to Annexure 7 attached hereto for a photographic report of the proposed project site and surroundings.

An ecological and wetland assessment was undertaken on Portions 9 and 10 of the farm Mimosa Glen 885, Bloemfontein. The proposed project site for purposes of this application refers to the 4.9 ha applicable to the mining permit application and additional approximate 3 ha for use for the development of offices and stockpiles on Portion 9 of the said farm (refer to the site plan under Annexure 2 of this report).

A Phase 1 Archaeological- and Palaeontological Assessment were undertaken within the study area as part of the investigations for the previous mining permit application in 2015. The proposed project site is situated within the same study area on the footprint of an existing mining permit area. A Desktop Palaeontological Impact Assessment and Protocol for Finds was undertaken for the proposed extension for the office and stockpile area as part of this new application. Also refer to Annexure 8 attached to this report for the specialists' reports.

Geographical character

- The study area is situated approximately 10km north-east of Bloemfontein following the N1 towards Johannesburg in the quarter degree square 2826CD. The site has an altitude ranging between 1382m and 1402m.
- The study area is located in the Upper Orange Water Management Area within quaternary catchment C52G. The subWMA indicated for the study area is the Riet/Modder.

Physical character

- The geology of the area consists of intrusions of igneous rock (i.e. dolerite) sills and dykes in sedimentary rock (i.e. layers of mud stone and sandstone) of the Beaufort Group (Adelaide Subgroup). The soils of the dolerite outcrops are of the Mispah and Glenrose soil forms.
- The area is characterised by an undulating topography with some flat areas with deep sandy-loam deposits as well as more steeply sloped areas along the dolerite outcrops and rivers.
- According to an Ecological and wetland survey conducted on the proposed project site in 2015, there are no wetlands or well-developed drainage lines within the proposed site boundaries. The nearest drainage is an ephemeral stream situated approximately 350 to the north-west of the northern boundary of the proposed project site draining in a south-westerly direction. Refer to Figure A11 of the Ecological and Wetland Assessment Report (February 2019) under Annexure 8 of this report.
- The man-made dam (artificial dam) and associated watercourse referred to within the Ecological and Wetland Assessment report (February 2019), is situated approximately 650m to the south, south-east from the southern boundary of the proposed project/mining area.
- The area receives an average summer rainfall of 457mm/annum and the mean annual temperature is 15.7°C (Mucina & Rutherford, 2006).
- Wind data for the periods 2010 - 2015 and 2015 – 2019 received from Weather SA for the nearest weather station to the site, i.e. Glen College AWS (0293597A6) are attached hereto in Annexure 6. According to this data, the main wind direction in the area ranges from south-east to east, mainly being from an east-south-easterly direction. Stronger winds tend to be from a west to north-north-westerly direction.

Biological character

- According to the Ecological and Wetland Assessment Report, dated February 2019, the dominant vegetation type present on the study area is the Winburg Grassy Shrubland (Gh7) (classified to be Least Threatened); however the vegetation type Dry Bloemfontein Grassland (Gh5) is also present in the study area.
- The project site does not fall within a threatened ecosystem but is situated in an Ecological Support Area (ESA1) (Free State Province's Biodiversity Plan, 2016).

- Refer to the Ecological and Wetland Assessment report (February 2019) for an indication of the dominant species identified to occur within the study area.
- Provincial protected plant species identified on the dolerite hill to the eastern boundary of the proposed mining site include: Wild Olive (*Olea eoropaea* subsp. *africana*), Kiepersol (*Cussonia paniculata*) and a Carrion flower (*Stapelia grandiflora*).
- Provincial protected plant species on the grassy plains that were identified during the assessment include: Lion's spoor (*Euphorbia clavaroides*), Carrion plant (*Stapelia grandiflora*), Candelabra flower (*Brunsvigia radulosa*) and *Gomphocarpus nervosus*.
- The original character of the study area's vegetation was an extensive grassland landscape. Extensive crop farming and grazing practices has resulted in a partly transformed state and in some cases it is degraded and invaded by pioneer grasses such as *Aristida congesta*, *A. Bipartita*, *A. adscensionis* and *Hyparrhenia hirta* (Ecological and Wetland Assessment, February 2019).
- Exotic plant species in the terrestrial shrubland community on the dolerite hill include: *Atriplex semmibaccata*, *Bidens bipinnata*, *Chenopodium album*, *Conyza bonariensis*, *Datura ferox*, *Schkuhria pinnata* and *Tagetes minuta*.
- Exotic plant species recorded in the grassland community on the footslope of the dolerite hill include: *Nicotiana glauca*, *Argemone subfusiformis*, *Atriplex semmibaccata*, *Bidens bipinnata*, *Chenopodium album*, *Conyza bonariensis*, *Datura ferox*, *Datura stramonium*, *Opuntia engelmannii*, *Salsola kali*, *Schkuhria pinnata*, *Solanum retroflexum*, *Tagetes minuta* and *Xanthium strumarium*.
- The study area is a disturbed area and the transformation of natural habitats result in low potential mammal diversity (Ecological and Wetland Assessment report, February 2019). The remaining natural vegetation provides nesting areas for avifauna and occasional shelter for terrestrial fauna.
- Faunal species confirmed during the ecological survey include: single rodent burrows likely that of the Four-striped Grass Mouse (*Rabdomys pumilo*); relative large burrow likely to have been made by Aardwolf (*Proteles cristatus*), Porcupine (*Hystrix africae-australis*) and/or Aardvark (*Orycteropus afer*); smaller burrows noted likely that of Ground squirrel (*Geosciurus inauris*), Yellow mongoose (*Cunicitis penicillata*) and Zorilla (*Ictonyx striatus*). None of these species are listed and/or protected species.

- According to the Ecological and Wetland Assessment report (February 2019), 15 amphibian species have been recorded within the region of which 8 species were in close proximity of the proposed mining site. Although the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded in this quarter degree grid square, it has not been recorded and also not expected on the proposed mining site as it is not a suitable habitat.
- A few bird species could occur in the study area, including Crowned Lapwing, Blacksmith Lapwing, Orange River Francolin, Helmeted Guineafowl, Thick-knee, Northern Black Korhaan, Cattle Egrets, Black-headed Heron, Turtle Doves, Rock Pigeons and Hadedda (Ecological and Wetland Assessment report, February 2019).
- According to the Ecological and Wetland Assessment report (February 2019), the VEGRAI Ecological Category as well as the EIS Category of the artificial dam and associated watercourse situated to the south-west of the proposed project site falls in Category D being a largely modified system where the loss of natural habitat, biota and basic ecosystem functions have occurred.
- The overall PES for these features is categorised as a C, being moderately modified: A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact. The ecological functions and service provision score for the riparian vegetation of these features scores a moderately – low rating.

Socio-economic character (Data obtained from the 2011 census)

- According to the 2011 census, 747 431 people resides in Mangaung with a population group of 83.3% black african persons, 5% coloured persons, 0.4% indian/asian persons, 11% white persons and 0.3% classified as other. Mangaung has a population growth rate of 1.47% (2001-2011).
- Of the total population in Mangaung, 52% is female and 48% is male and 5.3% is elderly (i.e. persons 65 years and older), 26.9% are children (i.e. persons younger than 15 years) and 67.8% between the ages of 15 and 64 (working age). Of the 292 971 economically active people, 27.7% are unemployed.
- Mangaung is the largest contributor to the GDP of the Free State Province with the following main industries: Agriculture, forestry and fishing; mining and quarrying; manufacturing; electricity, gas and water; construction; wholesale and retail trade; transport, storage and communication; finance, real estate and business services; and general government services. According to the 2011 census, mining and

quarrying has increased in the Mangaung Metropolitan from 0.0% in 1996 to 0.1% in 2011.

- It is estimated that 63.4% of households earned less than R3 200.00/month in 2010 with the largest income group (25%) earning between R1 600.00 - R3 200.00/month while the weighted average income in Mangaung was R5 183.00.
- Although 84.4% of the population in Mangaung resides in formal housing, Bloemfontein has a huge housing backlog which stood at approximately 53 820 houses in Mangaung in 2010. More than half of the metro's population resides in Bloemfontein (Mangaung Metropolitan IDP 2013-2014). Thus there is a great need for the development of infrastructure in Bloemfontein and the bigger Mangaung Metropolitan.
- The proposed operation will be situated on the footprint of an existing rock quarry under a previous mining permit.
- Current known economic activities within a 1km radius from the centre of the proposed and alternative sites on neighbouring properties include farming, overnight facilities and a business repairing water pumps and borehole equipment.

Cultural character

- There are no tribes and/or communities on or in close proximity of the affected property. According to the Office of the Regional Land Claims Commission: Free State, there is no restitution claim on their database in respect of the affected property (refer to Annexure 3 for the letter from the department).
- According to the Phase 1 Archaeological Impact Assessment (2015), the study area is located between archaeologically significant alluvial sediments of the Modder River 5km to the north and rich cultural remains previously recorded around the northern outskirts of Bloemfontein. This includes remains of Anglo Boer War remnants, graveyards and historical structures. However, there is no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There is also no indication of prehistoric structures, rock engravings, graves or historical buildings older than 60 years within the study area. The study area is not considered archaeologically vulnerable and are rated Generally Protected C (GP.C).
- According to the Phase 1 Palaeontological Impact Assessment (2015), the local palaeontological footprint is primarily represented by Late Permian Karoo vertebrate fauna and Late Cenozoic mammalian fossils.

However, the study area is located on dolerite bedrock capped by palaeontological sterile soils.

- According to the Desktop Palaeontological Impact Assessment and Protocol for Finds (2019), the proposed project site is almost completely underlain by Karoo Dolerite with a small portion in the late Permian Adelaide Subgroup of the Beaufort Group. These sediments are completely covered by a mantle of Quaternary superficial deposits.
- According to the PalaeoMap of South African Heritage Resources Information System the Palaeontological Sensitivity of the Karoo dolerite is rated as zero, while the Adelaide Group has a very high Palaeontological sensitivity and the Quaternary superficial deposits has a low palaeontological sensitivity.
- The Karoo Dolerite Suite (i.e. a volcanic suite consisting of igneous rocks) is unfossiliferous.
- The study area is not palaeontological significant and is rated Generally Protected C (GP.C) (Phase 1 Palaeontological Impact Assessment, 2015).

(b) Description of the current land uses.

In general, the plains in the surrounding area are mostly used for crop farming and grazing. The current land use within 1km radius from the centre of the study area include farming, farm dwellings, overnight facilities, existing borrow pit and a steelwork business also repairing borehole and related equipment.

The affected property is 33.6189 ha (as per title deed) in size and is zoned as agricultural use, but no active farming activities e.g. grazing, crops, agri-industrial activities are currently being undertaken on the property. There is an existing rock quarry on the property, of which the permit has lapsed.

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

Also refer to Annexure 8 attached to this report for the specialists' reports.

The preferred site for the proposed operation is on the footprint of an existing mining permit which has lapsed. The site is located on the northern slope of a dolerite hill. There are no well-defined drainage lines or wetlands on the proposed permit site. The nearest drainage is an ephemeral stream

situated approximately 350 to the north-west of the northern boundary of the proposed project site draining in a south-westerly direction.

There is an existing access road to the existing mining area, which is proposed to be extended to create a circle rout through the site. The mining area has not been fully rehabilitated, as it is proposed that the current environmental liabilities under the previous permit holder be transferred to the applicant of this permit. This will allow the applicant to commence with mining without the need and cost of full rehabilitation should this application be considered for approval. Structures currently on site are limited to a non-permanent container with a generator and a crushing and screening plant used prior to the lapsing of the previous mining permit. There is also an existing electricity point on site.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

Refer to the Land Use map under Annexure 2 of this report.

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).

Refer to the Environmental Impact/Risk and Management Report in Annexure 9 for the nature, significance, extent, duration and probability of the expected potential impacts.

The potential impacts expected to be associated with the proposed rock quarry include the following:

- Clearance of vegetation;
- Destruction of protected plant species;
- Habitat loss and effect on the general biodiversity;
- Establishment and spread of alien vegetation;
- Erosion and loss of topsoil;
- Loss of agriculture potential due to a change in land use;
- Temporary disturbance to ecosystem function;

- Change in topography and drainage lines and back disturbance of seasonal streams as a result;
- Slope instability of excavated areas;
- Impact on surface water and groundwater quality (e.g. spillage);
- Impact on surface- and groundwater quantity (e.g. abstraction);
- Pollution to the surrounding environment if waste is not managed;
- Dust generation;
- Elevated noise levels;
- Health and safety risk to employees on site and people entering the mining area;
- Safety risk to neighbours due to an increase in people in the area;
- Degradation of the road due to an increase in heavy vehicles on the access road;
- Potential damage to infrastructure as a result of blasting events;
- Impact on the general aesthetics of the area and immediate visual impact;
- Risk of veld fires;
- Positive impact on employment opportunities and skills development; and
- Positive impact of economic development.

The main concerns raised by I&APs and stakeholders during consultation to date include:

- Excessive dust on pastures.
- Risks of veld fires and noise generation from blasting events.
- Potential damage to houses and existing boreholes as a result of blasting events.
- The possibility of unwanted dumping and scavenging along the access road resulting in potential safety risks to the passing neighbours.
- Maintenance of the existing access road to neighbouring farms.
- Visual impact of an open mine.

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).

The criteria for determining the impact significance using systematic generic and judgemental criteria specified in the “DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT)” was used to rate the potential impacts and above

concerns raised by I&APs during the consultation process. Refer to Annexure 9 for detail on the criteria.

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)

Preferred locality

Advantages

- The property is in close proximity of Bloemfontein, which is also the head quarters of AMC, thus making it financially and practically viable to invest in the proposed project.
- As the applicant also plans to provide onsite training to their employees at this operation, this is the ideal locality.
- Results from a desktop geological review and previous mining on site indicated that a good resource of dolerite is present on the property.
- The proposed mining area is situated on an existing rock quarry and the site has already been impacted upon.
- Provincial protected plant species (i.e. Wild Olive, Kiepersol and a Carrion flower) occur on the property. It is expected that the potential impact on the protected species will be limited and/or avoided as most of these specimens were recorded to the north-east against the ridge, part of which falls within the alternative site.
- The elevation of the eastern boundary of the preferred site is approximately 5m lower than that of the alternative site. It is expected that the potential impact on the overall aesthetics of the area will be less significant on the preferred site.
- The potential impact from erosion is expected to be lower than at the alternative site due to the lower gradient of the upper reaches of the site.
- Due to the type and scale of the activities that will be associated with the proposed operation, as well as the distance from surrounding dwellings, the potential noise impact is expected to be low.
- Considering that the main wind direction in the area ranges from an easterly to south-easterly direction, nuisance dust towards the nearest neighbours situated towards the south-east will be low and is only expected to occur during high wind conditions blowing from a westerly to north-westerly direction.
- Twelve permanent job opportunities will be created.
- The existing access road will be used and extended to ensure logistic practicality for loading and hauling.

Disadvantages

- A cumulative impact on the general aesthetics of the area is possible as the neighbouring farm Mimosa Glen 885/10 was also previously used for mining activities. However, an application for a Closure Certificate has been submitted to DMR in respect of the mining permit on the said property.
- Erosion is likely if proper management measures are not implemented. However, it is expected that erosion can be managed successfully due to the lower gradient on the preferred site.

Alternative locality

Advantages

- An alternative locality is to move the site footprint approximately 60m to the north-east of the existing mining permit area, as topsoil and overburden to be removed ranges between 0.5m – 2m, hence reducing expected operational costs.
- More suitable material for mining due to the expected depth of the resources.
- Due to the type and scale of the activities that will be associated with the proposed operation, as well as the distance from surrounding dwellings, the potential noise impact is expected to be low with implementation of mitigation measures.
- Considering that the main wind direction in the area ranges from an easterly to south-easterly direction, nuisance dust towards the nearest neighbours situated towards the south-east will be low and is only expected to occur during high wind conditions blowing from a westerly to north-westerly direction.
- Twelve permanent job opportunities will be created with the proposed quarry.
- The existing access road will be used and extended to ensure logistic practicality for loading and hauling.

Disadvantages

- A cumulative impact on the general aesthetics of the area is possible as the neighbouring farm Mimosa Glen 885/10 was also previously used for mining activities. However, an application for a Closure Certificate has been submitted to DMR in respect of the mining permit on the said property.
- Protected plant species (i.e. Wild Olive, Kiepersol and a Carrion flower) occur on the proposed site. Should mining extent over the entire footprint of 4.9ha all the specimens within the boundary of the site will be affected and will require relocation or will be damaged.
- It is expected that the potential visual impact will be more significant on the alternative site.

- Due to the relative steep gradient of the site, erosion is likely if proper management measures are not implemented.

Preferred site layout

Advantages

- The layout was determined by the property boundaries and existing mining permit area, the general topography of the site and planned method of operation.
- The additional 3ha will allow the establishment of offices and stockpiles outside the mining permit area of 4.9ha. This will allow optimal use of the permit area for mining and processing, also limiting potential risks to office employees on site by situating the offices further from the operational area.
- The terrain to the north-west of the site is more level for placement of the crushing and screening plant and will also not be directly exposed to the blasting. A once-off establishment is expected on this position, also limiting costs and standing time during the Operational Phase in future.
- Product will be conveyed to the different stockpiles, which are expected to limit dust generation and limits the extent of the loading area and internal haul roads.
- The existing access road will be used and extended towards the stockpile area to ensure traffic flow for heavy transport vehicles.
- The position of the water reservoir on the ridge will allow gravitational flow to the plant.

Disadvantages

- The addition of the 3ha for offices and stockpiles will result in a larger area of disturbance and clearance of vegetation.
- The crushing and screening plant currently situated on site (as used during operation under the previous mining permit) will have to be moved and re-established should the new permit with the preferred site layout be continued with. This may incur a cost and delay in commencement of processing of material.
- Damming of water at the plant area is likely if the level where the plant is situated is lower than the surrounding stockpile and excavation areas.

Alternative site layout

Advantages

- The alternative site layout does not allow for the additional 3ha, thus reducing the area of disturbance.

- The crushing and screening plant currently situated on site (as used during operation under the previous mining permit) may be considered to remain on the current locality, potentially allowing for mining activities to commence immediately should the permit application be granted.
- Product will be conveyed to the different stockpiles, which are expected to limit dust generation and limits the extent of the loading area and internal haul roads.
- The existing access road will be used.
- The position of the water reservoir on the ridge will allow gravitational flow to the plant.

Disadvantages

- If the offices and stockpile area are confined within the 4.9ha permit area, the operational and mineable area will be limited, thus reducing the economical potential of the rock quarry as the entire 4.9ha will not be mined out.
- The crushing and screening plant currently situated on site (as used during operation under the previous mining permit) may be considered to remain on the current locality; however, this will necessitate the re-establishment in future, resulting in additional costs and standing time during the Operational Phase. Considering the area to be mined on the site layout, the plant will be too close to the open pit for blasting.

The 'no-go' alternative

Advantages

- No additional impacts on the aesthetics of the area.
- No further impact on vegetation and topography.
- No generation of dust, fly rock and noise.
- No risks of potential damage to infrastructure.
- Final rehabilitation of the previous mining permit area currently not fully rehabilitated.

Disadvantages

- Loss of the opportunity for commercial development and income.
- Loss of potentially addressing the need for resources for construction and upgrading of infrastructure in Bloemfontein and surroundings.
- Loss of job opportunities.
- Loss of skill upliftment through the planned onsite training.

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

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

The main concerns raised by I&APs and stakeholders during consultation included the following:

- Excessive dust on pastures.
- Risk of blasting starting fires and generation of noise.
- Maintenance of the gravel road.
- Negative visual impact of an open cast mine.
- Potential safety risk for passing neighbours should the proposed operation create a precedent for illegal activities such as dumping, stationary vehicles, etc.

The mitigation measures proposed for implementation include the following:

- The visual impact of the preferred project site is expected to be less as the elevation against the ridge is lower. This will also limit the impact and/or destruction of protected species recorded in the study area.
- The planting of high growing trees along the boundary of the property may be considered to alleviate the visual impact.
- AMC Umsenge will implement good housekeeping to ensure the site is clean and well managed. Mining will be conducted in a systematically and planned manner to prevent ad-hoc disturbance over the terrain.
- AMC Umsenge has committed to maintain the section of the gravel road that will be used during the life of mine.
- Blasting will be implemented by a professional blast operator and in accordance with the relevant legislation, best practices and policies. Electronic detonators will be used during blasting, limiting fire risks. The direct neighbours and potential affected parties will be informed timeously prior to each blasting event. Monitoring meters can be placed at places of concern to measure the vibration levels and potentially detect any possibility of damage as a result of blasting.
- Dust suppression by means of water spraying will be implemented at the plant and haul roads. Activities will be limited or stopped during high wind conditions. Monthly dust monitoring will be undertaken during the operation.
- Concurrent rehabilitation will be undertaken as far possible to limit the area exposed to the natural elements and thereby limiting potential environmental risks and residual impacts.

- Storm water management measures such as berms will be implemented to divert clean storm water around the operational area. The storm water management measures will also assist to mitigate erosion on site.
- Daily visual checks for signs of erosion will be undertaken by the site manager and any erosion will be repaired and measures implemented (e.g. gabions) to prevent reoccurrence of erosion.
- No mining or associated activities will be undertaken within 100m to a watercourse, borehole or identified well.
- Any potential hazardous substance (e.g. hydraulic fluids, fuel, oils, etc.) will be stored in a designated bunded area with an impermeable layer to prevent spillage to the surrounding environment and/or water resources. The volume of substance stored shall fall within the specified volumes allowed for storage.
- No waste generated during the proposed operation will be disposed of on site. General waste will be collected in appropriate receptacles and disposed of at the Northern Landfill site in Bloemfontein on a weekly basis or more regularly if necessary. Hazardous waste (if any) will be collected in appropriate receptacles and collected by a certified hazardous waste collection company or disposed of at a facility especially for that purpose.
- The applicant will report incidents of major spillages to the Provincial Head: Department of Water and Sanitation within 24 hours as specified by DWS.
- Appropriate toilet facilities will be implemented for use by employees on site.
- No employees will reside on site, but will daily commute to site.
- The property will be properly fenced and access to the operation will be regulated by security 24/7. No unauthorised entrance to the mining area will be allowed. This is also expected to prevent illegal dumping or other activities in the vicinity.
- On decommissioning of the operation, the slopes of the mining area will be stabilised and the opencast mining area will be made safe and/or fenced in accordance with the specifications of DMR to limit the safety risks.
- The company's standard Codes of Practice (COPs) and Safe Operating Procedures (SOPs) will be adopted for implementation during all the phases of the proposed operation.

Refer to Annexure 9 for an assessment of the impacts/risks after mitigation as well as for the recommended management measures to be implemented throughout all the phases of the proposed project to limit impacts.

ix) Motivation where no alternative sites were considered.

Refer to Part A, Section 3(h) for a description of the alternatives that were considered during this application for the proposed project.

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

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

After considering the preferred site layout and alternative layout, the motivation for the preferred site layout includes the following:

- The preferred site and layout was determined by the property boundaries; specialist studies; existing mining permit area; the general topography of the site; and planned method of operation.
- The previous mining permit has lapsed and an application to transfer the environmental liability to AMC Umsenge (Pty) Ltd. forms part of this permit application. The proposed project site has already been impacted on by mining activities, thus making it the preferred footprint area rather than to disturb virgin areas. The preferred site will also limit potential destruction of protected species mostly recorded along the upper ridges of the hill.
- The locality of the offices outside the mining permit area will allow optimum area available for operational and mining activities within the mining permit area. The offices will be situated in a safe distance from the operation in the event of blasting.
- There are no wetlands or well-defined watercourses within the preferred mining permit area. The preferred site is situated further than 100m from a watercourse/drainage line or borehole.
- The crushing and screening plant will be situated in the north-western corner of the site where the terrain is more level and not directly exposed by blasting.
- Material will be crushed and screened on site with crushing plants equipped with new technology, making it more effective and reducing dust generation.
- The crushed and screened material will be conveyed to stockpiles to limit hauling which will also reduce dust generation. The stockpile area is therefore planned to allow for a straight and short line to make conveying possible.
- A reservoir for the storage of water will be situated to a higher elevation on the ridge in order to allow gravitational flow to the plant to be used for dust suppression during crushing and on the conveyors.
- According to the wind rose for the period 2015 – 2019 as obtained from the South African Weather Services (Annexure 6), the main wind direction is from east-south-east to south-east, thus in the opposite direction from that of the nearest dwellings within 1km of the site. Stronger winds occur from the west-north-west to north-north-west and this is likely to have an impact on the said dwellings. Dust suppression will be implemented and activities will be limited or stopped during high wind conditions.

- Concerns from I&APs included the visual impact of the quarry. AMC Umsenge will implement good housekeeping at all times. Placement of the crusher and screening plant on a lower elevation is expected to reduce the visual impact.
- Blasting will be implemented by a professional blast operator and in accordance with the relevant legislation, best practices and policies. Electronic detonators will be used during blasting. In this way the load can be managed more accurately and determined specifically for the volume of material and type of fractures expected. The direct neighbours and potential affected parties will be informed timeously prior to each blasting event.
- The property will be properly fenced and access to the operation will be regulated by security 24/7. No unauthorised entrance to the mining area will be allowed. This is also expected to prevent illegal dumping or other activities in the vicinity.

Refer to Part A, Section 3(d)(ii) of this document for information on the activities to be associated with the proposed operation and to Part A, Section 3(h) for a description of the alternatives that were considered for this project.

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.)

A desktop study of the local area and its known environmental features was done. A site assessment was done by the Environmental Assessment Practitioner (EAP) to identify any potential sensitive features on the proposed project site and within the study area. Specialists conducted the following studies: Ecological and Wetland Assessment (2019), Phase 1 Palaeontological- and Archaeological Assessment (2015) and Desktop Palaeontological Impact Assessment and Protocol for Finds (2019) on the study area (i.e. Portion 9 of the farm Mimosa Glen 885, Bloemfontein). Based on the results of the site assessments and activities expected to be associated with the proposed rock quarry, the potential environmental impacts and risks were identified and assessed.

Identified I&APs and stakeholders were involved through a public participation process. The comments and concerns raised by these parties were also considered during the assessment of the potential impacts.

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).

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>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.)</p>	<p>(Including the potential impacts for cumulative impacts)</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>		<p>In which impact is anticipated</p> <p>(e.g. Construction, commissioning, operational Decommissioning , closure, post-closure)</p>		<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation.</p>	
<p>Site establishment (Clearance of vegetation; establishment of equipment; access</p>	<p>Clearance of vegetation</p>	<p>Aesthetics; Land use; Vegetation; Biodiversity</p>	<p>Commissioning</p>	<p>Medium</p>	<p>Avoid through site locality & layout; Remedy through rehabilitation; Limit footprint</p>	<p>Low</p>
	<p>Destruction of protected plant</p>	<p>Vegetation; Biodiversity;</p>	<p>Commissioning</p>	<p>Medium</p>	<p>Avoid through site locality & layout;</p>	<p>Low</p>

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
road; reservoir; etc.)	species	Ecosystem function			Remedy through offsetting; Limit through search and rescue of individual plants; Avoid by relocating plants where possible; Limit footprint	
	Establishment of alien vegetation	Vegetation; Biodiversity; Ecosystem function	Commissioning; Operational	Medium	Remedy through rehabilitation; Limit footprint; Monitor establishment of invasive plants; Control through management plan	Low
	Habitat loss and effect on the general biodiversity	Vegetation; Fauna; Biodiversity	Commissioning; Operational	Medium	Limit through site locality & layout; Remedy through rehabilitation; Remedy through offsetting; Limit footprint	Medium
	Erosion	Aesthetics; Land use; Water quality; Soil	Commissioning; Operational	Low	Remedy through rehabilitation; Limit through site locality & layout; Limit footprint; Monitor occurrence of erosion and extent thereof; Control through storm water control and erosion measures	Low
	Loss of topsoil	Soil; Land use	Commissioning	Low	Limit through site locality & layout; Limit footprint; Control through appropriate topsoil stockpiling; Control through storm water control and erosion measures; Monitor occurrence of erosion and extent thereof;	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					Remedy through rehabilitation	
	Visual scarring and impact on the aesthetics of the area	Aesthetics; Visual	Commissioning; Operational	Medium	Remedy through rehabilitation; Limit footprint; Limit through locality and site layout; Limit by creating visual barriers, e.g. planting of high trees; Limit with good house keeping	Low
	Elevated noise levels	Noise; I&APs; Health and Safety	Commissioning	Low	Control through operational procedures (including working hours)	Low
	Change in land use (Loss of agricultural potential)	Land use	Commissioning; Operational	Medium	Limit through site locality & layout; Remedy through rehabilitation; Limit footprint	Low
	Destruction of objects or artefacts of importance	Heritage; I&APs	Commissioning	Medium	Avoid through site locality & layout informed by Phase 1 Archaeological- and Paleontological Assessments; Limit by implementing the "Chance Find Protocol"; Create awareness with employees; Limit footprint	Low
Excavation / Open void	Local impression in topography	Topography; Land use	Operational; Closure	Medium	Control through operational procedures; Limit footprint; Remedy through landscaping and concurrent rehabilitation	Medium
	Clearance of vegetation	Aesthetics; Land use; Vegetation; Biodiversity	Operational; Closure	Medium	Control through operational procedures; Remedy through rehabilitation;	Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					Limit footprint	
	Temporary disturbance to ecosystem function	Ecosystem function; Biodiversity; Land use	Operational; Decommissioning	Medium	Control through operational procedures; Remedy through rehabilitation; Limit footprint	Low
	Slope instability	Topography; Land use; Health & Safety	Operational; Decommissioning ; Closure	Medium	Control through operational procedures; Remedy through concurrent rehabilitation; Control through slope and bench management	Low
	Change in surface water drainage	Natural flow path; Water quantity; Ecosystem function	Operational; Decommissioning ; Closure	Medium	Control through operational procedures; Remedy through concurrent rehabilitation; Control through slope and bench management; Control through storm water management	Low
	Erosion	Soil; Vegetation	Operational; Decommissioning ; Closure	Medium	Remedy through concurrent rehabilitation; Control through slope management; Control through storm water management; Avoid through appropriate topsoil stockpiling; Control through monitoring	Low
	Visual scarring	Aesthetics; Visual	Operational; Decommissioning ; Closure	Medium	Control through operational procedures; Remedy through concurrent	Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					rehabilitation; Limit through site layout and footprint; Limit by visual barriers, e.g. high trees	
	Dust generation	Air quality; I&APs	Operational; Decommissioning	Low	Control through operational procedures; Control through monitoring & dust suppression measures; Limit through concurrent rehabilitation	Low
	Elevated noise levels	Noise; I&APs	Operational; Decommissioning	Low	Control through operational procedures (including working hours); Limit through noise control & well functioning machinery	Low
	Change in land use (Loss of agriculture potential)	Land use	Operational; Decommissioning ; Closure	Medium	Limit through site locality & layout; Remedy through rehabilitation; Limit footprint	Low
	Destruction of objects or artefacts of importance	Heritage; I&APs	Operational	Medium	Avoid through site locality & layout informed by Phase 1 Archaeological- and Paleontological Assessments; Limit by implementing the "Chance Find Protocol"; Create awareness with employees; Limit footprint	Low
Drilling & blasting	Dust generation	Air quality; I&APs	Operational	Medium	Limit through blasting procedures; Control through monitoring & dust control measures	Medium
	Fly rock	Health & Safety;	Operational	Medium	Limit through blasting procedures;	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
		I&APs			Limit risks through communication to I&APs & clearance of employees from site; Remedy through clearance of affected areas	
	Elevated noise levels	Noise; I&APs	Operational	Medium	Limit through blasting procedures; Limit risks through communication to I&APs	Medium
	Fire risk	Health & Safety; I&APs; Biodiversity	Operational	Medium	Avoid through blast control measures & procedures	Low
	Damage to infrastructure & boreholes	Infrastructure; I&APs	Operational	Medium	Avoid through blast control measures & procedures; Control through monitoring	Low
	Disruption in the local geology	Geology	Operational	Medium	Avoid through blast control measures & procedures; Control through monitoring	Medium
Loading & hauling	Dust generation	Air quality; I&APs	Operational	Low	Control through operational procedures; Limit through dust control measures; Control through monitoring	Low
	Elevated noise levels	Noise; I&APs	Operational	Low	Control through operational procedures (including working hours); Limit through noise control & well functioning machinery	Low
	Deterioration of the gravel access road	Infrastructure; I&APs; Road safety	Operational; Decommissioning	Medium	Remedy through maintenance of the road; Control through speed control & visual checks (monitoring)	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Crushing & screening	Dust generation	Air quality; I&APs	Operational	Medium	Control through operational procedures; Control through dust control and monitoring;	Low
	Elevated noise levels	Noise; I&APs	Operational	Low	Control through operational procedures (including working hours); Limit through noise control & well functioning machinery	Low
	Visual scarring	Aesthetics; Visual	Operational; Decommissioning	Medium	Remedy through removal of equipment; Remedy through rehabilitation; Limit through site layout	Low
Stockpiling	Dust generation	Air quality; I&APs	Operational; Decommissioning	Low	Control through operational procedures; Control through dust control & monitoring; Remedy through rehabilitation	Low
	Visual scarring	Aesthetics; Visual	Operational; Decommissioning	Medium	Remedy through rehabilitation; Limit through site layout; Limit by creating visual barriers, e.g. planting of high trees	Medium
	Change in surface water drainage	Natural flow path; Water quantity; Ecosystem function	Operational; Decommissioning	Medium	Control through storm water controls; Limit through site layout; Remedy through rehabilitation	Low
	Loss of topsoil	Soil; Land use	Operational; Decommissioning	Low	Control through appropriate topsoil stockpiling; Control through storm water control;	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					Control through erosion control and monitoring	
	Establishment of alien vegetation	Vegetation; Biodiversity; Ecosystem functioning	Operational; Decommissioning	Medium	Remedy through rehabilitation; Control through monitoring establishment of invasive vegetation; Control through implementation of a weed management plan	Low
Water use: Abstraction of groundwater from a borehole	Impact on the groundwater quantity	Water quantity; I&APs; Water reserve	Operational	Medium	Control through operational procedures; Control through monitoring water use; Limit volumes to minimum required	Low
	Disturbance to local geology due to drilling	Geology	Commissioning; Operational; Decommissioning ; Closure	Low	Limit through drilling method; Limit abstraction rate and volume	Low
Water use: Storage of water in a reservoir	Visual scarring	Aesthetics; Visual; Land use	Operational; Decommissioning ; Closure	Low	Limit through site locality and footprint; Remedy through rehabilitation	Low
	Change in land use (Loss of agriculture potential)	Land use	Operational; Decommissioning ; Closure	Low	Limit through site locality; Limit footprint; Remedy through rehabilitation; Limit by using for agriculture purposes after Closure	Low
Material storage (e.g. fuel, oil, gas) and waste disposal (including sewage)	Soil contamination from spillages and waste disposal	Soil; Land use; Waste management	Operational; Decommissioning	Medium	Avoid through operational procedures; Prevent through management; Remedy through rehabilitation	Low
	Water pollution due to spillages and	Water quality; I&APs; Waste	Operational;	Medium	Prevent through site layout;	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
	waste disposal	management	Decommissioning		Avoid through operational procedures; Prevent through standard management; Remedy through cleaning and rehabilitation	
	Littering	Land use; Aesthetics; Water quality	Commissioning; Operational; Decommissioning	Medium	Prevent through waste management; Avoid through awareness to employees	Low
	Fire risk	Health & safety; I&APs; Biodiversity	Operational	Medium	Avoid through operational procedures; Avoid through management & appropriate storage control; Control through awareness to staff; Limit risks through training	Low
General operational activities in respect of I&APs and employees	Impact on the general aesthetics of the area	Aesthetics; I&APs	Commissioning; Operational; Decommissioning ; Closure	Medium	Remedy through rehabilitation; Limit through site locality & layout; Control through operational procedures	Medium
	Risk of injury to people entering the operational area	Health & safety; I&APs	Operational; Decommissioning ; Closure	Medium	Avoid through access control; Avoid through rehabilitation; Awareness through induction; Avoid through fencing the operational area and open pit	Low
	Risk of injury to employees working with machinery/equipment on site	Health & safety	Commissioning; Operational; Decommissioning	Medium	Avoid through appropriate PPE; Avoid through awareness & appropriate training to staff on site	Medium
	Illegal dumping &	Health & Safety;	Operational;	Medium	Avoid through access control;	Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
	scavenging potentially resulting in safety risks to passing neighbours	I&APs; Aesthetics	Decommissioning ; Closure		Avoid through fencing the operational area; Control by reporting illegal dumping	
	Job creation & skills upliftment	Community; Economy	Commissioning, Operational; Decommissioning	Medium (Positive)	Achieve through continuation with proposed operation; Achieve through operational procedures; Achieve through training	Medium (Positive)
	Economic development in the region	Community; Economy	Commissioning, Operational	Medium (Positive)	Achieve through continuation with proposed operation; Achieve through operational procedures	Medium (Positive)
Rehabilitation (e.g. removal of equipment, reshaping & re-vegetation of disturbed areas, etc.)	Soil contamination from spillages and waste disposal	Soil; Land use	Decommissioning	Medium	Avoid through rehabilitation procedures; Prevent through management; Remedy through clearance and reinstatement	Low
	Water pollution due to spillages and waste disposal	Water quality	Decommissioning	Medium	Avoid through rehabilitation procedures; Prevent through management; Remedy through clearance and reinstatement	Low
	Elevated noise levels	Noise; I&APs	Decommissioning	Low	Control through rehabilitation procedures (including working hours)	Low
	Change in surface water drainage	Topography; Storm water flow; Water quantity; Ecosystem function	Decommissioning ; Closure	Medium (Positive)	Achieve through landscaping and rehabilitation of disturbed areas; Achieve through storm water control measures, e.g. berms	Medium (Positive)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
	Erosion & loss of topsoil	Soil; Land use	Decommissioning ; Closure	Medium	Control through storm water controls; Remedy through rehabilitation and reinstatement of affected areas; Control through erosion control & monitoring	Low
	Establishment of alien vegetation	Vegetation; Biodiversity; Ecosystem function	Decommissioning ; Closure	Medium	Remedy through rehabilitation; Control through removal and management; Control through monitor of establishment of invasive plants	Low
	Establishment of a self-sustaining ecosystem	Land use; Aesthetics; Biodiversity; Ecosystem function	Decommissioning ; Closure	Medium (Positive)	Achieve through landscaping and rehabilitation of disturbed areas; Achieve through establishment of natural occurring vegetation	Medium (Positive)
Cumulative impacts	Dust generation	Air quality; I&APs	Operational	Medium	Limit through operational procedures; Control through management and monitoring; Control through dust control; Limit through concurrent rehabilitation	Low
	Visual scarring	Aesthetics; Visual	Commissioning; Operational; Decommissioning ; Closure	Medium	Reduced once the borrow pit on Portion 10 of the farm Mimosa Glen 885 has been rehabilitated; Limit through operational procedures; Remedy through concurrent rehabilitation; Limit by creating visual barriers, e.g. planting of high trees;	Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					Limit with good house keeping	
	Elevated noise levels	Noise; I&APs	Operational	Low	Control through operational procedures (including working hours)	Low
	Change in land use (Loss of agriculture potential)	Land use	Commissioning; Operational; Decommissioning ; Closure	Medium	Limit through site locality and layout; Limit footprint; Remedy through rehabilitation to an end land use potential of agriculture after Closure	Low
	Change in surface water drainage	Topography; Storm water flow; Water quantity; Ecosystem function	Operational; Decommissioning ; Closure	Medium	Control through storm water controls; Limit through site layout; Remedy through rehabilitation	Low
	Habitat loss and effect on the general biodiversity	Biodiversity; Ecosystem function	Commissioning; Operational; Decommissioning ; Closure	Medium	Control through operational procedures; Limit footprint; Remedy through landscaping and rehabilitation of disturbed areas; Remedy through establishment of natural occurring vegetation	Medium

The supporting impact assessment conducted by the EAP must be attached as an appendix.

[Also refer to Annexure 9 attached hereto for the Environmental Impact, Risk Assessment and Management Report for more detailed information.]

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):- [Refer to Annexure 8 for specialist studies.]

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.
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> The succulents (<i>Euphorbia clavaroides</i> and <i>Stapelia grandiflora</i>) and the bulbous species (<i>Brunsvigia radulosa</i> and <i>Gomphocarpus nervosus</i>) will have to be relocated before mining and construction commences. 	X	Part A Sections 3(e), 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> Obtain the required authorisation should any activity associated with the proposed mining activities be undertaken within 32 metres of a wetland or watercourse, or in the 1:100 year flood line. 	(No mining activities planned for this mining permit will be within the mentioned areas. Should it be relevant in future, the necessary authorisations will be acquired.)	Part A Sections 3(e), 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> Minimise erosion and resultant sedimentation of watercourses. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> Consideration should be given to the developed sensitivity map during all phases of the proposed mining operation, especially with the site layout and establishment of infrastructure in order to limit potential impacts. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8

Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Manage storm water flow. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Control the establishment of alien and invasive species in the proposed project site. Implement an alien plant removal program within the study area in order to help reinstate more natural hydrological and ecological functions. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Rehabilitate and stabilise disturbed areas when it becomes available for rehabilitation. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Limit open trenches and deep excavations to limit the risks of fauna falling in and being trapped. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Keep appropriate buffers of at least 32m from any watercourse. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Implement appropriate management and storage of potential hazardous substances. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Implement standard operational policies regarding speed limits on site, waste management, fires on site, etc. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 5 Annexure 8
Ecological and Wetland Assessment (February 2019)	<ul style="list-style-type: none"> • Limit the disturbance footprint and clearly demarcate the boundaries. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8

Phase 1 Archaeological Impact Assessment (2015)	<ul style="list-style-type: none"> According to the specialist, the proposed project site is rated Generally Protected C (GP.C) and there are no major archaeological grounds to suspend the proposed operation. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Phase 1 Palaeontological Impact Assessment (2015)	<ul style="list-style-type: none"> According to the specialist, the proposed project site is rated Generally Protected C (GP.C). Potential palaeontological impact resulting from the operation within the proposed project site is considered low. 	X	Part A Sections 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Desktop Palaeontological Impact Assessment and Protocol for Finds (2019)	<ul style="list-style-type: none"> The proposed project site for this application is the same as for the previous mining permit area with a proposed extension of 3 ha for establishment of offices and stockpiles. A "Chance Find Protocol" was developed for the proposed development should any fossil remains be uncovered during any phase of the operation. 	X	Part A Sections 3(e), 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8
Desktop Palaeontological Impact Assessment and Protocol for Finds (2019)	<ul style="list-style-type: none"> In the event of any discoveries, work in the immediate vicinity should be stopped immediately. It should be reported to the supervisor / ECO, secured (preferably <i>in situ</i>) and SAHRA should be contacted. Appropriate mitigation should be undertaken by a professional palaeontologist. 	X	Part A Sections 3(e), 3(h), 3(j) and 3(p) Part B Sections 1(d), 1(e) and 1(f) Annexure 8

l) Environmental impact statement

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

The key findings of the EIA are as follow:

- There is a great need for the development of infrastructure in Bloemfontein and the bigger Mangaung Metropolitan.
- The proposed operation will be situated on the footprint of an existing rock quarry under a previous mining permit which has lapsed. No application for the renewal of the permit was submitted to DMR.
- Current known economic activities within a 1km radius from the centre of the proposed and alternative sites on neighbouring properties include farming, overnight facilities and a business repairing water pumps and borehole equipment.
- The operation is expected to create 12 job opportunities and also provide the company with the opportunity to give onsite training to personnel.
- The development will have both positive and negative social impacts. The main concerns from I&APs are dust generation, potential impact on infrastructure, visual impact and safety risks.
- The implementation of storm water control measures, best practice in terms of the storage of potential hazardous substances to contain any spillage, compliance with the NEM: Waste Act, 2008 (Act 59 of 2008), locality of the operation and associated activities outside the 1:50 year flood-line and 100m away from any water resource and banks of a river and implementation of erosion control measures will be some of the main issues of concern to be managed. No objections against the continuation of the operation were received to date.
- The cumulative visual impact as a result of the proposed operation and the dormant borrow pit on Portion 10 of the farm Mimosa Glen 885 will be reduced after final rehabilitation of the said borrow pit (depending on the end land use to be decided on in future). Unfortunately, some visual scarring is expected to remain after rehabilitation. The required rehabilitation of the disturbed areas will enhance the overall aesthetics of the area and reduce dust generation.
- There are no wetlands or well-developed drainage lines within the proposed site boundaries. The nearest drainage is an ephemeral stream situated approximately 350 to the north-west of the northern boundary of the proposed project site draining in a south-westerly direction.
- There is a man-made dam (artificial dam) and ephemeral stream approximately 650m to the south, south-east of the proposed project site not expected to be impacted on by the proposed operation. According to the Ecological and

Wetland Assessment report (February 2019), the VEGRAI Ecological Category as well as the EIS Category of the artificial dam and stream falls in Category D being a largely modified system where the loss of natural habitat, biota and basic ecosystem functions have occurred.

- The overall PES for these features is categorised as a C, being moderately modified: A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact. The ecological functions and service provision score for the riparian vegetation of these features scores a moderately – low rating.
- The study area does not fall in a threatened terrestrial ecosystem (National List of Threatened Terrestrial Ecosystems, 2011).
- The study area is not part of a formal or an informal protected area. There are also some degraded and transformed areas (roads, quarries & stockpile areas).
- The project site does not fall within a threatened ecosystem but is situated in an Ecological Support Area (ESA1) (Free State Province's Biodiversity Plan, 2016).
- The study area is situated within the Upper Orange Water Management Area (WMA) and Riet/Modder subWMA.
- The Modder River is a NFEPA listed aquatic systems which drains the region
- Provincial protected plant species occurring on the dolerite hill include: Wild olive (*Olea Europaea* subsp. *africana*); Carrion flower (*Stapelia grandiflora*); and Kiepersol (*Cussonia paniculata*).
- Provincial protected plant species on the grassy plains that were identified during the assessment include: Lion's spoor (*Euphorbia clavaroides*), Carrion plant (*Stapelia grandiflora*), Candelabra flower (*Brunsvigia radulosa*) and *Gomphocarpus nervosus*.
- According to Wind data for the periods 2010 - 2015 and 2015 – 2019 (Weather SA), the main wind direction in the area ranges from south-east to east, mainly being from an east-south-easterly direction. Stronger winds tend to be from a west to north-north-westerly direction.
- The dominant vegetation type present on the study area is the Winburg Grassy Shrubland (Gh7) (classified to be Least Threatened); however the vegetation type Dry Bloemfontein Grassland (Gh5) is also present in the study area.
- The original character of the study area's vegetation was an extensive grassland landscape. Extensive crop farming and grazing practices has resulted in a partly transformed state and in some cases it is degraded and invaded by pioneer grasses and exotic plant species.
- The study area is a disturbed area and the transformation of natural habitats result in low potential mammal diversity (Ecological and Wetland Assessment report, February 2019). The remaining natural vegetation provides nesting areas for avifauna and occasional shelter for terrestrial fauna.

- No listed and/or protected faunal and/or amphibian species were recorded in the study area during the ecological assessment.
- Bird species that could occur in the study area include Crowned Lapwing, Blacksmith Lapwing, Orange River Francolin, Helmeted Guineafowl, Thick-knee, Northern Black Korhaan, Cattle Egrets, Black-headed Heron, Turtle Doves, Rock Pigeons and Hadeda (Ecological and Wetland Assessment report, February 2019).
- There are no tribes and/or communities on or in close proximity of the affected property and there is also no known restitution claim in respect of the affected property.
- According to the Phase 1 Archaeological Impact Assessment (2015), there is no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There is also no indication of prehistoric structures, rock engravings, graves or historical buildings older than 60 years within the study area. The study area is not considered archaeologically vulnerable and are rated Generally Protected C (GP.C).
- According to the Phase 1 Palaeontological Impact Assessment (2015), the study area is located on dolerite bedrock capped by palaeontological sterile soils.
- According to the investigation by Banzai Environmental (2019), the proposed project site is almost completely underlain by Karoo Dolerite Suite (i.e. a volcanic suite consisting of igneous rocks) which is unfossiliferous.
- The study area is not palaeontological significant and is rated Generally Protected C (GP.C) (Phase 1 Palaeontological Impact Assessment, 2015).
- According to the Desktop Palaeontological Assessment and Protocol for Finds (2019), the damage or destruction of any palaeontological materials will be permanent in the absence of mitigation procedures (should fossil material be present within the affected area). However, the Phase 1 Palaeontological Assessment conducted in the study area in 2015 found no fossiliferous outcrop. The possibility of impacts on palaeontological heritage during the operation is therefore regarded as low.
- It is expected that the identified potential impacts can be managed and mitigated provided that the proposed operation is undertaken on the preferred site and preferred site layout and that all recommended management and mitigation measures are implemented throughout all the phases of the operation.

ii) Final Site Map

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

Refer to Annexure 2 for the final preferred site superimposed on the environmental sensitive areas.

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

Proposed quarry on preferred site and layout (This option refers to the development of a quarry on the preferred site on the existing mining permit area, additional 3 ha for offices and stockpile and placement of the crusher and screening plant in the north-western corner of the site.)

Positive impacts:

- The locality of the proposed project site is in close proximity of Bloemfontein, being the head office of the company. This allows AMC with the opportunity to provide onsite training to their personnel for future placement on other operational mines. It will also assist in providing the demand of construction material in the region.
- Potential in operating the proposed operation in an environmental acceptable manner with implementation of appropriate mitigation and management measures.
- Twelve permanent job opportunities will be created.
- Based on previous mining and geological screening of the study area, the dolerite resource on the proposed project site is suitable and economically profitable for mining.
- Considering the main wind directions, distribution of dust to the neighbouring landowners can be reduced with implementation of dust suppression.
- The visual impact will remain, but is expected to be less as the plant will be on a lower elevation and screened by the stockpiles and surrounding topography.
- The preferred locality is situated on an existing mining permit area of which the footprint has already been impacted on.
- With the proposed site layout, the processed material can be conveyed to product stockpiles, thus limiting the footprint of haul roads and reducing dust generation as a result of moving vehicles.
- The plant and offices are situated further away from the open pit, thus reducing risks during blasting events.
- The open pit would be 500m or more from the nearest dwellings.
- The relocation of the crusher and screening plant will not be required in future, thus preventing standing time and additional costs.
- A larger portion of the site will be available for excavation.
- Lower operational costs in terms of the handling of material.

- Prevent and/or limit impact on protected species significantly.
- Practical management measures in terms of soil erosion are possible.
- Groundwater will be pumped from the registered borehole to the reservoir for storage, from where water will be obtained for dust suppression.
- The reservoir would be able to be used for agricultural use in future, depending on the end land use after Closure of the operation.

Negative impacts:

- Potential environmental impacts include: Loss of topsoil; Erosion; Dust generation; Noise; Local impact on the topography; Change in natural drainage of storm water; Risk in pollution due to spillages.
- The disturbance of an additional approximately 3 ha for stockpiles and offices.
- Temporary change in land use.
- Fly rock and dust from blasting.
- Potential damage to infrastructure.
- Abstraction of groundwater could influence downstream water users.
- The proposed water reservoir will increase the disturbance footprint on the ridge.
- Health and safety risks.

Alternatives that were considered in terms of the locality and site layout (This entails the development of the quarry on the alternative site and placement of the crusher and screening plant on the current position on site.)

Positive impacts:

- Shallower topsoil and overburden, with an expected deeper layer of dolerite.
- Lower operational costs in terms of the removal of overburden and re-establishment of the plant.
- The open pit would be 500m or more from the nearest dwellings.
- Twelve permanent job opportunities.
- Groundwater will be pumped from the registered borehole to the reservoir for storage, from where water will be obtained for dust suppression.
- The reservoir would be able to be used for agricultural use in future, depending on the end land use after Closure of the operation.

Negative impacts:

- Potential environmental impacts include: Loss of topsoil; Higher likelihood of erosion due to the steeper gradient; Dust generation; Noise; Local impact on the topography; Change in natural drainage of storm water; Risk in pollution due to spillages; Higher impact on the protected plant species.

- Although a portion of the alternative site is located on the previous mining permit area, it would also include undisturbed areas higher against the ridge, resulting in higher risks of destroying protected plant species and habitat.
- The disturbance of an additional approximately 3 ha for stockpiles and offices.
- Temporary change in land use.
- Higher operational costs in terms of the handling of material.
- Significant higher visual impact as the plant is on a higher elevation visible from the nearby tertiary road.
- Fly rock and dust from blasting.
- Abstraction of groundwater could influence downstream water users.
- Health and safety risks.
- High possibility that the crusher will need to be relocated in future, resulting in standing time and increasing costs.
- The proposed water reservoir will increase the disturbance footprint on the ridge.

The no-go alternative

Positive impacts:

- No further impacts on the environment other than the existing impacts resulting from the previous mining permit.
- Limited cumulative impact on the aesthetics of the area.
- No generation of dust / noise.
- The current mining permit area will have to be rehabilitated and closed.
- Limited health and safety risks.

Negative impacts:

- Loss of the opportunity for commercial development and income.
- Loss of the opportunity for the company to provide onsite training to personnel.
- Loss of the opportunity to provide dolerite aggregate for Bloemfontein and surrounding areas.
- Twelve job opportunities will be lost.

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

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

The main impact management objectives and outcomes are as follow:

- To ensure that environmental Best Practice is implemented in terms of the management and mitigation of environmental impacts throughout the operation.
- To implement management measures and develop sustainable mining methods to limit and/or prevent the potential environmental impacts expected to be associated with the proposed operation to a minimum.
- To ensure compliance with the relevant environmental legislation.
- To obtain the necessary Environmental Authorisations in terms of the respective legislation.
- To implement mining methods in such manner that the end land use and rehabilitation objectives are reached at closure of the operation.
- To undertake concurrent rehabilitation of mined out areas to limit further environmental impacts and also limit the final rehabilitation costs.
- To create environmental awareness to all personnel on site.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

Implementation of appropriate management measures in respect of, but not necessarily limited to, the following aspects:

- The authorisation of this mining permit application (if considered for approval) may be dependent on the transfer of the environmental liabilities of the mining permit under the previous holder which has lapsed.
- Dust suppression;
- Storm water drainage;
- Erosion control measures;
- Removal of vegetation and topsoil prior to disturbing an area and appropriate stockpiling of topsoil for re-use during rehabilitation;
- Implement appropriate waste management and the separation of waste streams;
- Management of spills;
- Acceptable blasting methods by a certified blast operator;
- Concurrent rehabilitation of disturbed and/or mined out areas; and
- Undertake the annual environmental performance assessments and a revised quantum in accordance with the NEMA Regulations on Financial Provision for mining, 2015.

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

(Which relate to the assessment and mitigation measures proposed)

During the assessment and development of the management measures, it was assumed that the information provided by the applicant, input from I&APs and

stakeholders and assessment by specialists were true, correct to the best of their knowledge and unbiased.

The previous mining permit on the property is under a different permit holder than the applicant for this proposed operation. This permit has lapsed in November 2018 and the permit holder did not submit an application for a renewal thereof. The environmental liabilities will be transferred to the new applicant as the planned end land use is mining on the footprint of the previous mining permit.

Information from the Phase 1 Palaeontological and Archaeological Assessment (2015) conducted as part of the Environmental Authorisation for the previous mining permit on the affected property was used as baseline heritage information for this report, as the study was also for the same study area and mining permit area applied for with this new application. A desktop Palaeontological Impact Assessment and Protocol for Finds (2019) has been undertaken for the proposed extension of clearance for offices and stockpiles.

Although a good dolerite resource is present and it is known from previous mining to be suitable for construction, the exact extent of the resource is uncertain. Apart from the depth of overburden that will differ, it is assumed that the entire study area has the same consistent dolerite resource that would be suitable for construction purposes. The amount of material to be blasted and extracted per annum as included in the Financial and Technical Report, dated April 2019 was estimated on this assumption.

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

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

There are no environmental fatal flaws with regards to the continuation of the proposed rock quarry, provided that it is undertaken on the preferred site (already impacted on) and that all the recommended management and mitigation measures are implemented as minimum measures throughout all the phases of the proposed operation.

ii) Conditions that must be included in the authorisation

- The proposed project site is situated on the footprint of a previous mining permit area, with the addition of approximately 3 ha for office space and stockpiling. The operational area will be permitted for mining (if considered for approval under the

MPRDA, 2002) and the development of the 3 ha will be approved for clearance of land for development (if considered for approval under NEMA, 1998).

- Transfer of the current environmental liability of the previous mining permit which has lapsed may be dependent on the financial provisioning for the new permit.
- Erosion control measures must be applied during all phases of the operation.
- Declared weeds and invasive vegetation must be eradicated and removed prior to seeding.
- The “Chance Find Protocol” should be implemented throughout all the phases of the operation. Excavation activities should stop and the provincial department of SAHRA be contacted immediately should any artefact or object of archaeological or palaeontological importance be discovered during the operation.
- The access road to the operation should be maintained and appropriate storm water control measures should be implemented on the road.
- Topsoil should be removed and stockpiled for use during rehabilitation.
- Overburden and topsoil should be stockpiled separately and used for concurrent rehabilitation as soon as disturbed areas become available for rehabilitation. Overburden should be used as backfill of final voids.
- The sides of the quarry should have acceptable bench heights and the operational area should be made safe.
- Emergency procedures should be in place for environmental and safety incidents.
- The standard Code of Practice and Safe Operating Procedures of the company should be adopted for implementation during all the phases of the operation.
- An Environmental Control Officer should conduct environmental audits on at least a bi-annual basis to verify compliance with the management measures stipulated in the BAR, EMPr and conditions in the Environmental Authorisation (if considered for approval).
- An application for permits to relocate protected species should be submitted to DESTEA FS should any protected species be affected by the proposed development as it progresses.
- Any blasting activities should be undertaken by a certified blast operator and the adjacent neighbours should be informed in advance of a blast event.
- Working hours should be kept to day time (unless otherwise specified by the applicant).
- An application for a water use license should be submitted to Department Water and Sanitation in terms of any unauthorised water use in future.
- Dust monitoring should be conducted to ensure compliance with the standards of allowed Particular Matter as well as to identify the areas of impact during the Operational Phase for implementation of appropriate management measures.
- Access to the mining permit area should be regulated.

- The Mines Health and Safety Act, 1996 (Act 29 of 1996) should be adhered to at all times.

q) Period for which the Environmental Authorisation is required.

This application for Environmental Authorisation is for a listed activity requiring a mining permit in terms of Section 27 of the MPRDA, 2002 (Act 28 of 2002). Currently a mining permit is valid for two years after which the permit can be renewed annually for another 3 years. The Environmental Authorisation in respect of the mining permit, i.e. 4.9 ha operational area would be required for site establishment and at least another 5 years once operational, dependant on the regulations and requirements in terms of NEMA, 1998 (Act 107 of 1998) and regulations at the time that the permit reaches its expiry date. With lapsing of the permit, the applicant can apply for a Closure Certificate or apply for a Mining Right in terms of the MPRDA, 2002, depending on the end-land use to be decided on by the landowner at the time.

Environmental Authorisation for the additional 3 ha for the offices may be permanent in nature, depending on the end-land use to be decided on at the time of decommissioning.

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 by the applicant to comply with this BAR and EMPr is provided at the end of the EMPr.

s) Financial Provision

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

The amount to manage and rehabilitate the environmental aspects as estimated in the Financial and Technical Report (Tables 2 & 3.1), dated April 2019 amounts to R134 305.00 per quarter, which totals to R1 074 440.00 over the first two years of the operation.

i) Explain how the aforesaid amount was derived.

The quarterly amount of R134 305.00 to manage and rehabilitate the environmental aspects of the operation was accounted as follow:

- Estimated rehabilitation cost divided by 8 quarters (i.e. 2 years) and added to the quarterly cost of mitigation measures (Table 2 of Financial and Technical Report, dated April 2019)

The quantum for financial provision to be provided to DMR was calculated in accordance with DMR's guideline titled "Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine", dated 2005 considering the latest master rates in Section B as well as current rehabilitation costs.

The calculated cost for final closure of the operation by the applicant (i.e. Sub-total 1 of the Quantum) is R204 165.00. As concurrent rehabilitation of mined out areas will be undertaken during the Operational Phase as far possible, it is anticipated that the final amount required for rehabilitation will be significantly lower. The calculated cost for current environmental liability by a Third Party (as per quantum calculation) (i.e. Grand Total of the Quantum plus VAT) is R286 443.49.

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

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

The total estimated environmental cost of R134 305.00 per quarter for management and rehabilitation of the proposed operation was included in the budget calculation in Table 3.1 of the Financial and Technical Report, dated April 2019. This calculation includes the cost for concurrent rehabilitation and therefore also provided for as an operating cost.

Refer to the quantum calculation and the Financial and Technical Competence Report submitted as part of this application for Environmental Authorisation.

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**).

There are no tribes and/or communities on or in close proximity of the affected property. There is also no land claim on the affected party (Annexure 3).

The landowner of the affected property is AMC Property (Pty) Ltd. which is also an associated company to the applicant, i.e. AMC Umsenge (Pty) Ltd. AMC Umsenge has consent from AMC Property to continue with the proposed operation on the proposed project site.

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

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

A Phase 1 Archaeological- and Palaeontological Impact Assessment was undertaken for this study area in 2015. During this study, the specialist indicated that both the archaeological and palaeontological impact for the proposed project site is considered to be very low. The site is rated Generally Protected C (GP.C). The palaeontological findings were confirmed by a Desktop Palaeontological Impact Assessment and Protocol for Finds (2019) by a professional palaeontologist. A "Chance Find Protocol" was developed as part of this assessment and should be implemented should objects of potential importance be unearthed during the operation. Refer to Annexure 8 for the specialists' reports.

u) Other matters required in terms of sections 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).

Refer to Part A, Section 3(h) for a description of the alternatives that were considered during this application for the proposed operation.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme.

a) Details of the EAP

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 3(a) herein as required).

Name of The Practitioner: Hanri van Jaarsveld

Tel No.: 079 499 7999

Fax No.: -

Email address: Hanri@lefatsemail.co.za

Refer to Annexure 1 for the expertise of the EAP.

b) Description of the Aspects of the Activity

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, Section (3)(h) herein as required).

The aspects of the proposed operation were described in Part A, Section 1(h) of this document.

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)

Refer to Annexure 2 for the final preferred site superimposed on the environmental sensitive areas.

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 closure objectives took into account the current status quo of the environment, the potential impacts expected to be associated with the proposed operation as well as the end land use potential after decommissioning of the operation.

The closure objectives will be to:

- Rehabilitate the area disturbed by the proposed operation and related activities to a land use potential of at least “grazing”. The deeper excavations are expected to form an artificial water environment.
- To rehabilitate the quarry to a post mining environment that is safe and with stable surfaces.
- To limit and/or reduce any residual impacts after decommissioning of the operation.
- To reduce the need for long-term monitoring and maintenance.
- Obtain a closure certificate after decommissioning of the mining activities.

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

At commencement of the proposed operation, an estimated 1000 litres per day will be required for dust suppression. Depending on the volumes of material processed per month, this may increase during full operation.

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

There is an existing water use registration for 300 cubic metres per year for use for dust suppression issued 07 July 2016 (Annexure 4). Refer also to Annexure 8 of this report for the Pump Test on the yield of the registered borehole. An application for amendment of the information of the permit holder will be submitted to DWS.

The necessary approvals will be obtained from Department Water and Sanitation (DWS) for any new water uses and/or should an increase in volume abstracted be necessary in future. The establishment of the reservoir will be phased during the operation. An application for a Water Use Authorisation in terms of the NWA, 1998 (Act 36 of 1998) will be submitted to DWS prior to establishment of the reservoir should it be continued with.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>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.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post closure).</p>	<p>(volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(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)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
<p>Site establishment (e.g. clearance of mining area; establishment of structures & equipment)</p>	<p>Planning; Commissioning</p>	<p>Approximately 8 ha</p>	<p>Refer to Table 11 in Annexure 9</p>	<p>Continuation of the proposed operation will be dependent on the approval of the Environmental Authorisation and mining permit.</p> <p>The environmental liabilities under the previous mining permit will be transferred to the new applicant in terms of the MPRDA, 2002 (Act 28 of 2002).</p>	<p>Obtain the relevant approvals and transfer agreement during planning.</p> <p>Management during commissioning, operational and decommissioning phases.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				<p>The layout considers the more sensitive vegetation and ecosystem higher on the ridge, while also keeping a buffered distance from well defined drainage lines</p> <p>Clearance of the site and establishment of equipment will be kept within the approved development boundaries and approved site layout.</p> <p>An application for the removal, relocating and/or destruction of provincial protected plant species will be submitted to the competent authority.</p>	<p>Rehabilitation during decommissioning.</p> <p>Permits for removal/clearance of protected plant species will be applied for as and when required during the operational phase.</p>
Excavation	Operational	4.9 ha	Refer to Table 11 in Annexure 9	<p>Excavation will be undertaken only within the mining permit area of 4.9 ha.</p> <p>Monitoring in terms of the receiving environment will be undertaken to ensure compliance with environmental standards (e.g. air quality) where applicable.</p> <p>The operational procedures will aim to comply with the relevant environmental as well as Health and Safety legislation.</p> <p>Operational procedures will be undertaken in accordance with the company's standard COPs and SOPs to limit risks and impacts.</p>	<p>Management during operational and decommissioning phases.</p> <p>Concurrent rehabilitation as disturbed areas becomes available for rehabilitation.</p> <p>Final rehabilitation upon cessation of excavation during decommissioning.</p>
Drilling & blasting	Operational	<p>Area: 4.9 ha</p> <p>Material: Approximately 210 000 ton/year</p>	Refer to Table 11 in Annexure 9	<p>Blasting will adhere to the conditions of the blast permit and the Explosives Act, 2003 (Act 15 of 2003).</p> <p>Blasting will be undertaken by a certified blast operator and will be undertaken in accordance with the company's Safe Operating Procedure for blasting.</p>	<p>Management and mitigation during operational phase.</p> <p>Monitoring as required and/or on request of affected I&AP during operational phase.</p> <p>Concurrent rehabilitation during operational phase.</p>

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
					Final rehabilitation during decommissioning phase.
Loading and hauling	Operational	Area: Approximately 0.5 ha Material: Approximately 210 000 ton/year	Refer to Table 11 in Annexure 9	The operational procedures will limit dust generation and noise to acceptable levels. Management and monitoring will ensure that trucks are not loaded beyond its specified load capacity and keep to the designated speed limits. Management measures will limit risks and impacts.	Management during operational phase. Maintenance of access road during operational and decommissioning phase. Rehabilitation of loading areas and haul roads during decommissioning.
Crushing and screening	Operational	Approximately 0.6 ha	Refer to Table 11 in Annexure 9	The crusher and screening plant will be placed within the approved mining permit area. Dust monitoring will ensure compliance with the PM standards and identify possible areas of concern. The company's standard COPs and SOPs will be adopted for implementation on the site to limit risks and impacts.	Management and monitoring during operational phase. Removal of plant and final rehabilitation during decommissioning phase.
Stockpiling	Operational	Approximately 3 ha	Refer to Table 11 in Annexure 9	Stockpiles will be placed within the final approved site layout. Stockpiles will be placed outside any storm water drainage lines and managed in accordance with Environmental Best Practices.	Management during operational phase. Final rehabilitation with cessation of mining activities during decommissioning phase.
Water use: Abstraction of groundwater from a borehole	Operational	Approximately 1000 litres per day with commencement.	Refer to Table 11 in Annexure 9	The total volume of water registered with DWS for annual abstraction and use will be adhered to. AMC is investigating alternative water resources to supplement the current registered volume. It will be ensured that the alternative resources will be authorised	Management and monitoring during operational phase. Water use authorisation will be applied for as and when necessary.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				water uses or the necessary approvals obtained prior to use.	
Water use: Storage of water in a reservoir	Commissioning; Operational; Decommissioning; Closure	Volume: Approximately 100 m ³ Area: Approximately 85m ²	Refer to Table 11 in Annexure 9	Should the storage of water in the reservoir require a water use authorisation in terms of the National Water Act, 1998 (Act 36 of 1998), the necessary authorisations will be applied for.	Management during operational phase. Water use authorisation will be applied for as and when necessary for a new water use.
Material storage (e.g. fuel, oil, gas) and waste disposal (including sewage)	Commissioning; Operational; Decommissioning	Approximately 0.2 m ³ per month	Refer to Table 11 in Annexure 9	Material will be stored according to best practice as specified for the material type and volume, e.g. fuel. This includes storage in a designated bunded area with an impermeable layer. No waste will be disposed on site. Waste separation will be undertaken and each waste type (e.g. general waste, hazardous waste) will be managed and disposed of at registered facilities. The operational and management procedures will be in accordance with the company's standard COPs for potential dangerous goods and waste management to limit risks and impacts of spillage.	Management during commissioning, operational and decommissioning phase. Removal and disposal of remaining waste during at Closure. Rehabilitation during decommissioning phase.
General operational activities in respect of I&APs and employees	Operational; Decommissioning	Employees on site Direct neighbours & registered I&APs	Refer to Table 11 in Annexure 9	Management and monitoring will ensure compliance with environmental standards, e.g. PM standards and noise levels. Adherence to SHE legislation will prevent and limit injuries. Implementation of the company's standard COPs and SOPs will limit risks and impacts.	Management during operational and decommissioning phases. Concurrent rehabilitation during operational phase and final rehabilitation during Closure.
Rehabilitation (e.g. removal of equipment,	Operational; Decommissioning	8 ha	Refer to Table 11 in Annexure 9	The aim of rehabilitation will be to limit environmental risks and impacts, residual	Concurrent rehabilitation during operational phase

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
reshaping & vegetation of disturbed areas, etc.)	and Closure			impacts, the need for management and monitoring after cessation of mining and to obtain a Closure Certificate after rehabilitation to DMR's specifications.	and final rehabilitation during Closure

Details of mitigation measures are provided for in Annexure 9.

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e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed). (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc etc...)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	MITIGATION TYPE (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Site establishment (Clearance of vegetation; establishment of equipment; access road; reservoir; etc.)	<ul style="list-style-type: none"> - Clearance of vegetation - Destruction of protected plant species - Establishment of alien vegetation - Habitat loss and effect on the general biodiversity - Erosion - Loss of topsoil - Visual scarring and impact on the aesthetics of the area 	Aesthetics; Visual; Land use; Vegetation; Biodiversity; Ecosystem function; Fauna; Water quality; Soil; Noise; I&APs; Heritage; Health and Safety	Commissioning; Operational	<ul style="list-style-type: none"> - Avoid and/or limit through site locality & layout - Limit by creating visual barriers, e.g. planting of high trees - Limit with good house keeping - Remedy through offsetting - Limit through search and rescue of individual plants - Avoid by relocating plants where possible - Remedy through rehabilitation - Limit footprint - Monitor establishment of 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Offset habitat of at least the approximate footprint of the disturbed area. - Prevent or limit distribution of alien vegetation. - Acceptable noise levels. - Manageable visual impact. - Rehabilitate to a self-sustaining ecosystem, depending on the end land use.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	<ul style="list-style-type: none"> - Elevated noise levels - Change in land use - Destruction of objects or artefacts of importance 			<ul style="list-style-type: none"> invasive plants - Control through management plan - Monitor occurrence of erosion and extent thereof - Control through storm water control and erosion measures - Control through appropriate topsoil stockpiling - Limit by implementing the "Chance Find Protocol" - Create awareness with employees - Control through operational procedures (including working hours) 	
Excavation / Open void	<ul style="list-style-type: none"> - Local impression in topography - Clearance of vegetation - Temporary disturbance to ecosystem function - Slope instability - Change in surface water drainage - Erosion - Visual scarring - Dust generation - Elevated noise levels - Change in land use - Destruction of objects or artefacts of importance 	<p>Topography; Land use; Soil; Aesthetics; Visual; Vegetation; Biodiversity; Ecosystem function; Health & Safety; Natural flow path; Water quantity; Air quality; I&APs; Heritage; Noise</p>	<p>Operational; Decommissioning; Closure</p>	<ul style="list-style-type: none"> - Control through operational procedures - Limit through site layout and footprint - Limit by visual barriers, e.g. high trees - Remedy through landscaping and concurrent rehabilitation - Control through slope and bench management - Control through storm water management - Avoid through appropriate topsoil stockpiling - Control through monitoring & dust suppression measures - Limit by implementing the "Chance Find Protocol" - Create awareness with employees 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Acceptable noise levels. - Compliance with Particulate Matter (PM) standards. - Rehabilitate to a self-sustaining environment. - No impact on objects/artefacts of potential heritage importance.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
				- Limit through noise control & well functioning machinery	
Drilling & blasting	<ul style="list-style-type: none"> - Dust generation - Fly rock - Elevated noise levels - Fire risk - Damage to infrastructure & boreholes - Disruption in the local geology 	Air quality; I&APs; Health & Safety; Noise; Biodiversity; Infrastructure; Geology	Operational	<ul style="list-style-type: none"> - Limit through blasting procedures - Control through monitoring & dust control measures - Limit risks through communication to I&APs & clearance of employees from site - Remedy through clearance of affected areas 	<ul style="list-style-type: none"> - Impact limited and managed effectively. - Once off elevated noise and high dust generation. - Prevent fire risks
Loading & hauling	<ul style="list-style-type: none"> - Dust generation - Elevated noise levels - Deterioration of the gravel access road 	Air quality; I&APs; Noise; Infrastructure; Road safety	Operational; Decommissioning	<ul style="list-style-type: none"> - Control through operational procedures - Limit through dust control measures - Limit through noise control & well functioning machinery - Control through monitoring & visual checks - Remedy through maintenance of the road 	<ul style="list-style-type: none"> - Impact managed effectively where avoidance is not possible. - Acceptable noise levels. - Compliance with Particulate Matter (PM) standards.
Crushing & screening	<ul style="list-style-type: none"> - Dust generation - Elevated noise levels - Visual scarring 	Air quality; Noise; I&APs; Aesthetics; Visual	Operational; Decommissioning	<ul style="list-style-type: none"> - Control through operational procedures - Control through dust control and monitoring - Limit through noise control & well functioning machinery - Remedy through removal of equipment - Remedy through rehabilitation - Limit through site layout 	<ul style="list-style-type: none"> - Impact limited and managed effectively where avoidance is not possible. - Acceptable noise levels. - Compliance with Particulate Matter (PM) standards. - Rehabilitate to a self-sustaining environment. - Limit cumulative visual impact.
Stockpiling	<ul style="list-style-type: none"> - Dust generation - Visual scarring - Change in surface 	Air quality; I&APs; Aesthetics;	Operational; Decommissioning	<ul style="list-style-type: none"> - Control through operational procedures - Control through dust control & 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Compliance with Particulate

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	<ul style="list-style-type: none"> water drainage - Loss of topsoil - Establishment of alien vegetation 	Visual; Natural flow path; Water quantity; Ecosystem function; Vegetation; Biodiversity; Soil; Land use		<ul style="list-style-type: none"> monitoring - Limit through site layout - Limit by creating visual barriers, e.g. planting of high trees - Remedy through rehabilitation - Control through storm water controls - Control through appropriate topsoil stockpiling; - Control through erosion control and monitoring - Control through monitoring establishment of invasive vegetation - Control through implementation of a weed management plan 	<ul style="list-style-type: none"> Matter (PM) standards. - Rehabilitate to a self-sustaining environment.
Water use: Abstraction of groundwater from a borehole	<ul style="list-style-type: none"> - Impact on the groundwater quantity - Localised disturbance to local geology due to drilling 	Water quantity; I&APs; Water reserve; Geology	Commissioning; Operational; Decommissioning; Closure	<ul style="list-style-type: none"> - Control through operational procedures - Control through monitoring water use - Limit abstraction rate and volume - Limit through drilling method 	<ul style="list-style-type: none"> - Impact on downstream users avoided. - Comply with legislation.
Water use: Storage of water in a reservoir	<ul style="list-style-type: none"> - Visual scarring - Change in land use 	Aesthetics; Visual; Land use	Operational; Decommissioning; Closure	<ul style="list-style-type: none"> - Limit through site locality and footprint - Remedy through rehabilitation - Limit by using for agriculture purposes after Closure 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Comply with legislation.
Material storage (e.g. fuel, oil, gas) and waste disposal (including sewage)	<ul style="list-style-type: none"> - Soil contamination - Water pollution - Littering - Fire risk 	Soil; Land use; Waste management; Water quality; I&APs; Aesthetics; Health & safety;	Commissioning; Operational; Decommissioning	<ul style="list-style-type: none"> - Avoid through operational procedures and management - Remedy through rehabilitation - Prevent through site layout - Remedy through cleaning and rehabilitation - Prevent through waste 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Rehabilitate to a self-sustaining environment. - No long-term water quality impact.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		Biodiversity		management and appropriate storage control - Avoid through awareness and training to employees	
General operational activities in respect of I&APs and employees	<ul style="list-style-type: none"> - Impact on the general aesthetics of the area - Risk of injury to people entering the operational area - Risk of injury to employees working with machinery/equipment on site - Illegal dumping & scavenging potentially resulting in safety risks to passing neighbours - Job creation & skills upliftment - Economic development in the region 	Aesthetics; I&APs; Health & safety; Community; Economy	Commissioning; Operational; Decommissioning; Closure	<ul style="list-style-type: none"> - Remedy through rehabilitation - Limit through site locality & layout - Control through operational procedures - Avoid through access control - Control by reporting illegal dumping - Avoid through fencing the operational area and open pit - Avoid through appropriate PPE - Avoid through awareness & appropriate training to staff on site - Achieve positive impacts on the community through continuation with proposed operation and training 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible. - Rehabilitate to a self-sustaining environment. - No fatalities. - Positive impact on the economy and lifestyle of employees.
Rehabilitation (e.g. removal of equipment, reshaping & re-vegetation of disturbed areas, etc.)	<ul style="list-style-type: none"> - Soil contamination from spillages and waste disposal - Water pollution due to spillages and waste disposal - Elevated noise levels - Change in surface water drainage - Erosion & loss of topsoil - Establishment of alien vegetation - Establishment of a self- 	Soil; Land use; Water quality; Noise; I&APs; Topography; Storm water flow; Ecosystem function; Vegetation; Biodiversity; Aesthetics	Decommissioning; Closure	<ul style="list-style-type: none"> - Avoid through rehabilitation procedures - Prevent through management - Remedy through clearance and reinstatement of polluted areas - Achieve a self-sustaining ecosystem through landscaping and rehabilitation of disturbed areas - Control through storm water controls - Remedy through rehabilitation and reinstatement of affected areas; 	<ul style="list-style-type: none"> - Impact avoided or limited and managed effectively where avoidance is not possible - Rehabilitate to a self-sustaining environment - Comply with PM standards - Acceptable noise levels - No long-term water quality impact - Positive impact on the environment and end land use

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	sustaining ecosystem			<ul style="list-style-type: none"> - Control through erosion control & monitoring - Control through monitoring, removal and establishment of reestablishment of invasive plants - Achieve through landscaping and rehabilitation of disturbed areas - Achieve through establishment of natural occurring vegetation 	
Cumulative impacts	<ul style="list-style-type: none"> - Dust generation - Visual scarring - Elevated noise levels - Change in land use - Change in surface water drainage - Habitat loss and effect on the general biodiversity 	Air quality; I&APs; Noise; Aesthetics; Visual; Land use; Topography; Storm water flow; Water quantity; Ecosystem function; Biodiversity	Commissioning; Operational; Decommissioning; Closure	<ul style="list-style-type: none"> - Limit through operational procedures - Control through management and monitoring - Control through dust control - Reduced once the borrow pit on Portion 10 of the farm Mimosa Glen 885 has been rehabilitated - Limit by creating visual barriers, e.g. planting of high trees - Limit with good house keeping - Limit through site locality and layout - Limit footprint - Remedy through rehabilitation to an end land use potential of agriculture after Closure - Control through storm water controls - Remedy through landscaping and rehabilitation of disturbed areas - Remedy through establishment of natural occurring vegetation 	<ul style="list-style-type: none"> - Impact limited and managed effectively where avoidance is not possible - Rehabilitate to an end land use of agriculture (dependant on the end land use) - Comply with PM standards - Acceptable noise levels - No long-term water quality impact

f) Impact Management Actions

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

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
<p>whether listed or not listed.</p> <p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p>(modify, remedy, control, or stop) through</p> <p>(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring <p>Remedy through rehabilitation.</p>	<p>Describe the time period when the measures in the environmental management program must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regards to Rehabilitation, therefore state either:-</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Site establishment (Clearance of vegetation; establishment of equipment; access road; reservoir; etc.)</p>	<ul style="list-style-type: none"> - Clearance of vegetation - Destruction of protected plant species - Establishment of alien vegetation - Habitat loss and effect on the general biodiversity - Erosion 	<ul style="list-style-type: none"> - Avoid and/or limit through site locality & layout - Limit by creating visual barriers, e.g. planting of high trees - Limit with good house keeping - Remedy through offsetting - Limit through search and rescue of individual plants - Avoid by relocating plants where possible - Remedy through rehabilitation 	<p>Obtain the relevant approvals and transfer agreement during planning.</p> <p>Management during commissioning, operational and decommissioning phases.</p> <p>Rehabilitation during decommissioning.</p> <p>Permits for removal/clearance of</p>	<p>Continuation of the proposed operation will be dependent on the approval of the Environmental Authorisation and mining permit.</p> <p>The environmental liabilities under the previous mining permit will be transferred to the new applicant in terms of the MPRDA, 2002 (Act 28 of 2002).</p> <p>The layout considers the more sensitive vegetation and ecosystem higher on the ridge, while also keeping a buffered distance</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	<ul style="list-style-type: none"> - Loss of topsoil - Visual scarring and impact on the aesthetics of the area - Elevated noise levels - Change in land use - Destruction of objects or artefacts of importance 	<ul style="list-style-type: none"> - Limit footprint - Monitor establishment of invasive plants - Control through management plan - Monitor occurrence of erosion and extent thereof - Control through storm water control and erosion measures - Control through appropriate topsoil stockpiling - Limit by implementing the "Chance Find Protocol" - Create awareness with employees - Control through operational procedures (including working hours) 	<p>protected plant species will be applied for as and when required during the operational phase.</p>	<p>from well defined drainage lines</p> <p>Clearance of the site and establishment of equipment will be kept within the approved development boundaries and approved site layout.</p> <p>An application for the removal, relocating and/or destruction of provincial protected plant species will be submitted to the competent authority.</p>
Excavation	<ul style="list-style-type: none"> - Local impression in topography - Clearance of vegetation - Temporary disturbance to ecosystem function - Slope instability - Change in surface water drainage - Erosion - Visual scarring - Dust generation - Elevated noise levels - Change in land use - Destruction of objects or artefacts of 	<ul style="list-style-type: none"> - Control through operational procedures - Limit through site layout and footprint - Limit by visual barriers, e.g. high trees - Remedy through landscaping and concurrent rehabilitation - Control through slope and bench management - Control through storm water management - Avoid through appropriate topsoil stockpiling - Control through monitoring & dust suppression measures - Limit by implementing the "Chance Find Protocol" 	<p>Management during operational and decommissioning phases.</p> <p>Concurrent rehabilitation as disturbed areas becomes available for rehabilitation.</p> <p>Final rehabilitation upon cessation of excavation during decommissioning.</p>	<p>Excavation will be undertaken only within the mining permit area of 4.9 ha.</p> <p>Monitoring in terms of the receiving environment will be undertaken to ensure compliance with environmental standards (e.g. air quality) where applicable.</p> <p>The operational procedures will aim to comply with the relevant environmental as well as Health and Safety legislation.</p> <p>Operational procedures will be undertaken in accordance with the company's standard COPs and SOPs to limit risks and impacts.</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	importance	<ul style="list-style-type: none"> - Create awareness with employees - Limit through noise control & well functioning machinery 		
Drilling & blasting	<ul style="list-style-type: none"> - Dust generation - Fly rock - Elevated noise levels - Fire risk - Damage to infrastructure & boreholes - Disruption in the local geology 	<ul style="list-style-type: none"> - Limit through blasting procedures - Control through monitoring & dust control measures - Limit risks through communication to I&APs & clearance of employees from site - Remedy through clearance of affected areas 	<p>Management and mitigation during operational phase.</p> <p>Monitoring as required and/or on request of affected I&AP during operational phase.</p> <p>Concurrent rehabilitation during operational phase.</p> <p>Final rehabilitation during decommissioning phase.</p>	<p>Blasting will adhere to the conditions of the blast permit and the Explosives Act, 2003 (Act 15 of 2003).</p> <p>Blasting will be undertaken by a certified blast operator and will be undertaken in accordance with the company's Safe Operating Procedure for blasting.</p>
Loading and hauling	<ul style="list-style-type: none"> - Dust generation - Elevated noise levels - Deterioration of the gravel access road 	<ul style="list-style-type: none"> - Control through operational procedures - Limit through dust control measures - Limit through noise control & well functioning machinery - Control through monitoring & visual checks - Remedy through maintenance of the road 	<p>Management during operational phase.</p> <p>Maintenance of access road during operational and decommissioning phase.</p> <p>Rehabilitation of loading areas and haul roads during decommissioning.</p>	<p>The operational procedures will limit dust generation and noise to acceptable levels.</p> <p>Management and monitoring will ensure that trucks are not loaded beyond its specified load capacity and keep to the designated speed limits.</p> <p>Management measures will limit risks and impacts.</p>
Crushing and screening	<ul style="list-style-type: none"> - Dust generation - Elevated noise levels - Visual scarring 	<ul style="list-style-type: none"> - Control through operational procedures - Control through dust control and monitoring - Limit through noise control & well functioning machinery - Remedy through removal of equipment - Remedy through rehabilitation - Limit through site layout 	<p>Management and monitoring during operational phase.</p> <p>Removal of plant and final rehabilitation during decommissioning phase.</p>	<p>The crusher and screening plant will be placed within the approved mining permit area.</p> <p>Dust monitoring will ensure compliance with the PM standards and identify possible areas of concern.</p> <p>The company's standard COPs and SOPs will be adopted for implementation on the site to limit risks and impacts.</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Stockpiling	<ul style="list-style-type: none"> - Dust generation - Visual scarring - Change in surface water drainage - Loss of topsoil - Establishment of alien vegetation 	<ul style="list-style-type: none"> - Control through operational procedures - Control through dust control & monitoring - Limit through site layout - Limit by creating visual barriers, e.g. planting of high trees - Remedy through rehabilitation - Control through storm water controls - Control through appropriate topsoil stockpiling; - Control through erosion control and monitoring - Control through monitoring establishment of invasive vegetation - Control through implementation of a weed management plan 	<p>Management during operational phase.</p> <p>Final rehabilitation with cessation of mining activities during decommissioning phase.</p>	<p>Stockpiles will be placed within the final approved site layout.</p> <p>Stockpiles will be placed outside any storm water drainage lines and managed in accordance with Environmental Best Practices.</p>
Water use: Abstraction of groundwater from a borehole	<ul style="list-style-type: none"> - Impact on the groundwater quantity - Localised disturbance to local geology due to drilling 	<ul style="list-style-type: none"> - Control through operational procedures - Control through monitoring water use - Limit abstraction rate and volume - Limit through drilling method 	<p>Management and monitoring during operational phase.</p> <p>Water use authorisation will be applied for as and when necessary.</p>	<p>The total volume of water registered with DWS for annual abstraction and use will be adhered to.</p>
Water use: Storage of water in a reservoir	<ul style="list-style-type: none"> - Visual scarring - Change in land use 	<ul style="list-style-type: none"> - Limit through site locality and footprint - Remedy through rehabilitation - Limit by using for agriculture purposes after Closure 	<p>Management during operational phase.</p> <p>Water use authorisation will be applied for as and when necessary for a new water use.</p>	<p>Should the storage of water in the reservoir require a water use authorisation in terms of the National Water Act, 1998 (Act 36 of 1998), the necessary authorisations will be applied for.</p>
Material storage (e.g. fuel, oil, gas) and waste	<ul style="list-style-type: none"> - Soil contamination - Water pollution 	<ul style="list-style-type: none"> - Avoid through operational procedures and management - Remedy through rehabilitation 	<p>Management during commissioning, operational</p>	<p>Material will be stored according to best practice as specified for the material type and</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
disposal (including sewage)	<ul style="list-style-type: none"> - Littering - Fire risk 	<ul style="list-style-type: none"> - Prevent through site layout - Remedy through cleaning and rehabilitation - Prevent through waste management and appropriate storage control - Avoid through awareness and training to employees 	<p>and decommissioning phase.</p> <p>Removal and disposal of remaining waste during at Closure.</p> <p>Rehabilitation during decommissioning phase.</p>	<p>volume, e.g. fuel. This includes storage in a designated bunded area with an impermeable layer.</p> <p>No waste will be disposed on site. Waste separation will be undertaken and each waste type (e.g. general waste, hazardous waste) will be managed and disposed of at registered facilities.</p> <p>The operational and management procedures will be in accordance with the company's standard COPs for potential dangerous goods and waste management to limit risks and impacts of spillage.</p>
General operational activities in respect of I&APs and employees	<ul style="list-style-type: none"> - Impact on the general aesthetics of the area - Risk of injury to people entering the operational area - Risk of injury to employees working with machinery/equipment on site - Illegal dumping & scavenging potentially resulting in safety risks to passing neighbours - Job creation & skills upliftment - Economic development in the region 	<ul style="list-style-type: none"> - Remedy through rehabilitation - Limit through site locality & layout - Control through operational procedures - Avoid through access control - Control by reporting illegal dumping - Avoid through fencing the operational area and open pit - Avoid through appropriate PPE - Avoid through awareness & appropriate training to staff on site - Achieve positive impacts on the community through continuation with proposed operation and training 	<p>Management during operational and decommissioning phases.</p> <p>Concurrent rehabilitation during operational phase and final rehabilitation during Closure.</p>	<p>Management and monitoring will ensure compliance with environmental standards, e.g. PM standards and noise levels.</p> <p>Adherence to SHE legislation will prevent and limit injuries.</p> <p>Implementation of the company's standard COPs and SOPs will limit risks and impacts.</p>
Rehabilitation (e.g. removal of equipment,	<ul style="list-style-type: none"> - Soil contamination from spillages and 	<ul style="list-style-type: none"> - Avoid through rehabilitation procedures 	<p>Concurrent rehabilitation during operational phase</p>	<p>The aim of rehabilitation will be to limit environmental risks and impacts, residual</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
reshaping & vegetation of disturbed areas, etc.)	<ul style="list-style-type: none"> - waste disposal - Water pollution due to spillages and waste disposal - Elevated noise levels - Change in surface water drainage - Erosion & loss of topsoil - Establishment of alien vegetation - Establishment of a self-sustaining ecosystem 	<ul style="list-style-type: none"> - Prevent through management - Remedy through clearance and reinstatement of polluted areas - Achieve a self-sustaining ecosystem through landscaping and rehabilitation of disturbed areas - Control through storm water controls - Remedy through rehabilitation and reinstatement of affected areas; - Control through erosion control & monitoring - Control through monitoring, removal and establishment of reestablishment of invasive plants - Achieve through landscaping and rehabilitation of disturbed areas - Achieve through establishment of natural occurring vegetation 	and final rehabilitation during Closure.	impacts, the need for management and monitoring after cessation of mining and to obtain a Closure Certificate after rehabilitation to DMR's specifications.
Cumulative impacts	<ul style="list-style-type: none"> - Dust generation - Visual scarring - Elevated noise levels - Change in land use - Change in surface water drainage - Habitat loss and effect on the general biodiversity 	<ul style="list-style-type: none"> - Limit through operational procedures - Control through management and monitoring - Control through dust control - Reduced once the borrow pit on Portion 10 of the farm Mimosa Glen 885 has been rehabilitated - Limit by creating visual barriers, e.g. planting of high trees - Limit with good house keeping - Limit through site locality and layout 	<p>Management during all phases.</p> <p>Concurrent rehabilitation during operational phase and final rehabilitation during Closure.</p>	<p>Management and monitoring throughout all phases will ensure compliance with environmental standards and acceptable levels.</p> <p>Implementation of the company's standard COPs and SOPs will limit risks and impacts.</p> <p>Implementation of the Environmental Management Programme report as minimum will limit risks and potential residual environmental impacts. This will also limit the expected cumulative impacts.</p>

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		<ul style="list-style-type: none"> - Limit footprint - Remedy through rehabilitation to an end land use potential of agriculture after Closure - Control through storm water controls - Remedy through landscaping and rehabilitation of disturbed areas - Remedy through establishment of natural occurring vegetation 		

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i) Financial Provision

(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The closure objectives took into account the current status quo of the environment, the potential impacts expected to be associated with the proposed operation as well as the end land use potential after decommissioning of the operation.

The closure objectives are to:

- Rehabilitate the area disturbed by the operation and related activities to a land use potential of agriculture (at least grazing with an expected artificial water environment), depending on the end land use planned for at the time.
- To rehabilitate the quarry to a post mining environment that is safe and with stable surfaces.
- To limit and/or reduce any residual impacts after decommissioning of the operation.
- To reduce the need for long-term monitoring and maintenance.
- Obtain a closure certificate after decommissioning of the mining activities of the mining permit.

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

The environmental objectives as described in this report have been consulted with the adjacent neighbours during a public meeting. The environmental objectives are also included in this draft BAR and EMP that will be available for comment.

(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.

Concurrent rehabilitation will be undertaken and the exposed/disturbed areas will be limited in size as far as possible. Stripping of overburden will progress from east to west. Any topsoil and overburden will be removed from the area

to be disturbed and stockpiled separately for use during rehabilitation. Blasting and excavation will be undertaken in such manner to create acceptable vertical terraces/benches as far as possible.

Once mining activities have ceased rehabilitation of the final void and disturbed areas (e.g. stockpile areas, plant area) will be undertaken. The unrehabilitated areas at the time of Closure will be landscaped, top soiled and re-vegetated with natural occurring vegetation. The final void will be made safe and it is expected that an artificial water ecosystem will form on site after time. Refer to the proposed Rehabilitation plan attached under Annexure 2 of this report for an indication of the proposed rehabilitation plan.

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

The Rehabilitation plan was developed with the aim to achieve the closure objectives considering the nature of the impacts expected to be associated with the operation. If the proposed rehabilitation measures are implemented, it is expected that a stable and self-sustainable ecosystem will be established at closure. Some residual impacts, e.g. visual scarring may occur even after rehabilitation measures have been implemented.

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

The quantum for financial provision to be provided to DMR was calculated in accordance with DMR's guideline titled "Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine", dated 2005 considering the latest master rates in Section B as well as current rehabilitation costs.

The calculated cost for final closure of the operation by the applicant (i.e. Sub-total 1 of the Quantum) is R204 165.00. As concurrent rehabilitation of mined out areas will be undertaken during the Operational Phase as far possible, it is anticipated that the final amount required for rehabilitation will be significantly lower. The calculated cost for current environmental liability by a Third Party (as per quantum calculation) (i.e. Grand Total of the Quantum plus VAT) is R286 443.49.

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

The financial provision as calculated in terms of the quantum calculation and as required in terms of the MPRDA, 2002 (Act 28 of 2002) in respect of this application will be provided by the applicant.

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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) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Site establishment (Clearance of vegetation; establishment of equipment; access road; reservoir; etc.)	<ul style="list-style-type: none"> - Vegetation loss - Collection of protected plant species - Establishment of alien vegetation - Erosion - Visual impact - Noise levels - Land use / agricultural potential - Occurrence and destruction of objects with potential heritage importance 	Visual checks; Verify compliance with conditions of the EA and EMP; Identify non-compliances; Monitor key parameters, e.g. noise levels.	Site manager Designated Environmental Officer Environmental Control Officer (when required)	Weekly visual checks for erosion, vegetation clearance and collection of protected species. Report environmental incidents immediately. Record incidents and non-compliances monthly. Implement management measures throughout the commissioning phase. Implement standard COPs and SOPs.
Excavation / Open void	<ul style="list-style-type: none"> - Slope stability - Vegetation loss - Ecosystem function - Change in surface water drainage - Erosion 	Visual checks; Verify compliance with conditions of the EA and EMP; Identify non-compliances; Monitor key parameters, e.g. dust monitoring	Site manager Designated Environmental Officer Environmental Control Officer (when required)	Weekly visual checks for erosion and loss of topsoil. Report environmental incidents immediately. Record incidents and non-compliances monthly.

	<ul style="list-style-type: none"> - Visual impact - Dust - Noise levels - Land use / agricultural potential - Occurrence and destruction of objects with potential heritage importance 			<p>Monitor dust fallout monthly and report results in annual performance reports.</p> <p>Annual environmental performance assessment with financial provision review</p> <p>Implement the management measures throughout the operational phase.</p> <p>Implement standard COPs and SOPs.</p>
Drilling & blasting	<ul style="list-style-type: none"> - Dust - Fly rock & dust - Noise levels - Fires - Damage to infrastructure 	Visual checks; Verify compliance with the Explosives Act, conditions of the EA and EMPr; Identify non-compliances; Monitor key parameter, e.g. dust and vibration levels; Identify any damage	Safety officer Blast operator Designated Environmental Officer Environmental Control Officer (when required)	<p>Report environmental incidents immediately.</p> <p>Report damage to infrastructure once proven.</p> <p>Implement blast control measures and management measures during blasting.</p> <p>Implement standard COPs and SOPs.</p>
Loading & hauling	<ul style="list-style-type: none"> - Dust - Noise levels - Access road 	Visual checks of the road; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. dust monitoring	Site manager Safety Officer Designated Environmental Officer Environmental Control Officer (when required)	<p>Weekly visual checks for signs of deterioration of the road.</p> <p>Record incidents and non-compliances monthly.</p> <p>Monitor dust fallout monthly and report results in annual environmental performance assessment.</p> <p>Implement the management measures throughout the operational phase.</p> <p>Implement standard COPs and SOPs.</p>
Crushing & screening	<ul style="list-style-type: none"> - Dust generation - Elevated noise levels - Visual scarring 	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. dust monitoring	Site manager Safety officer Designated Environmental Officer Environmental Control Officer (when required)	<p>Report environmental incidents immediately.</p> <p>Record incidents and non-compliances monthly.</p> <p>Monitor dust fallout monthly and report results in annual environmental performance assessment.</p>

				Implement management measures throughout the operational phase. Implement standard COPs and SOPs.
Stockpiling	<ul style="list-style-type: none"> - Dust - Visual impact - Change in surface water drainage - Erosion - Establishment of alien vegetation 	Visual checks for loss of topsoil and alien vegetation; Verify compliance with conditions of the EA and EMP; Identify non-compliances; Monitor key parameters, e.g. dust monitoring	Site manager Designated Environmental Officer Environmental Control Officer (when required)	Report environmental incidents immediately. Record incidents and non-compliances monthly. Monitor dust fallout monthly and report results in annual environmental performance assessment. Implement management measures throughout the operational phase. Implement standard COPs and SOPs.
Water use: Abstraction of groundwater from a borehole	<ul style="list-style-type: none"> - Abstraction volume 	Verify compliance with the Water Use License and EMP; Identify non-compliances; Monitor abstraction volumes	Site manager Designated Environmental Officer Environmental Control Officer (when required)	Record non-compliances monthly. Implement management measures throughout the operational phase.
Water use: Storage of water in a reservoir	<ul style="list-style-type: none"> - Storage capacity 	Verify compliance with the Water Use License and EMP; Identify non-compliances; Monitor abstraction volumes	Site manager Designated Environmental Officer Environmental Control Officer (when required)	Record non-compliances monthly. Implement management measures throughout the operational phase.
Material storage (e.g. fuel, oil, gas) and waste disposal (including sewage)	<ul style="list-style-type: none"> - Storage facilities (locality, capacity, functionality, etc.) - Soil contamination - Water pollution - Littering - Fires 	Visual checks for contamination, spillages, damaged storage containers and signs of littering; Verify compliance with conditions of the EA and EMP; Identify non-compliances	SHE representative Site manager Designated Environmental Officer Environmental Control Officer (when required)	Report environmental incidents immediately. Report pollution incidents to the Provincial Head: Department of Water and Sanitation within 24 hours. Record incidents and non-compliances monthly. Implement management measures throughout the operational phase. Implement standard COPs and SOPs.
General operational	<ul style="list-style-type: none"> - Visual impact 	Verify compliance with conditions of	SHE representative	Report environmental incidents

<p>activities in respect of I&APs and employees</p>	<ul style="list-style-type: none"> - Access to the operational area - Machinery and equipment on site - Illegal dumping & scavenging - Job creation & skills upliftment 	<p>the EA and EMPr; Identify non-compliances; Complaints register with comments from I&APs; Visual checks on fences; Log sheets of legal entrances to the mining area; Record of employee awareness training</p>	<p>Site manager Designated Environmental Officer Environmental Control Officer (when required)</p>	<p>immediately. Record incidents and non-compliances monthly. Implement management measures throughout the commissioning, operational and decommissioning phases. Implement standard COPs and SOPs.</p>
<p>Rehabilitation (e.g. removal of equipment, reshaping & re-vegetation of disturbed areas, etc.)</p>	<ul style="list-style-type: none"> - Soil contamination - Water pollution - Spillages - Noise levels - Change in surface water drainage - Erosion - Establishment of alien vegetation - Rehabilitated areas 	<p>Visual checks for contamination and spillages; Verify compliance with conditions of the EA and EMPr; Identify non-compliances</p>	<p>Site manager Designated Environmental Officer Environmental Control Officer (when required)</p>	<p>Report environmental incidents immediately. Record incidents and non-compliances monthly. Implement management measures throughout the decommissioning phase. Monitor rehabilitated areas for one year after Closure.</p>

(l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

An environmental audit on at least a bi-annual basis will be undertaken by an Environmental Control Officer to measure compliance with the measures stipulated in the BAR, EMPr and Environmental Authorisation (if considered for approval). A summary of the environmental audit report will be included in the Annual Environmental Performance Assessment report for submission to DMR. The environmental performance assessment and revision of the quantum will be undertaken annually in accordance with the NEMA Regulations on Financial Provision, 2015.

(m) Environmental Awareness Plan

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

Induction on environmental awareness will be provided to all permanent and temporary employees as well as sub-contractors (if applicable) at the start of their employment on site.

The induction will contain as minimum:

- The environmental policy of the company;
- The role of each employee to conserve the environment in accordance with the policy;
- The impact that the employee's action or work could have on the environment;
- General measures to be implemented during the operation to prevent environmental impacts, e.g. waste management, dust control, water conservation, etc.;
- Emergency procedures and the individuals to contact in the event of an incident, e.g. major spillage of fuel.

Proof of environmental training/induction will be kept on site and available for inspection on request.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Refer to Table 11 in the Environmental Impacts/Risks and Management Report in Annexure 9 of this report for environmental management and mitigation measures to be implemented to limit and/or prevent environmental impacts/risks expected to be associated with the proposed operation.

(n) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually).

The financial provision will be reviewed annually in accordance with the NEMA Regulations on financial Provision, 2015.

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2 UNDERTAKING

The EAP herewith confirms:

The correctness of the information provided in the reports

- a) the inclusion of comments and inputs from stakeholders and I&APs ;
- b) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- c) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.

Signature of the environmental assessment practitioner:

Name of company:

Date:

Signature of the Commissioner of Oaths:

Name:

Designation:

Date:

Official stamp of Commissioner of Oaths (below)