PETRA QUARRY
PORTION 0 OF HILLSIDE NO 2830, MANGAUNG MUNICIPAL AREA, FREE STATE PROVINCE

ENVIRONMENTAL MANAGEMENT PROGRAMME

JULY 2025

DMRE REFERENCE NUMBER **NMPS REFERENCE NUMBER**	**FS 30/5/1/2/2/10059 MR** **FS 30/5/1/2/2/10069 MR**
DOCUMENT VERSION	**Revision 02**

PREPARED FOR:

Petra Quarry (Pty) Ltd
Contact Person: Me E van der Westhuizen
P.O. Box 13057
Noordstad
Bloemfontein
9302
Tel: 051 433 2965
Cell: 082 780 0024
E-mail: ellen@raumix.co.za

PREPARED BY:

Greenmined Environmental (Pty) Ltd
Contact Person: Ms C Fouché
Suite 62
Private Bag X15
Somerset West
7129
Tel: 021 851 2673
Cell: 082 811 8514
E -mail: Christine.f@greenmined.co.za

EXECUTIVE SUMMARY

Petra Quarry (Pty) Ltd holds a mining right (DMRE Ref No: FS 30/5/1/2/2/10059 MR & FS 30/5/1/2/2/10069 MR) to mine aggregate over 54.9874-ha of Portion 0 of the farm Hillside No 2830, located in the Mangaung District of the Free State. The mining right was valid until 13 October 2020 upon which it was renewed for a further twenty two (22) years until 14 April 2043.

The 2025 environmental performance audit concluded that the 2015 environmental management programme (EMPR) of Petra Quarry does not fully comply with Appendix 4 of the EIA Regulations (GNR 982 of 2014) (as amended). The Quarry has since made various changes and/or improvements on site, and management identified the need to amend/update the EMPR to adequately manage and/or mitigate the environmental impacts associated with the activity as well as ensure legal compliance.

This 2025 Amended EMPR will replace the 2015 EMPR upon approval by the Department of Mineral Resources and Energy (DMRE) and will serve as the guiding document for all environmental management aspects of the mine. The competent authority will evaluate the amended EMPR in terms of Regulation 35 of GNR 982, ensuring it provides sufficient measures for the avoidance, mitigation, and management of environmental impacts while allowing for continued compliance with legal requirements and industry best practices.

Petra Quarry (Pty) Ltd remains committed to sustainable mining practices, environmental stewardship, and responsible resource extraction that balances economic development with environmental protection and community well-being.

LIST OF ABBREVIATIONS

ASTM	American Standard Test Method
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBD	Central Business District
DARD	Department of Agriculture and Rural Development
DCSRT	Department of Community Safety, Roads and Transport
DESTEA	Department of Economic Small Business Development, Transport and Environmental Affairs
DMRE	Department of Mineral and Resources and Energy
DoEL	Department of Employment and Labour
DPWI	Department of Public Works and Infrastructure
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended)
EMPR	Environmental Management Programme
EPA	Environmental Performance Assessment
GNR	Government Notice
GPS	Global Positioning System
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
IUCN	International Union of Conservation of Nature
MHSA	Mine Health and Safety Act, 1996 (Act No 29 of 1996)
MMM	Mangaung Metropolitan Municipality
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MR	Mining Right
MR Holder	Petra Quarry (Pty) Ltd
NCR	Noise Control Regulations, 1992
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFA	National Forest Act, 1998 (Act No. 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
OHSAS	Occupational Health and Safety Management Systems
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PHRA-FS	Provincial Heritage Resources Agency – Free State Province
PPE	Personal Protective Equipment
RoM	Run of Mine
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAWIS	South African Waste Information System
SDS	Safety Data Sheet
SLP	Social and Labour Plan
SWMP	Stormwater Management Plan
TMM's	Trackless Mobile Machinery
WMA	Water Management Area

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	Petra Quarry (Pty) Ltd
TEL NO:	051 433 2964
FAX NO:	-
POSTAL ADDRESS:	P.O. Box 13057, Noordstad, Bloemfontein, 9302
PHYSICAL ADDRESS:	Farm Hillside No 2830, Bloemfontein
FILE REFERENCE NUMBER:	FS 30/5/1/2/2/10059 MR & FS 30/5/1/2/2/10069 MR (NMPS)

A. INTRODUCTION

Petra Quarry (Pty) Ltd holds a mining right (Ref No: FS 30/5/1/2/2/10059 MR & FS 30/5/1/2/2/10069 MR) to mine aggregate over 54.9874 ha of Portion 0 of the farm Hillside No 2830 in the Mangaung District of the Free State. The mining right was valid until 13 October 2020 upon which it was renewed for a further twenty two (22) years until 14 April 2043.

The 2025 environmental performance audit concluded that the 2015 environmental management programme (EMPR) of Petra Quarry does not fully comply with Appendix 4 of the EIA Regulations (GNR 982 of 2014) (as amended). The Quarry has since made various changes and/or improvements on site, and management identified the need to amend/update the EMPR to adequately manage and/or mitigate the environmental impacts associated with the activity as well as ensure legal compliance.

Accordingly, this document serves as the amended EMPR (version 02) for Petra Quarry, submitted to the DMRE in compliance with Section 35 of the EIA Regulations, 2014 (as amended). As per regulation 35: "*The competent authority must consider the environmental audit report and amended EMPr and, where applicable the amended closure plan, contemplated in regulation 34 and approve such amended EMPr, and where applicable the amended closure plan, if it is satisfied that it sufficiently provides for avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity, or where applicable the closure of the facility, and that it has been subjected to an appropriate public participation process*."

Should the DMRE approve this document (hereafter referred to as the "2025 EMPR"), this EMPR will replace the previously approved 2015 EMPR of the Quarry and will be applicable to all aspects of the mining activity throughout the operational- and decommissioning phases.

(GNR 982 APPENDIX 4 SECTION 1(1)(a))

B. DECLARATION OF INDEPENDENCE BY EAP

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake any activities regulated in terms of the Act. Petra Quarry (Pty) Ltd (hereafter referred to as the "MR Holder") appointed Greenmined Environmental (Pty) Ltd (hereafter referred to as "Greenmined") to undertake the amendment of the mine's EMPR. Greenmined has no vested interest in Petra Quarry (Pty) Ltd or the mining project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended) (EIA Regulations).

a) DETAILS OF THE EAP

Name of the Practitioner: Ms Christine Fouché (Senior Environmental Specialist)
Tel No.: 021 851 2673
Cell No: 082 811 8514
E-mail address: christine.f@greenmined.co.za

b) EXPERTISE OF THE EAP

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

Ms Fouché has twenty years' experience in doing Environmental Impact Assessments related projects in South Africa. Ms. Fouche is a registered Environmental Assessment Practitioner (registration no: 2019/1003) with EAPASA (Environmental Assessment Practitioners Association of South Africa). See a list of past projects attached as Appendix G.

(GNR 982 APPENDIX 4 SECTION 1(1)(b))

C. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

a) LOCATION OF THE ACTIVITY

Table 1: Location of the activity.

Farm Name	Portion 0 of the farm Hillside No 2830	
Mining Area (Ha)	54.9874 ha	
Magisterial District	Mangaung Metropolitan Municipality	
Distance and direction from the nearest town	Petra Quarry is situated within Bloemfontein, ±5 km north of the Central Business District (CBD). The mine is accessed from Christo Groenewald Street and bordered by the R700 also known as Kenneth Kaunda Road.	
21 digit Surveyor General Code for each farm portion	F00300000000283000000	
Site Coordinates	A 29°03'30.75" S	26°14'29.32" E
	B 29°03'37.41" S	26°14'55.87" E
	C 29°03'55.15" S	26°14'55.72" E
	D 29°03'55.13" S	26°14'48.80" E

	E 29°03’56.29” S	26°14’47.00” E
	F 29°03’55.83” S	26°14’44.66” E
	G 29°03’55.91” S	26°14’42.47” E
	H 29°03’55.87” S	26°14’39.77” E
	I 29°03’56.17” S	26°14’38.81” E
	J 29°03’57.67” S	26°14’38.43” E
	K 29°03’58.44” S	26°14’37.94” E
	L 29°03’58.50” S	26°14’37.74” E
	M 29°03’58.18” S	26°14’30.82” E
	N 29°03’55.06” S	26°14’30.91” E
	O 29°03’55.03” S	26°14’29.15” E
	P 29°03’48.80” S	26°14’29.17” E
	Q 29°03’52.44” S	26°14’21.72” E
	R 29°03’45.88” S	26°14’19.45” E
	S 29°03’41.06” S	26°14’29.24” E

b) DESCRIPTION OF THE MINING ACTIVITIES

1. PROJECT DESCRIPTION – OPERATIONAL PHASE

Petra Quarry is an opencast operation where dolerite is extracted. According to the 2015 Environmental Management Programme (EMPR), mining activities at the site were initially established in the 1980s by the Mangaung Municipality and were subsequently taken over by the current Mining Right Holder in 2001.

The Quarry periodically operates 24-hours, 7-days a week especially when material is needed for road related projects. Blasting is permitted only between 08:00 and 17:00, Mondays to Saturdays, and is not allowed on Sundays and public holidays. The day time shift entails the following main activities:

- Drilling and blasting;
- Excavations, loading and hauling material to the processing plant;
- Crushing, screening and stockpiling of material;
- Dispatch; and

- Maintenance and cleaning of the plant.

During the night shift activities are limited to the following:

- Drilling;
- Excavations, loading and hauling of material to the processing plant;
- Crushing, screening and stockpiling of material; and
- Maintenance of the plant.

Sub-contractors are periodically engaged for contract crushing and mining activities and typically establish temporary site camps within the mining boundaries during operations.

1.1 Site Infrastructure

Petra Quarry has well-established buildings and infrastructure that support its mining operations. The site is accessed via Christo Groenewald Street turning west off the R700 (Kenneth Kaunda) road that also provides access to the Northern Landfill site of Bloemfontein.

The administrative buildings of Petra Quarry accommodate the office personnel, and the ablution facilities associated with the office complex and workshops drain to a septic tank system, which is serviced as required.

The following main areas are defined at the mine as indicated in the following figure:

1. Explosives Destruction Area;
2. Excavation;
3. Processing Areas;
4. Workshops and Storage Areas
5. Salvage Yard and Wash Bay;
6. Stockpile Areas;
7. Parking Area;
8. Office Complex; and
9. Entrance.

Figure 1: Satellite view of the various operational areas at Petra Quarry (image obtained from Google Earth).

Also refer to Appendix B2 for the Plant Flow Diagram applicable to Petra Quarry.

1.2 Excavation and Processing

The MR Holder mines the excavation (Figure 1) through the opencast mining method where the topsoil (if any) is stripped and stockpiled separately before the excavation is expanded. The dolerite is loosened by conventional drilling and blasting methods.

Blasted material (muck pile) is removed from the pit using excavators and trackless mobile machinery (TMMs) and transported to the Primary Plant, where it is deposited onto the surge pile. Material from the surge pile is conveyed to the Secondary Plant and subsequently processed at the Main Plant, where it is screened into various aggregate sizes.

The Sand Plant processes both oversize material and -5 mm dust transported from the Main Plant. This material is crushed and washed to produce -6 mm washed sand.

Wash Plant 1 receives 19 mm, 13 mm, and 9.5 mm concrete stone from the Main Plant. These materials are fed into a feeder bin and processed through a BARMAC (Vertical Shaft Impact crusher) to enhance shape, followed by screening and washing to produce various sizes of Roadstone.

Wash Plant 2 screens and washes 6.7 mm concrete stone transported from the Main Plant to produce 6.7 mm Roadstone and a 6.3 mm special product intended for a brick-making supplier.

1.3 Water Use

Potable water is sourced from the Mangaung Municipality.

Storm water collects on the quarry floor and flow towards the lowest section of the pit (sump) from where it is used for dust suppression as well as in the process water system. Storm water that enters the processing areas runs to the settlement ponds from where it is re-used at the crushers.

1.4 Electricity Use

The mining operation is supplied with municipal power from the nearby power line. Gensets are used as back-up power.

1.5 Servicing and Maintenance

The well-equipped brick workshops of the Quarry, that forms part of the office complex, are used for the repair and maintenance of all mining related equipment and machinery. Water from the wash bay drains into an oil separator while clean stormwater is directed away from the dirty areas via berms and channels.

Fuel is stored in a 23 000 l tank in a bunded area. Chemicals are stored in designated storage areas in accordance with the product specific material safety data sheets.

1.6 Waste Management

The MR Holder has an integrated waste management policy, and the company strives to recycle where possible.

Presently, waste is separated into waste that can be re-used, and those that must be removed from the site. General waste (that cannot be reused) is removed to the Northern Landfill Site of the municipality. Hazardous waste is removed from site by qualified hazardous waste handling contractors.

The ablutions of the mine drains into a closed-system septic tank that is serviced by a registered liquid waste removal service provider when needed.

1.7 Labour Component

Presently (July 2025), Petra Quarry has a permanent labour component of 40 employees. Sub-contractors are periodically employed for contract crushing and mining operations, who then bring their own personnel. The permanent employees of the Quarry mainly reside in Bloemfontein, Botshabelo and Thaba 'Nchu and are daily transported to site. No employees (permanent and/or sub-contractor) reside on site.

2. DECOMMISSIONING OBJECTIVES

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

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

- Demolish and remove all buildings and/or infrastructure that will no longer be required by the landowner, as well as all waste material, in accordance with the requirements of this EMPr and/or the Provincial Department of Mineral Resources and Energy (DMRE).
- Shape and contour all disturbed areas in accordance with the approved Closure Plan.

- Ensure that permanent changes to the topography resulting from mining activities are sustainable and do not pose erosion risks or safety hazards to the landowner or surrounding community.
- Effectively utilise available topsoil to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining with adequate vegetation cover.
- Eradicate all invasive and alien plant species by intensive management of the mining area.

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

The decommissioning phase will entail the reinstatement of the processing- and stockpile areas by removing the stockpiled material, and site infrastructure and equipment and landscaping the disturbed footprints. It is anticipated that the buildings and roads will be retained for future use by the landowner and will not be removed unless expressly required by the landowner.

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

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery, equipment and waste from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species for at least one growth season.

Once the mining area was rehabilitated the MR Holder is required to submit a closure application to the DMRE in accordance with Section 43(4) of the MPRDA, 2002 that states: "*An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing,*

abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report". The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

2.1 Residual Impacts After Closure

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

Once adequately rehabilitated, the quarry will nevertheless behave as a sump and collect surface run-off after wet periods. The floor of the quarry may, therefore, reveal fluctuating water levels depending on rainfall patterns. Considering this, it is important to adequately block access to the excavation (soil berm / oversize rock in entrance) to prevent unauthorized access by humans (especially children) and animals upon closure of the mine.

(GNR 982 APPENDIX 4 SECTION 1(1)(c))

c) COMPOSITE MAP

The mine plan showing the land and mining area to which the right relates, in accordance with Regulation 42 of the Mining Titles Registration Act, 1967 (Act No 16 of 1967), is attached as Appendix A. Also refer to Appendix B1 for the General Layout Plan of the operation.

Figure 2: Satellite view of the Petra Quarry mining footprint (image obtained from Google Earth).

D. POLICY AND LEGISLATIVE CONTEXT

a) APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT

Table 2: Policy and Legislative Context.

LEGISLATION	REFERENCE WHERE APPLIED	POLICY CONTEXT APPLICABLE TO PROJECT
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Section G(b) Impacts to be mitigated in their respective phases. Section H Impact Management Actions and Outcomes. Section I – M Mechanisms for Monitoring Compliance.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Free State Nature Conservation Ordinance No 8 of 1969	Section F Environmental attributes associated with the mining area – Terrestrial Biodiversity and Groundcover	The Wild Olive Trees (*Olea europaea* subsp. *africana*) is protected in terms of this Ordinance.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Section G(b) Impacts to be mitigated in their respective phases. Section H Impact Management Actions and Outcomes. Section I – M Mechanisms for Monitoring Compliance.	All mining operations have to be conducted in terms of the MHSA, 1996.
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. - Section 39(6)(a)	Section A Introduction.	The 2015 EMPR of Petra Quarry must be amended as a result of an environmental performance audit (2025).
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended) - Section 35 of GNR 982 (as amended)		
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations		The mitigation measures proposed for the site consider the

LEGISLATION	REFERENCE WHERE APPLIED	POLICY CONTEXT APPLICABLE TO PROJECT
thereto specifically the National Dust Control Regulations, GN No R827.	Section G(b) Impacts to be mitigated in their respective phases. Section H Impact Management Actions and Outcomes. Section I – M Mechanisms for Monitoring Compliance.	NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.		The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)		The mitigation measures proposed for the site consider the NEM:WA.
National Forest Act, 1998 (Act No 84 of 1998)	Section F Environmental attributes associated with the mining area – Terrestrial Biodiversity and Groundcover	The Wild Olive Trees (*Olea europaea* subsp. *africana*) is protected in terms of the NFA, 1998.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Section G(b) Impacts to be mitigated in their respective phases. Section H Impact Management Actions and Outcomes. Section I – M Mechanisms for Monitoring Compliance.	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.		The mitigation measures proposed for the site includes specifications of the NWA, 1998.
Noise Control Regulations GNR 154 of January 1992 and Application of Noise Control Regulations, CNR 155 of January 1992 framed under the ECA.		The mitigation measures proposed for the site consider the NCR requirements.

b) TABLE OF LEGAL TRIGGERS FOR THE MINING OPERATION

Table 3: Table of Legal Triggers applicable to the Mining Operation.

LEGISLATION	TRIGGER	APPLICABILITY TO PETRA QUARRY	RESPONSIBLE AUTHORITY	COMPLIANCE STATUS
National Environmental Management Act	Environmental Authorisation (EA) required for listed activities.	The approved EMPR is deemed equivalent to an EA in accordance with the	DMRE	**Compliant:** Amended EMPR to be submitted for approval.

LEGISLATION	TRIGGER	APPLICABILITY TO PETRA QUARRY	RESPONSIBLE AUTHORITY	COMPLIANCE STATUS
(NEMA) (Act 107 of 1998)		provisions of the NEMA, 1998.		
Mineral and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002)	Mining right required for mineral extraction.	Petra Quarry (Pty) Ltd holds a mining right (FS 30/5/1/2/2/10059 MR & FS 30/5/1/2/2/10069 MR)	DMRE	**Compliant:** Mining Right valid until 2043.
National Water Act (NWA) (Act 36 of 1998)	Water use licensing / General authorisation (Section 21 activities).	Petra Quarry has a water use authorisation (reference no: 23096392) to abstract water from the quarry pit for industrial use, irrigate wastewater for dust suppression, and dispose of water containing waste. However, various other water uses may also trigger Section 21 of the NWA.	DWS	**Potentially Non-Compliant:** The water uses of the Quarry must be reviewed to ensure compliance with Section 21 of the NWA.
National Environmental Management: Air Quality Act (NEM:AQA) (Act 39 of 2004)	Dust control and potential air emission licensing.	Dust suppression measures required to comply with the National Dust Control Regulations.	Municipality Air Quality Officer	**Compliant:** Emissions does not trigger an air emission licence. Dust suppression in place and monthly fallout dust monitoring implemented on site.
National Environmental Management: Waste Act (NEMWA) (Act 59 of 2008)	Waste management licensing for hazardous and general waste.	Waste is removed by registered contractors; no on-site disposal occurs. Petra Quarry is also registered with SAWIS (Reg No: D05959-01)	DMRE	**Compliant:** Waste managed per legal requirements.
National Heritage Resources Act (NHRA) (Act 25 of 1999)	Heritage impact assessment required if archaeological finds occur.	No known heritage resources within the mining footprint.	SAHRA / Provincial Heritage Resources Agency – Free State (PHRA-FS)	**Compliant:** No known heritage sites in the mining area.

LEGISLATION	TRIGGER	APPLICABILITY TO PETRA QUARRY	RESPONSIBLE AUTHORITY	COMPLIANCE STATUS
Occupational Health and Safety Act (OHSA) (Act 85 of 1993)	Workplace safety and hazard management.	Compliance with safety regulations for workers and mining equipment.	Department of Employment and Labour (DoEL)	**Compliant:** Safety regulations followed, but ongoing audits required.
Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983).	Land degradation and soil conservation measures.	Measures required for erosion control and vegetation restoration.	Department of Agriculture and Rural Development (DARD)	**Compliant**: Rehabilitation plan in place but requires ongoing monitoring
Noise Control Regulations (GNR 154 of 1992, under the Environment Conservation Act).	Noise level monitoring and control.	Blasting and mining operations generate noise, requiring mitigation measures.	DMRE	**Compliant:** Noise monitoring in place.
National Road Traffic Act (NRTA) (Act 93 of 1996)	Regulation of transport for heavy mining vehicles.	Trucks transport material via public roads; overloading must be prevented.	Department of Community Safety, Roads and Transport	**Compliant:** Transport regulations followed, but monitoring required

E. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

The relevant landowner, stakeholders and I&AP's will be informed of the proposed EMPR amendment by means of an advertisement in the Bloemfontein Express newspaper, and on-site notices that were placed at conspicuous places. A notification letter inviting comments on the EMPR amendment over a 30-days commenting period (ending 15 September 2025) will be send to the landowner, neighbouring landowners/land users (that can be identified), stakeholders, and any other I&AP that may be interested in the project. The comments received on the draft EMPR amendment will be incorporated into the final EMPR amendment to be submitted to the DMRE for consideration.

Table 4: List of the I&AP's and stakeholders that were notified of this application.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
➢ Mangaung Metropolitan Municipality Portion 0 of Hillside No 2830 ➢ Million Dollar Farms (Pty) Ltd care of Mr A Barendse Portion 0 (Remaining Extent) of Douglas Valley No 260 ➢ Care of Mr Jack Roberts Mooihoek No 1078 ➢ Mr Petrus Steyn Portion 10 of Ribblesdale No 1506 ➢ Much Asphalt (Pty) Ltd I&AP ➢ Tora Concrete (Pty) Ltd I&AP ➢ Mr Phalo Daniel Romeno I&AP ➢ Urth Bloemfontein I&AP	➢ Department of Economic Small Business Development, Tourism and Environmental Affairs ➢ Department of Public Works and Infrastructure ➢ Department of Agriculture and Rural Development ➢ Department of Employment and Labour ➢ Department of Community Safety, Roads and Transport ➢ Department of Water and Sanitation ➢ Mangaung Metropolitan Municipality ➢ Mangaung Metropolitan Municipality Ward No 44 ➢ Eskom ➢ SAHRA

Refer to the following table for an explanation on how the public participation process of this project will take the methods stipulated in Regulation 41 of the NEMA Regulations into account.

Table 5: Table comparing the required methods with the public participation process of this project.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
➢ Regulation 41(2)(a): *Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-* *(i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and* (ii) *Any alternative site.* ➢ Regulation 41(3): *A notice, notice board or advertisement referred to in subregulation (2) must—*	Notice boards were fixed at the: ➢ entrance to the Quarry, ➢ turnoff to the housing complex west of the quarry, and ➢ turnoff to Northridge Estate. The notice boards complied with the requirements of Regulation 41(3). The notices were printed on boards of 60 x 42 cm in Arial font of sufficient size.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
(a) give details of the application or proposed application which is subjected to public participation; and *(b) state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application;* *(ii) the nature and location of the activity to which the application relates;* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the application or proposed application may be made.* Regulation 41(4): *A notice board referred to in subregulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and* (b) *display the required information in lettering and in a format as may be determined by the competent authority.*	
Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;* (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;* *(iv) the municipality which has jurisdiction in the area;* *(v) any organ of state having jurisdiction in respect of any aspect of the activity;* *(vi) any other party as required by the competent authority;*	(i) The landowner will be invited to comment on the draft EMPR. (ii) The directly surrounding landowners, and lawful occupiers of the land (if applicable and if identifiable) will be informed of the project and invited to comment on the EMPR amendment. (iii) The Ward Councillor applicable to the mining footprint will be invited to comment on the project and the EMPR amendment. (iv) Representatives from the local and district municipalities will be invited to comment on the project and EMPR amendment. (v) As listed in Table 4 the relevant state departments and entities will be invited to comment on the project and the EMPR amendment.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
➢ Regulation 41(2)(c): *Placing an advertisement in-* *(i) One local newspaper; or* *(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.*	The project and availability of the amended EMPR will be advertised in the Bloemfontein Express newspaper on 13 August 2025.
➢ Regulation 41(2)(d): *Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken…*	The Bloemfontein Express is a provincial newspaper distributed in English, free of charge in the region applicable to this application.
➢ Regulation 41(2)(e): *Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—* *(i) illiteracy;* *(ii) disability; or* (iii) *any other disadvantage.*	If applicable, I&AP's without emails will be messaged via Whatsapp or SMS. Persons not answering their telephones will also be messaged to explain the reason for the call from the consultants.
➢ Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d)…*	Not applicable to this application.
➢ Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and* (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	The amended EMPR containing all the facts in respect of this application will be available to the landowner, stakeholders and potential I&AP's for perusal and commenting over a 30-days commenting period. The amended EMPR will also be available on the Greenmined website. I&AP's and stakeholders will be invited to contact the EAP should additional information be required. The comments received on the draft EMPR amendment will be incorporated into the final EMPR amendment to be submitted for departmental consideration.
➢ Regulation 41(7): *Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental*	Not applicable to this project.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	

a) SUMMARY OF ISSUES RAISED BY I&APS

Table 6: Summary of issues raised by IAPs

INTERESTED AND AFFECTED PARTIES		DATE COMMENTS RECEIVED	ISSUES RAISED	EAPS RESPONSE TO ISSUES AS MANDATED BY THE MR HOLDER	SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUES AND OR RESPONSE WERE INCORPORATED
AFFECTED PARTIES	**X**	-	-	-	-
Landowner/s		-	-	-	-
Mangaung Metropolitan Municipality (MMM) ➢ Portion 0 of Hillside No 2830	x	Any comments received from the MMM will be incorporated into the final EMPR amendment.			
Lawful occupier/s of the land	-	-			
Much Asphalt (Pty) Ltd	x	Any comments received from Much Asphalt (Pty) Ltd will be incorporated into the final EMPR amendment.			
Tora Concrete (Pty) Ltd	x	Any comments received from Tora Concrete will be incorporated into the final EMPR amendment.			
Mr Phalo Daniel Romeno	x	Any comments received from Mr Romeno will be incorporated into the final EMPR amendment.			
Landowners or lawful occupiers on adjacent properties	**X**	-			
Million Dollar Farms (Pty) Ltd care of Mr A Barendse ➢ Portion 0 (Remaining Extent) of Douglas Valley No 260	x	Any comments received from the surrounding landowners will be incorporated into the final EMPR amendment.			
Care of Mr J Roberts ➢ Mooihoek No 1078	x				

INTERESTED AND AFFECTED PARTIES		**DATE COMMENTS RECEIVED**	**ISSUES RAISED**	**EAPS RESPONSE TO ISSUES AS MANDATED BY THE MR HOLDER**	**SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUES AND OR RESPONSE WERE INCORPORATED**
Mr Petrus Steyn ➢ Portion 10 of Ribblesdale No 1506	x				
Municipal councillor	**X**	-	-	-	-
Mangaung Metropolitan Municipality (Ward 44)	X	Any comments received from the ward councillor will be incorporated into the final EMPR amendment.			
Municipality		-	-	-	-
Mangaung Metropolitan Municipality (MMM)	X	Any comments received from the municipality will be incorporated into the final EMPR amendment.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e	-	-	-	-	-
Department of Public Works and Infrastructure (DPWI)	X	Any comments received from DPWI will be incorporated into the final EMPR amendment.			
Department of Community Safety, Roads and Transport (DCSRT)	X	Any comments received from DCSRT will be incorporated into the final EMPR amendment.			

INTERESTED AND AFFECTED PARTIES		DATE COMMENTS RECEIVED	ISSUES RAISED	EAPS RESPONSE TO ISSUES AS MANDATED BY THE MR HOLDER	SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUES AND OR RESPONSE WERE INCORPORATED
Department of Water and Sanitation (DWS)	X	Any comments received from DWS will be incorporated into the final EMPR amendment.			
Eskom	X	Any comments received from Eskom will be incorporated into the final EMPR amendment.			
Communities	No communities were identified within the study area.				
Dept. Land Affairs	X	Any comments received from the Department of Land Affairs will be incorporated into the final EMPR amendment.			
Traditional Leaders	N/A	N/A	N/A	N/A	N/A
Other Competent Authorities affected	X	-	-	-	-
Department of Economic Small Business Development, Tourism and Environmental Affairs (DESTEA)	X	Any comments received from DESTEA will be incorporated into the final EMPR amendment.			
Department of Agriculture and Rural Development (DARD)	X	Any comments received from DARD will be incorporated into the final EMPR amendment.			
Department of Employment and Labour (DoEL)	X	Any comments received from DoEL will be incorporated into the final EMPR amendment.			

INTERESTED AND AFFECTED PARTIES		**DATE COMMENTS RECEIVED**	**ISSUES RAISED**	**EAPS RESPONSE TO ISSUES AS MANDATED BY THE MR HOLDER**	**SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUES AND OR RESPONSE WERE INCORPORATED**
South African Heritage Resources Agency (SAHRA)	X	Any comments received from SAHRA will be incorporated into the final EMPR amendment.			
OTHER AFFECTED PARTIES		-	-	-	-
N/A		-	-	-	-
INTERESTED PARTIES		-	-	-	-
Urth Bloemfontein		Any comments received from the I&AP will be incorporated into the final EMPR amendment.			

F. ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE MINING AREA

a) CLIMATE

The following chart shows the maximum, minimum and average temperatures of Bloemfontein. Bloemfontein experiences its highest temperatures during the summer months from November – March with peaks of up to 33°C; thereafter the mercury drops to lows of 2°C during June/July.

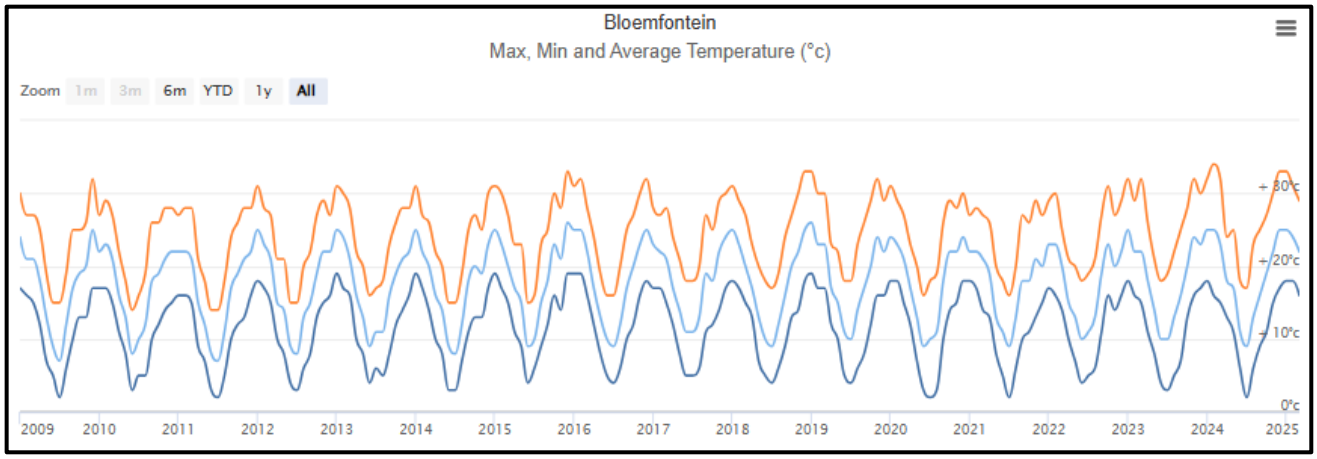


Figure 3: Maximum, minimum, and average temperature of Bloemfontein where the orange line indicates the maximum temperature, the light blue line shows the averages, and the dark blue line shows the minimum temperatures (chart obtained from http://www.worldweatheronline.com)

The average rainfall of the Bloemfontein area is 582 mm that mainly occurs as summer thunderstorms, while the evaporation is generally well in excess of the rainfall. The following chart, obtained from World Weather Online, shows that the measured rainfall for the period January 2024 to December 2024 was ±376 mm, while the area received the lowest rainfall during July 2024 and the highest in April 2024.

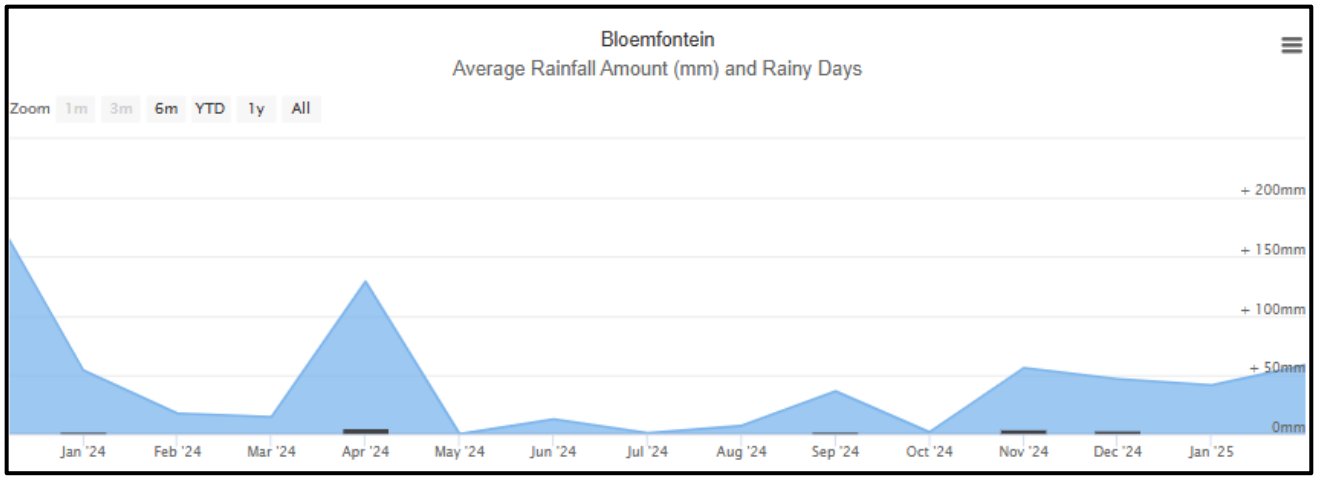


Figure 4: Average rainfall amount and rainy days count for Bloemfontein (chart obtained from http://www.worldweatheronline.com)

The Bram Fischer International Airport is the nearest weather station to the mine that provides wind statics. According to the data, the dominant wind direction of the region is fairly constant in a south to south-easterly direction (north / north-westerly wind), with the average wind speed being ±6 knots as shown in the figure below.

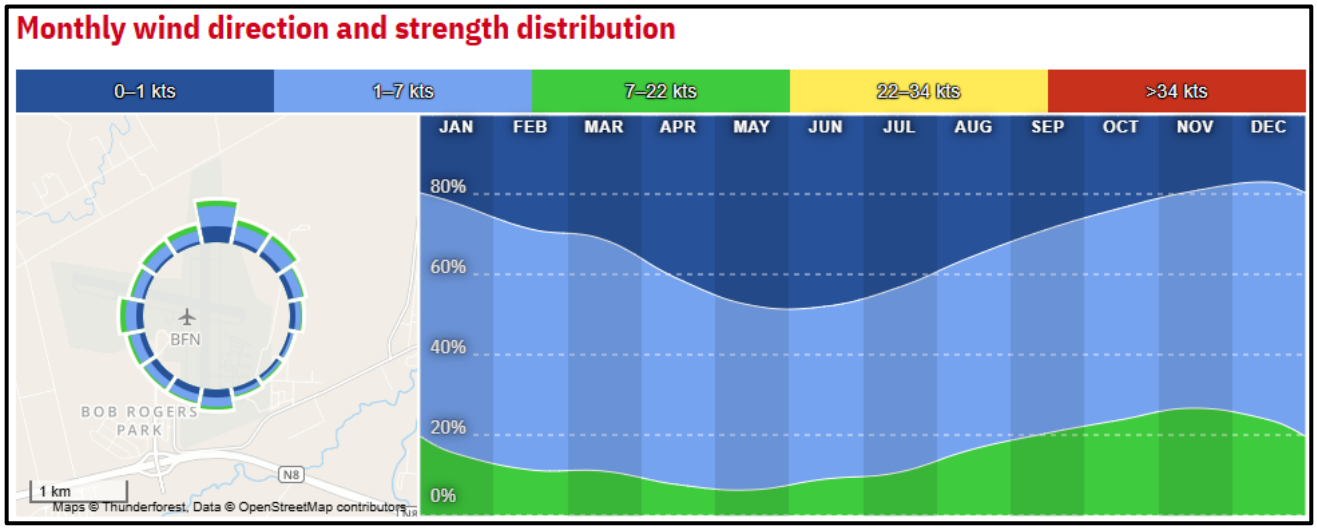


Figure 5: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period as measured at the Bram Fisher International Airport (image obtained from http://www.windfinder.com/windstatistics/bloemfontein).

b) TOPOGRAPHY

The topography of the greater area is characterized by gently rolling plains and grasslands, typical of the Highveld region. Nearer to Petra Quarry (±1 km radius) the terrain is predominantly flat to gently undulating, with elevations ranging approximately between 1 485 and 1 638 meters above sea level (masl). The landscape consists mainly of open grasslands, interspersed with occasional rocky outcrops and isolated hills.

As shown in the following figure, the topography of the mining area features a high-altitude plateau with the elevation decreasing from the north-eastern corner towards the southern boundary, whereafter the elevation gradually rises towards the western & north-western parts of the mine. The route indicated below shows an average slope of 8.2% over 3.39 km, with a maximum elevation gain of 85.5 m (or -127 m elevation loss).

Over time, excavation activities at Petra Quarry have progressively transformed the natural landscape, resulting in the formation of a pit covering ±27 hectares (July 2025), thereby directly altering the topography of the area.

Figure 6: Elevation profile of the mining area (Image obtained from Google Earth).

c) VISUAL CHARACTERISTICS

The visual character of the surrounding landscape, located on the north-eastern periphery of Bloemfontein, is defined by a combination of natural Highveld grassland and human-modified rural-industrial elements.

As mentioned earlier, the terrain is gently undulating, typical of the central Free State plateau, with open grasslands, scattered shrubs, and minimal tree cover, resulting in expansive views across the landscape. The general colour palette varies seasonally, with dry yellows and browns in winter, and more vibrant greens during the summer rainfall season.

The area is semi-rural, with agricultural lands, quarrying operations, and limited low-density development visible in the wider area. Petra Quarry introduces a prominent man-made feature into the landscape, characterized by exposed rock faces, access roads, and altered land surfaces. These features introduce a distinctly industrial element into an otherwise semi-natural environment.

The visual absorption capacity of the immediate landscape is relatively low due to the flat to gently rolling terrain and limited vegetative screening. As such, quarry operations are visible from surrounding areas, especially from elevated vantage points within a 1–2 km radius.

While Bloemfontein's urban core lies southwest of the site, the surrounding area retains a semi-rural character, with a mixture of agricultural holdings, open veld, and other land uses such as residential (Northridge Estate and the recently developed complex north of Christo Groenwald Street), and small-scale industry (Much Asphalt and Tora Concrete). A key anthropogenic feature influencing the local visual environment is the Bloemfontein landfill site, located directly to the south of the Quarry. The landfill introduces a prominent, visually intrusive element into the landscape. These features disrupt the natural visual continuity and contribute to the industrialised character of the area, especially when viewed from elevated or open areas to the north and east.

In summary, the overall visual impression is one of a utilitarian rural landscape with pockets of disturbance, rather than a pristine or highly scenic environment.

d) AIR QUALITY AND NOISE AMBIANCE

Air Quality

The general air quality in the vicinity of Petra Quarry is characteristic of a semi-rural environment influenced by both natural conditions and localized anthropogenic activities. The area is dominated by open grassland with relatively low background levels of air pollution under natural conditions. However, air quality is periodically affected by the following:

- Quarrying operations, including blasting, crushing, and materials handling, which contribute to the generation of particulate matter, particularly during dry and windy conditions.

- Heavy vehicle movement on unpaved haul roads, which can further increase dust levels.

- Emissions from the adjacent Bloemfontein landfill site may include windblown dust, biodegradable gas emissions (such as methane and hydrogen sulphide), and occasional burning of waste, which introduces odorous or noxious compounds into the local atmosphere.

- Regional contributions from agricultural burning, unpaved roads, and emissions at the adjacent asphalt- and ready-mix plants.

Overall, while the broader region enjoys moderate to good air quality, localized deterioration occurs intermittently in the immediate surroundings of Petra Quarry due to dust-generating activities and the nearby landfill.

Noise Ambiance

The ambient noise environment around Petra Quarry reflects the semi-rural and industrial-transition character of the area. Under natural conditions, baseline noise levels are low and shaped primarily by natural sources such as wind through grasslands, birdlife, and occasional agricultural activities. However, anthropogenic noise sources are present and include:

- Operational noise from the Quarry, such as blasting (intermittent), rock crushing, material loading, and movement of heavy vehicles and machinery.

- Vehicular noise from haul trucks collecting material from the Quarry, Asphalt Plant and Ready-mix Plant, and traveling along regional and internal gravel roads.

- Activities at the Bloemfontein landfill site, including compactors, waste delivery trucks, and occasional mechanical operations, contribute to a background industrial noise layer.

- Limited noise intrusion from the urban edge of Bloemfontein during certain times of the day, depending on prevailing wind direction.

The development of Northridge Estate and the complex north of Christo Groenewald Road introduces a residential setting with higher noise sensitivity. While the residential areas are not immediately adjacent to the Quarry itself, residents may experience intermittent noise impacts, particularly from passing trucks and blasting events if not adequately buffered, timed, and communicated.

This proximity elevates the importance of noise mitigation measures, including:

- Scheduling of noisy activities (e.g. blasting) during daylight hours with advance public notice.
- Speed restrictions and noise control measures for haul trucks passing near residential areas.
- Maintenance of the access road to minimize body and chassis noise.

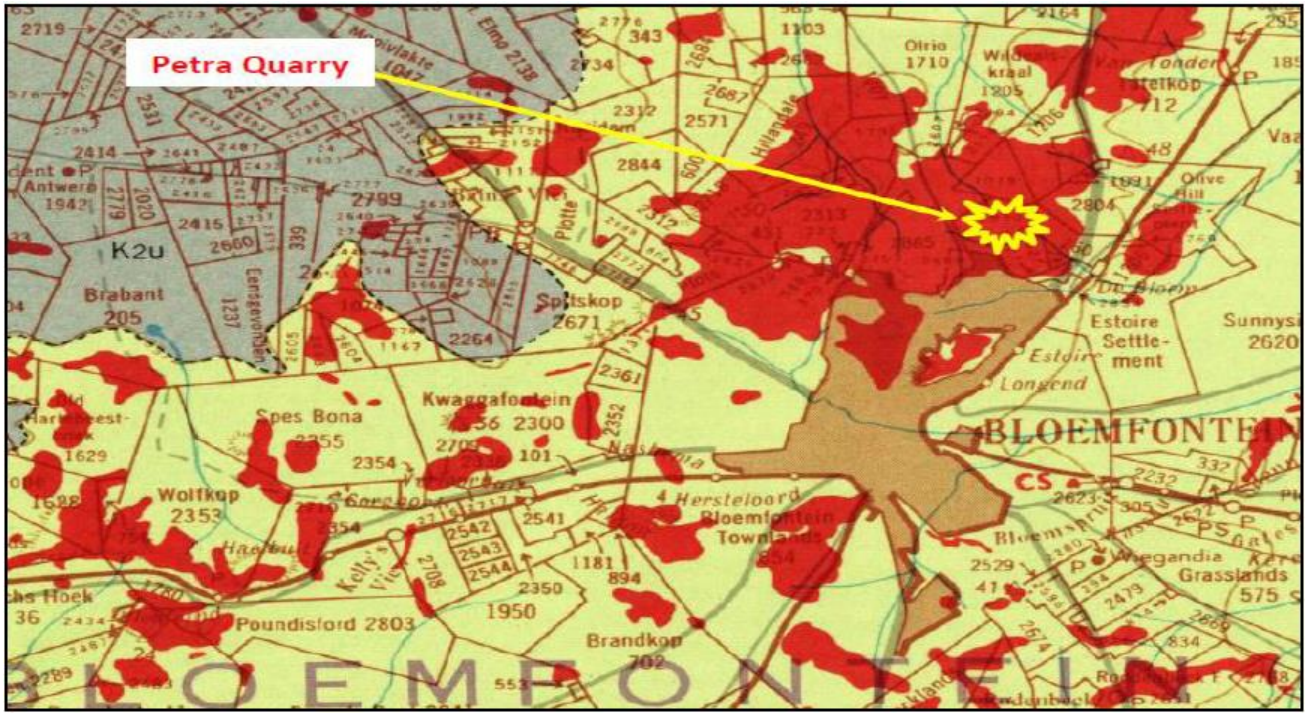
e) GEOLOGY AND SOIL

(Information extracted from the Petra Quarry Mandatory Code of Practice)

The Karoo Supergroup of Permian age consists of successions of the Dwyka Formation, Ecca Groups at the bottom; followed by the overlying Beaufort Group; then the Molteno-, Elliot- and Clarens Formations and finally on top the Drakensberg - & Lebombo Groups. The Beaufort Group overlies the Ecca Group and consists of alternating mudstone (red in places) and

sandstone. The Beaufort Group sub-divides into the lower Adelaide – and upper Tarkastad Subgroups. The Adelaide Subgroup further subdivides into the lower Abrahamskraal Formation (1500-2000 m thick) and an upper Teekloof Formation (±1400 m thick) with the boundary arbitrarily at the base of the so-called “Poortjie Sandstone”. Jurassic-age dolerite extensively intrudes the Beaufort Group as dykes and sheets.

Although the Adelaide Subgroup consists mainly of sandstones and mudstones, the quarry is found in a dolerite extrusion within the Abrahamskraal Formation. The targeted mineral in the quarry is therefore the dolerite, which forms the majority of the rock mass of the quarry.



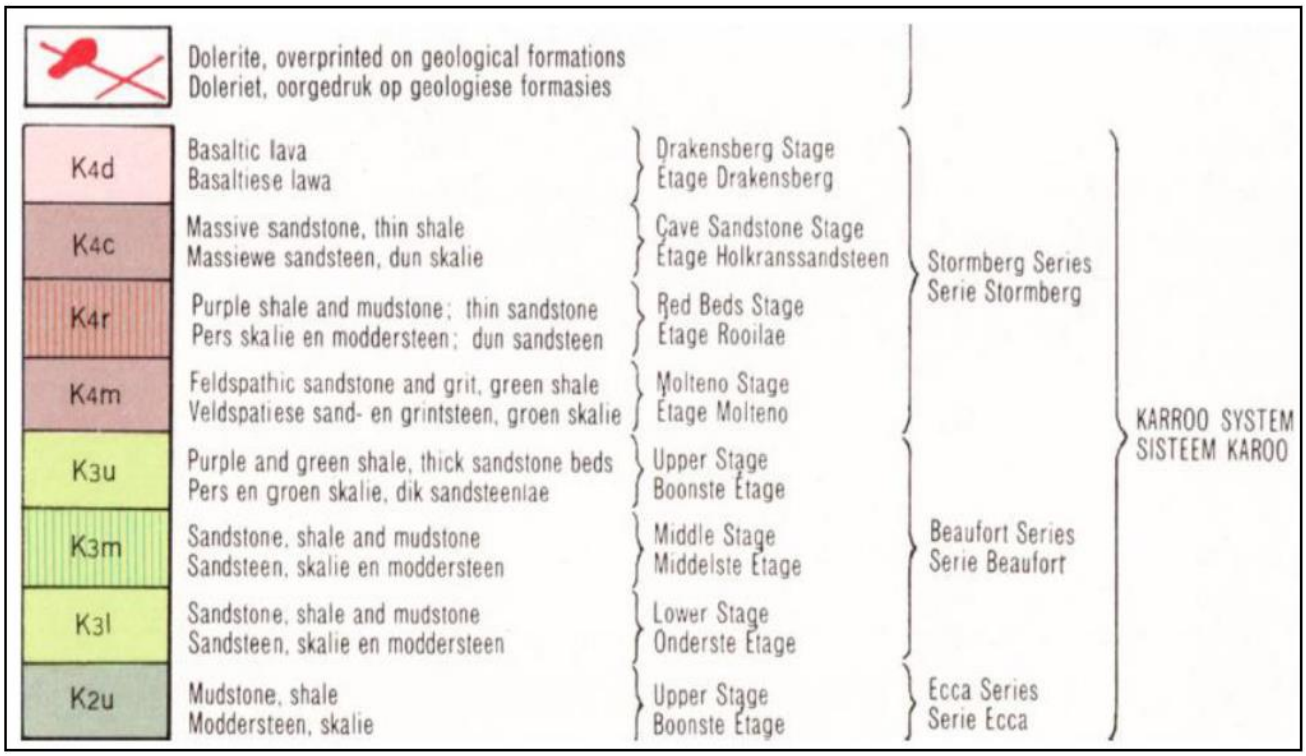


Figure 7: Geology of the area, showing the Karoo rocks in green and dolerite intrusion features in red (Raumix Aggregates).

f) HYDROLOGY

Petra Quarry is situated in a semi-arid region characterized by seasonal rainfall patterns, moderate evaporation rates, and generally limited surface water availability.

Surface Water

The Quarry is situated in the Riet-Modder sub-water management area that forms part of the Upper Orange Water Management Area (WMA ID 12).

The landscape is largely devoid of perennial rivers or streams within the immediate 1 – 2 km radius of the Quarry. Drainage occurs primarily through ephemeral drainage lines or non-perennial watercourses, which become active only during and immediately after rainfall events, typically between October and March. These seasonal drainage features are shallow and ill-defined, often forming part of the natural runoff network over grassland and disturbed surfaces.

One such non-perennial drainage lines / stream passes the southern boundary of the mining area that is highly overgrown by reeds (*Arundo donax*). The water quality of this stream is generally highly polluted as it carries the stormwater from the landfill site and other semi-industrial sites. Where the stream passes the mining area (southern boundary) a stormwater berm was added that directs the water draining from the mining area through a sediment trap

before it flows into the stream. Petra Quarry does annual water quality monitoring upstream and downstream of the mine to monitor the water quality of the stream.

There are no natural wetlands, pans, or dams within the immediate footprint of Petra Quarry, however rain water accumulates in the sump of the quarry from where it is extracted and used for dust suppression at the mine. The mine also has settlement ponds that receive the process water from the wash plants.

Groundwater

The region is underlain by sedimentary rocks of the Karoo Supergroup, often with low primary porosity, meaning that groundwater occurs mainly in secondary aquifers associated with fractures and weathered zones. Groundwater resources are typically shallow and discontinuous, and are vulnerable to contamination from surface sources, especially where aquifers are unconfined. The depth of the water table in the vicinity of the Quarry is ±25 m.

While groundwater is not extensively used in the immediate area for potable supply, private boreholes do occur on nearby farms. One borehole does occur within the mining footprint; however the Quarry does not use the water for mining operations.

g) TERRESTRIAL BIODIVERSITY AND GROUNDCOVER

According to Mucina and Rutherford (2012) the natural vegetation types of the study area comprises the Winburg Grassy Shrubland (Gh7) and the Bloemfontein Karroid Shrubland (Gh8), as indicated in the following figure.

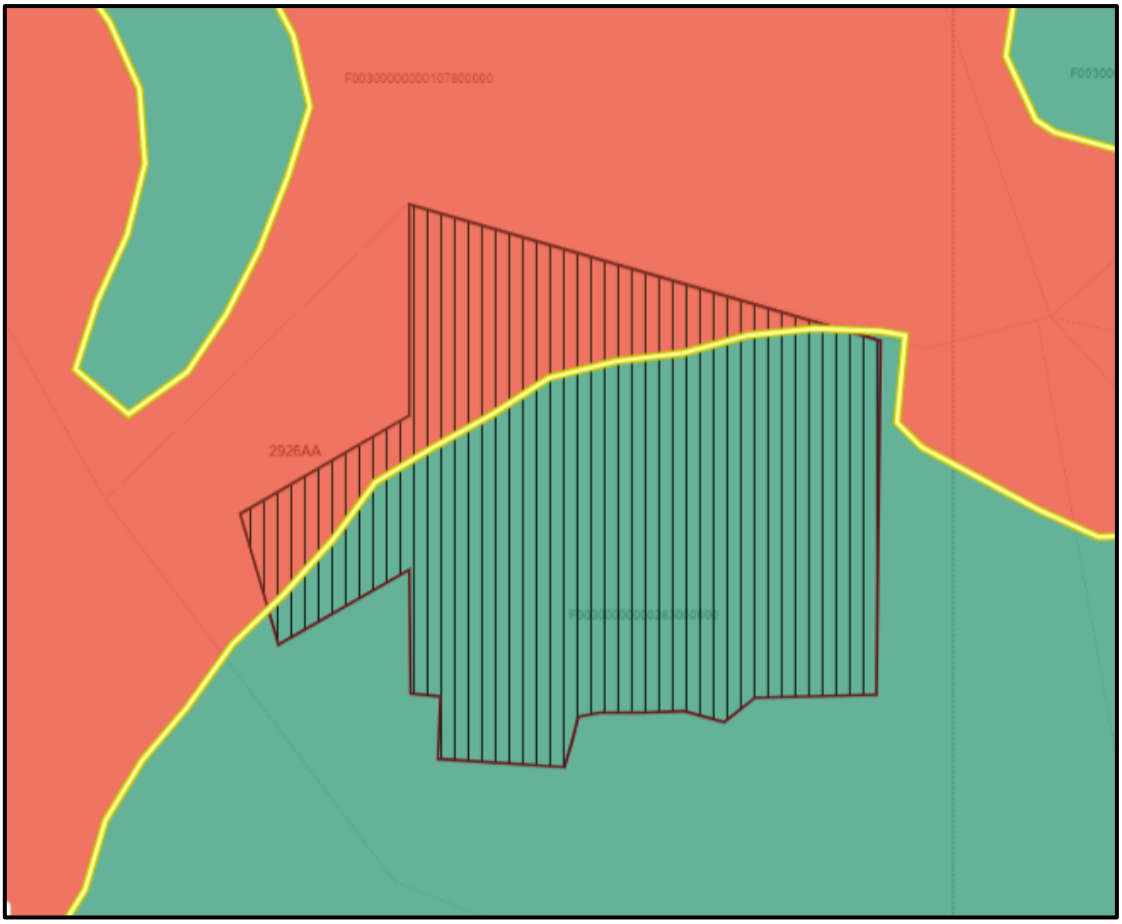


Figure 8: BGIS National Vegetation Map showing the vegetation type of the study area, where the green shading indicates the Winburg Grassy Shrubland (Gh 7), the red shading shows the Bloemfontein Karroid Shrubland (Gh 8) and the black stripped polygon indicates the mine. (Image obtained from the BGIS Map Viewers website).

Winburg Grassy Shrubland (Gh 7)

The vegetation and landscape features of the Winburg Grassy Shrubland (Gh 7) vegetation type is characterised by solitary hills, slopes and escarpments of mesas creating a mosaic of habitats ranging from open grassland to shrubland. Tall shrubs and sometimes small trees are sheltered against frequent periods of frost during the winter months and regular veld fires in late winter to early spring. The medium-height evergreen shrublands are dominated by a combination of *Olea europaea* subsp. *africana*, *Euclea crispa* subsp. *crispa*, *Gymnosporia buxifolia, Diospyros lycioides, Searsia burchellii, S. ciliata, S. erosa* (mainly in the south), *Clutia pulchella* and *Grewia occidentalis*. Trees such as *S. lancea, Celtis africana* and *Ziziphus mucronata* are found in more deeply incised drainage lines. (Mucina & Rutherford, 2012).

Some of the important taxa found in this vegetation type include (amongst others) the following Small Trees: *Vachellia karroo, Celtis africana, Cussonia paniculata, Pittosporum viridiflorum, Searsia lancea, Scolopia zeyheri, Ziziphus mucronata*. Tall Shrubs: *Buddleja saligna, Euclea*

crispa subsp. *ovata, Gymnosporia polyacantha, Olea europaea* subsp. *africana, Searsia burchellii, S. erosa, Diospyros lycioides* subsp. *lycioides, Grewia occidentalis, Gymnosporia buxifolia, Tarchonanthus camphoratus.* Low Shrubs: *Helichrysum dregeanum, Pentzia globosa, Anthospermum rigidum* subsp. *pumilum, Asparagus cooperi, A. laricinus, Berkheya annectens, Chrysocoma ciliata, Clutia pulchella*. Graminoids: *Aristida adscensionis, A. congesta, A. diffusa, Cymbopogon pospischilii, Cynodon dactylon, C. incompletus, Eragrostis chloromelas, E. lehmanniana, E. micrantha, E. obtusa, E. trichophora Themeda triandra, Tragus koelerioides, Digitaria argyrograpta, Elionurus muticus, Enneapogon scoparius, Eragrostis plana, E. superba, Tragus berteronianus*,

The vegetation type is classified as Least Threatened and according to Mucina and Rutherford (2012) almost 2% is statutorily conserved in the Willem Pretorius Nature Reserve. More than 10% has been transformed for cultivation and by urban sprawl. A conservation target of 28% was set for the vegetation type.

Bloemfontein Karroid Shrubland (Gh 8)

The vegetation and landscape features of the Bloemfontein Karroid Shrubland (Gh 8) vegetation type is characterised by plateaus or slightly sloping flanks of dolerite outcrops supporting low shrubland dominated by dwarf small-leaved karroid and succulent shrubs. Grasses are restricted to depressions and crevices filled with fine soils. Remarkable is the presence of abundant geophytic herbs. Solitary shrubs or small shrub groups with *Diospyros austro-africana, Euclea crispa subsp. ovata, Searsia burchellii, S. ciliata* and *S. erosa* are occasionally present, especially in habitats where root penetration into deeper crevices is possible (Mucina & Rutherford, 2012).

Some of the important taxa found in this vegetation type include (amongst others) the following Tall Shrubs: *Diospyros austro-africana, Euclea crispa subsp. ovata, Searsia burchellii, S. erosa, S. tridactyla*. Low Shrubs: *Eriocephalus ericoides, Euryops empetrifolius, Anthospermum rigidum* subsp. *pumilum, Asparagus suaveolens, Felicia muricata, Elelichrysum dregeanum*. Graminoids: *Aristida diffusa, Eragrostis nindensis, Eieteropogon contortus, Oropetium capense, Aristida adscensionis, A. congesta, Cymbopogon caesius, C. pospischiiii , Cyperus rupestris* var. rupestris, *Digitaria eriantha, Enneapogon scoparius, Eragrostis chloromelas, E. obtusa, E. superba, E. trichophora, Eustachys paspaloides*, Herbs: *Berkheya onopordifolia* var. *onopordifolia, B. rigida, Chamaesyce inaequilatera, Commelina africana, Gazania linearis* var. *linearis, Geigeria aspera* var. *aspera, G. fili folia, Elermannia coccocarpa*. Geophytic Herbs: *Cheilanthes eckloniana, Albuca setosa, Dipcadi ciliare, D. vi ride, Nerine laticoma, Pellaea calomelanos, Trachyandra saltii.* Succulent Herbs: *Senecio*

radicans, Adromischus trigynus, Aloe grandidentata, Anacampseros telephiastrum, Avonia ustulata, Crassula nudicaulis, Duvalia corderoyi, Orbea cooperi.

Some sites of this vegetation are exposed to considerable urban development pressures especially within the borders of the Mangaung Municipality. According to Mucina and Rutherford (2012) no part of this vegetation type is statutorily conserved, although small portions are found on the premises of the Free State National Botanical Gardens in Bloemfontein. More than 10% has been transformed for cultivation and by urban sprawl. A conservation target of 28% was set for the vegetation type.

2018 SANBI Vegetation Map

According to the latest vegetation map provided for South Africa (SANBI, 2018), the project site is still within the Winburg Grassy Shrubland and the Bloemfontein Karroid Shrubland.

Site Specific Conditions

Through the years most of the natural vegetation cover of the mining area has been removed. Presently (2025), only ±19% of the mining footprint still resembles the initial vegetation layer in particular the Winburg Grassy Shrubland in the south-eastern corner of the mine. A few indigenous Wild Olive Trees (*Olea europaea* subsp. *africana*) occurring within the active mining area were fenced to ensure protection. Wild Olive Trees are listed as a protected tree in terms of the National Forest Act, 1998 (Act No 84 of 1998) and the Free State Nature Conservation Ordinance No 8 of 1969.

No endangered plant species occur within the mining footprint that needs special protection and/or management practices. The MR Holder removes the vegetation cover with the topsoil (where available) that is stockpiled separately to be used during the rehabilitation phase.

Invader plant species known to occur in the disturbed areas include (but not limited to) the following:

ꕥ *Argemone mexicana*	Mexican Poppy	NEM:BA Category 1b
ꕥ *Cereus jamacaru*	Queen of the Night	NEM:BA Category 1b
ꕥ *Cirsium vulgare*	Scotch Thistle	NEM:BA Category 1b
ꕥ *Datura stramonium*	Common Thorn Apple	NEM:BA Category 1b
ꕥ *Nicotiana glauca*	Wild Tobacco	NEM:BA Category 1b
ꕥ *Pennisetum setaceaum*	Fountain Grass	NEM:BA Category 1b
ꕥ *Pyracantha angustifolia*	Yellow Firethorn	NEM:BA Category 1b
ꕥ *Ricinus communis*	Castor-oil Plant	NEM:BA Category 2

ꕥ *Sesbania punicea*	Red Sesbania	NEM:BA Category 1b
ꕥ *Solanum elaeagnifolium*	Silverleaf Bitter Apple	NEM:BA Category 1b
ꕥ *Xanthium spinosum*	Spiny Cocklebur	NEM:BA Category 1b
ꕥ *Xanthium strumarium*	Large Cocklebur	NEM:BA Category 1b

h) FAUNA

Petra Quarry operates within a highly disturbed area with very little to no fauna resident within the mining area. Rock hyrax (*Procavia capensis*) frequent the quarry faces and rocky areas, while common bird species occur at the mine.

Petra Quarry has been operational since the 1980's and the remaining faunal component has therefore become accustomed to the mining operations. No endangered species reside within the mining footprint that warrants special consideration.

i) CULTURAL AND HERITAGE ENVIRONMENT

No sites of archaeological or cultural importance is present on the site. Neither did the mining operations of the past ±45 years identify any artefacts or areas of archaeological and/or palaeontological concern.

j) SOCIO-ECONOMIC ENVIRONMENT

Demographics and Settlement Patterns

Petra Quarry is within Ward 44 of the Mangaung Metro Municipality (MMM) northeast of Bloemfontein's urban core. According to the 2022 Census, Mangaung has a population of 747,431. The racial composition is predominantly Black African (83.3%), followed by White (11.0%), Coloured (5.0%), and other groups (0.7%) (Statistics South Africa).

The area surrounding the quarry exhibits a semi-rural character, with a mix of agricultural lands, smallholdings, and emerging residential developments. Notably, Northridge Estate, a middle-income residential area, has developed along the main access road to the quarry, reflecting the northward expansion of Bloemfontein's urban footprint.

Education and Employment

Educational attainment in Mangaung shows that 4.3% of individuals aged 20 years and older have no formal schooling, 4.7% have completed primary education, 33.2% have some secondary education, 30.3% have completed matric, and 14.2% have some form of higher education (Statistics South Africa).

The local economy is diverse, encompassing agriculture, mining, waste management, and residential services. Petra Quarry contributes to the economy by providing employment opportunities and supporting local businesses involved in logistics, equipment maintenance, and other services.

The mine also contribute to the local economy of the area, both directly and through the multiplier effect that its presence creates. Equipment and supplies are purchased locally, and wages are spent at local businesses, generating both jobs and income in the area. In addition thereto the implementation of the Social and Labour Plan obligations contribute positively to the socio-economic environment of the local community.

Public Services and Infrastructure

Proximity to Bloemfontein ensures access to public services, healthcare, education, and retail facilities. However, infrastructure in the immediate vicinity of the quarry is relatively basic, with gravel roads, limited public transport, and intermittent municipal service delivery in outlying areas.

Social Sensitivities

The development of Northridge Estate as well as the residential complex north of Christo Groenwald Street introduces a sensitive receptor in close proximity to the quarry. Residents may be affected by dust, noise, and traffic associated with quarry operations. Therefore, it is crucial to implement mitigation measures and engage in stakeholder communication to address potential concerns.

k) LAND USE

Historically, the Petra Quarry area formed part of the municipal commonage and was primarily utilised for agricultural purposes, specifically livestock grazing, due to its open grassland nature and proximity to communal farming areas.

Subsequent to its agricultural use, the Mangaung Municipality initiated mining activities on the site for the extraction of dolerite, a common construction aggregate material. In June 2001, Petra Quarry (Pty) Ltd assumed operational control of the existing quarry and has continued mining activities to the present day under applicable authorisations.

The current land use of the site is thus classified as mining and industrial, focused on the extraction, crushing, and stockpiling of dolerite aggregate for the regional construction market.

Figure 9: Satellite view of the mining area (red polygon) in relation to the surrounding land uses (image obtained from Google Earth).

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

Table 7: Land uses and/or prominent features that occur within 500 m radius of the mining area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The mining area is surrounded by natural areas used for agricultural purposes.
Low density residential	**YES**	-	Two residential complexes were developed within 500 m of mine's boundary.
Medium density residential	-	**NO**	-
High density residential	-	**NO**	-
Informal residential	-	**NO**	-
Retail commercial & warehousing	-	**NO**	The Northridge Mall is more than 500 m from the mine.
Light industrial	**YES**	-	Much Asphalt and Tora Concrete borders the mine to the south and north respectively.
Medium industrial	-	**NO**	-
Heavy industrial	-	**NO**	-
Power station	-	**NO**	-

LAND USE CHARACTER	YES	NO	DESCRIPTION
High voltage power line	-	**NO**	-
Office/consulting room	**YES**	-	The office of Much Asphalt, Tora Concrete borders the mine.
Military or police base / station / compound	-	**NO**	-
Spoil heap or slimes dam	**YES**	-	Various waste rock/overburden dumps occur within the mining footprint.
Quarry, sand or borrow pit	**YES**	-	The mining area has a hard rock quarry.
Dam or reservoir	**YES**	-	Farm dams occur on the surrounding farms.
Hospital/medical centre	-	**NO**	-
School/ crèche	-	**NO**	-
Tertiary education facility	-	**NO**	-
Church	-	**NO**	-
Old age home	-	**NO**	-
Sewage treatment plant	-	**NO**	-
Train station or shunting yard	-	**NO**	-
Railway line	-	**NO**	-
Major road (4 lanes or more)	-	**NO**	-
Airport	-	**NO**	-
Harbour	-	**NO**	-
Sport facilities	-	**NO**	-
Golf course	-	**NO**	-
Polo fields	-	**NO**	-
Filling station	-	**NO**	-
Landfill or waste treatment site	**YES**	-	The Northern Landfill Site of Bloemfontein borders the mining area to the south.
Plantation	-	**NO**	-
Agriculture	**YES**	-	The mine is situated within a greater area used for grazing of livestock.
River, stream, or wetland	**YES**	-	A drainage line flows past the southern boundary of the mine.
Nature conservation area	-	**NO**	-
Mountain, hill, or ridge	**YES**	-	The topography of the area is undulating and various hills occur in the area.
Museum	-	**NO**	-
Historical building	-	**NO**	-
Protected Area	-	**NO**	-
Graveyard	-	**NO**	-
Archaeological site	-	**NO**	-
Other land uses (describe)	-	**NO**	-

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

G. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

a) IMPACTS AND RISKS ASSOCIATED WITH THE PROJECT

The table below presents the potential positive and negative environmental impacts associated with this project, identified for each main activity and applicable project phase (operational and decommissioning). This EMPR does not elaborate on the planning-, site establishment- and or construction phases as this is an operational Quarry and these phases are no longer applicable. Refer also to Appendix C for the Environmental Impact Statement.

It should be noted that the impacts listed have not been reassessed in detail, as no significant changes or additions to the mining activities have been identified that were not already assessed during the mining right application process and subsequently approved by the DMRE.

Accordingly, Table 8 provides a summary of the relevant impacts that may arise during the operational and/or decommissioning phases of the project, along with an updated and project-specific list of mitigation and management measures to be implemented on site. For details on compliance monitoring and performance assessment, please refer to the section titled *Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including headings (l)–(m)* as required by Appendix 4 of the EIA Regulations (GNR 982 of 2014) (as amended).

Table 8: Positive and negative impacts associated with the project proposal.

ACTIVITY	PHASE	POTENTIAL IMPACT
➢ Excavation ➢ Crushing	➢ Operational Phase ➢ Decommissioning Phase	➢ Visual intrusion associated with the excavation activities. ➢ Visual intrusion associated with the stockpiled material and vehicles transporting the material.
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting	➢ Operational Phase ➢ Decommissioning Phase	➢ Dust nuisance caused by blasting activities. ➢ Dust nuisance due to excavation activities. ➢ Dust nuisance due to the crushing activities. ➢ Dust nuisance form stockpiled material and vehicles transporting the material.

ACTIVITY	PHASE	POTENTIAL IMPACT
➢ Sloping and Landscaping during Rehabilitation of the Site		➢ Dust nuisance caused during sloping and landscaping activities.
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Operational Phase ➢ Decommissioning Phase	➢ Noise nuisance caused by blasting activities. ➢ Noise nuisance generated by excavation equipment. ➢ Noise nuisance generated by the crushing activities. ➢ Noise nuisance caused by vehicles. ➢ Noise nuisance caused by machinery.
➢ Excavation ➢ Crushing ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Operational Phase ➢ Decommissioning Phase	➢ Contamination of surface and groundwater due to effluent runoff from excavation area. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Excavations)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Crushing)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Stockpiling & Transporting)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Sloping & Landscaping)*.
➢ Excavation	➢ Operational Phase	➢ Negative impact on the fauna and flora of the area.
➢ Stockpiling and Transporting ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	➢ Operational Phase ➢ Decommissioning Phase	➢ Weed and invader plant infestation of the area to the disturbance of the soil *(Operational Phase).* ➢ Infestation of the area by weed and invader plants *(Decommissioning Phase).*
➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Decommissioning Phase	➢ Soil erosion.

ACTIVITY	PHASE	POTENTIAL IMPACT
➢ Replacing the Topsoil and Re-vegetating of the disturbed area		➢ Loss of reinstated topsoil due to the absence of vegetation.
➢ Blasting ➢ Excavation ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Operational Phase ➢ Decommissioning Phase	➢ Health and safety risk posed by blasting activities. ➢ Unsafe working conditions for employees. ➢ Health and safety risk posed by un-sloped areas.
➢ Stockpiling and Transporting	➢ Operational Phase	➢ Degradation of access roads.
➢ Excavation	➢ Operational Phase	➢ Potential damage to cultural and heritage aspects.
➢ Socio-economic Impacts (Positive Impacts)	➢ Operational Phase	➢ Work opportunities for forty seven workers *(2015 EMPR)*. ➢ Skills development plan for workers. ➢ Local economic development plan. o Building of extra classrooms for the Monokotswai Intermediate School at Botshabelo *(2015 EMPR)*

b) IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Table 9: Impacts to be mitigated in their respective phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
➢ Excavation ➢ Crushing	Operational & Decommissioning Phase	±55 ha	<u>Visual Characteristic</u> ➢ The site must always have a neat appearance and be kept in good condition. ➢ Mining equipment must be stored neatly in dedicated areas when not in use. ➢ The right holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area. ➢ All excavation and mining related activities must be contained within the approved mining footprint. ➢ Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum. ➢ All buildings, equipment and/or infrastructure that will remain on the property after closure, must be left in a good and functional condition, and the landowner must accept responsibility for these structures in writing.	Management of the activities must be in accordance with the: ➢ MPRDA, 2008 ➢ NEMA, 1998	Throughout the operational and decommissioning phases.
➢ Blasting ➢ Excavation ➢ Crushing	Operational & Decommissioning Phase	±55 ha	<u>Dust Management</u> ➢ The liberation of dust into the surrounding environment must be effectively controlled using, inter alia, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ➢ Dust suppression must continue during day and night shifts.	Dust generation on site must be managed in accordance with the: ➢ NEM:AQA, 2004 Regulation 6(1) ➢ National Dust Control Regulations, GN No R827	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site			➢ Water sprayers must be fitted to the processing plants, and the plant may not operate if these sprayers are out of order. ➢ The site manager must daily assess the efficiency of all dust suppression equipment. ➢ Excess dust and fines must at least weekly be removed from the processing area. ➢ Speed on the haul roads must be limited to 20 km/h to prevent the generation of excess dust. ➢ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. ➢ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ➢ All dust generating activities shall comply with the National Dust Control Regulations, (GN No R827) under NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ➢ Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts. ➢ Monthly fallout-dust monitoring must be implemented at the site for the duration of the activities and the results must be compliant with the standards of the National Dust Control Regulations, 2013 (as amended).	➢ ASTM D1739 (SANS 1137:2012)	

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	Operational & Decommissioning Phase	±55 ha	<u>Noise Management</u> ➢ The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding landowners must be notified in writing prior to each blast. ➢ A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008. ➢ The monitoring of noise pollution during night shift must form part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist) corrective measures must be implemented within one month. ➢ Best practice measures shall be implemented to minimize potential noise impacts.	Noise generation on site must be managed in accordance with the: ➢ NEM:AQA, 2004 Regulation 6(1) ➢ NRTA, 1996	Throughout the operational and decommissioning phases.
➢ Excavation ➢ Crushing ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during	Operational-, and Decommissioning Phase	±55 ha	<u>Waste Management</u> ➢ Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. This waste must be treated	Project related waste must be managed in accordance with the: ➢ NWA, 1998 ➢ NEM:WA, 2008	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Rehabilitation of the Site			as hazardous waste and must be disposed of at a licenced hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes. ꕥ If a diesel bowser is used on site, it must always be equipped with a drip tray and/or parked in a bunded area with impermeable surface. Drip trays must be used during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ꕥ Ablution facilities must be provided to all employees. The ablution facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage. Any pollution problems arising from the above are to be addressed immediately by the MR Holder. ꕥ Site management must ensure drip trays are cleaned after use. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. ꕥ Equipment/tools/vehicles placed in the salvage yard must be drained of all hydrocarbons before placement. The salvage yard must be kept clean and unwanted materials must be removed from the mine as regular as possible. ꕥ An oil spill kit must be available at the mine, and the employees must be trained in the emergency		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			procedures to follow when a spill occurs as well as the application of the spill kit. ꕥ Spills must be cleaned up immediately, within two hours of occurrence, by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a licenced facility. Proof must be filed. ꕥ When small volumes of wastewater are generated during the life of the project the following is applicable: ▪ Water containing waste must not be discharged into the natural environment. ▪ Measures to contain the wastewater and safely dispose thereof must be implemented. ꕥ It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the activities is reported to the Department of Water and Sanitation and other relevant authorities. ꕥ All decommissioned/rehabilitated areas must be cleared of all waste at the end of the project.		
ꕥ Excavation ꕥ Crushing ꕥ Stockpiling and Transporting ꕥ Sloping and Landscaping during Rehabilitation of the Site	Operational-, and Decommissioning Phase	±55 ha	<u>Storage / Handling of Hazardous Substances / Chemicals</u> ꕥ All chemical stores must: ▪ Be situated on level, impermeable surfaces with secondary containment (bunding). ▪ Have a capacity to contain at least 110% of the largest stored volume, per SANS 10228. ▪ Have access to a spill kit and staff must be trained in the emergency response procedures. ꕥ Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.	Project related chemicals/products must be managed in accordance with the: ꕥ HSA, 1973	Throughout the operational- and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site. ➢ Any fuel/used oil tanks and/or generators must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. ➢ The outlet valve/s of all bunded areas must always be kept closed. ➢ The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely. ➢ The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. Reuse of this water on site is only permitted if verified proof is available confirming that it is free of hydrocarbons. ➢ Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and may not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump,		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			alternatively removed by the hazardous waste handling contractor. ꞵ No mining equipment and/or vehicles may be washed on the bare ground. Washing must be done in a formal wash bay with impermeable surface that drains to an operational oil sump. Reuse of the water from the sump is only permitted if verified proof is available confirming that it is free of hydrocarbons.		
ꞵ Excavation	Operational and Decommissioning Phase	±55 ha	<u>Terrestrial Biodiversity and Groundcover – Management of Vegetation</u> ꞵ The mining boundaries must be clearly demarcated, and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. ꞵ The Right Holder must be committed to a conservation approach and the actual footprint of disturbance must be kept to a minimum. ꞵ Environmental induction must be arranged for all site staff to ensure that basic environmental principles are adhered to. This includes awareness of littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc. ꞵ No plant species protected under the NFA, 1998 and/or Free State Nature Conservation Ordinance, such as the Wild Olive (*Olea europaea* subsp *africana*) may be removed prior to obtaining all required permits. ꞵ Cleared vegetation must be retained and may not be burned but can be mulched and stockpiled. Ideally the	Natural vegetated areas must be managed in accordance with the: ꞵ NEM:BA 2004	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes. ➢ The ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment. ➢ All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. ➢ No fires must be allowed on-site. ➢ Spoil heaps and topsoil stockpiles must be provided with a vegetation cover of indigenous grasses. ➢ All newly vegetated areas must be protected against grazing by domestic animals. ➢ Monitoring of the rehabilitated area/s must take place every six months until mine closure, or for at least one growth season after closure. Photos must be taken at fixed points and must be available for auditing purposes.		
➢ Stockpiling and Transporting ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	Operational- and Decommissioning Phase	±55 ha	<u>Terrestrial Biodiversity and Ground Cover – Management of Invasive Plant Species</u> ➢ An invasive plant species management plan (Appendix E) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Invasive plant species clearing must be done on an ongoing basis throughout the life of the activities.	Invasive plant species on site must be managed in accordance with the: ➢ CARA, 1983 ➢ NEM:BA, 2004	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed. ➢ All stockpiles (topsoil & overburden) must be kept free of invasive plant species. ➢ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled, or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
➢ Excavation	Operational and Decommissioning Phase	±55 ha	<u>Fauna</u> ➢ The site manager must ensure no fauna is caught, killed, harmed, sold, or played with. ➢ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person. ➢ The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken by a suitably trained individual. ➢ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be	Fauna must be managed in accordance with the: ➢ NEM:BA 2004	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			instructed to report any animals that may be trapped in the working area. ꕥ No snares may be set, or nests raided for eggs or young. ꕥ No litter, food or other foreign material may be thrown or left around the site. Such items must daily be removed to the site offices. ꕥ All excavations must include features (such as sloped edges or escape ramps) to ensure that any animals entering the area can exit safely.		
ꕥ Sloping and Landscaping during Rehabilitation of the Site ꕥ Replacing the Topsoil and Re-vegetating of the disturbed area	Operational-, and Decommissioning Phase	±55 ha	<u>Geology and Soil – Topsoil Management</u> ꕥ The upper 300 mm of the soil (if available) must be stripped and stockpiled before mining. ꕥ Topsoil is a valuable and essential resource for rehabilitation, and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. ꕥ Topsoil stripping, stockpiling, and re-spreading must be done in a systematic way. The mining plan must be such that topsoil is stockpiled for the minimum possible time. ꕥ The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. All topsoil heaps must be signposted. ꕥ Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants	Stockpiles must be managed in accordance with the: ꕥ CARA, 1983	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			(indigenous grass) on the stockpiles will help to prevent erosion. ꕥ Topsoil heaps may not exceed 2.5 m in height and are not to be sloped more than 1:2 to avoid collapse. ꕥ The topsoil stockpiles must be kept free of invasive plant species. ꕥ Topsoil heaps to be stored longer than a period of 3 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. ꕥ Storm- and runoff water must be diverted around the topsoil and overburden stockpile areas to prevent erosion. ꕥ The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. ꕥ The right holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. ꕥ An indigenous grass layer must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. It is important that rehabilitation be taken up to the point of stabilization. Rehabilitation cannot be considered complete until the first grass layer is well established.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion. ➢ The rehabilitated area must be monitored for erosion and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		
➢ Sloping and Landscaping during Rehabilitation of the Site ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	Operational-, and Decommissioning Phase	±55 ha	<u>Geology and Soil – Erosion Control and Storm Water Management</u> ➢ A storm water management plan must be implemented for the duration of the mining activities. ➢ Clearing of vegetation must be limited to the mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. ➢ Vegetation clearing activities must be put on hold when heavy rains are expected. ➢ Clean stormwater must be diverted around the topsoil heaps and mining areas (if possible) to prevent erosion. ➢ Stockpiles must be: ▪ Located on flat, stabilised areas away from drainage lines, ▪ Covered with vegetation to reduce wind and water erosion risks. ➢ When mining within steep slopes, it must be ensured that adequate slope protection is provided. ➢ Roads and other disturbed areas within the project area must be regularly monitored for erosion and	Soil must be managed in accordance with the: ➢ CARA, 1983 ➢ Closure Plan (Appendix D) ➢ MPRDA, 2002 ➢ NEM:BA, 2004 ➢ NWA, 1998	Throughout the operational and decommissioning phases.

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

			problem areas must receive follow-up monitoring to assess the success of the remediation.
			- Any erosion problems within the mining area because of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
			- The runoff water from the processing plants must be directed to the settling ponds.
			- Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared to ensure effective drainage of the areas.
			- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
			  ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
			  ▪ Dirty water must be collected and contained in a system separate from the clean water system.
			  ▪ Dirty water must be prevented from spilling or seeping into clean water systems.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ➢ All erosion and sediment control measures must be monitored (weekly) for the life of the operation and repaired immediately when damaged. The erosion and sediment control structures may only be removed once vegetation cover has successfully recolonised the affected areas. ➢ After heavy rainfall events, site management must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled in with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.		
➢ Blasting ➢ Excavation ➢ Sloping and Landscaping during Rehabilitation of the Site	Operational & Decommissioning Phase	±55 ha	<u>Hydrology</u> ➢ All water uses applicable to the operation, as defined under the National Water Act (NWA), must be duly authorised by the Department of Water and Sanitation (DWS). A copy of the water use authorisation must be kept on-site and made available for inspection or auditing upon request. ➢ Annual water quality monitoring must be conducted for the following: water within the quarry sump(s), water in the settling pond/s, and water in the final tank of the oil sump. The upstream and downstream water of the drainage line (if available) must also be tested annually. Any deviations from acceptable water quality	All hydrology matters must be managed in accordance with the: ➢ NWA, 1998 ➢ SWMP	Throughout the operational and decommissioning phases.

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

			standards that are attributable to mining activities must be addressed without delay. In addition, water from the oil separator must be tested specifically for the presence of hydrocarbons.
			- To prevent the contamination of the aquatic environment:
			  - The employees must notify site management immediately of any pollution incidents.
			  - The contractor must prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into any natural areas.
			- During rehabilitation, the MR Holder must aim to restore surface water flow patterns to align with the natural drainage of the area, as far as is practically feasible.		

- Blasting - Excavation - Sloping and Landscaping during Rehabilitation of the Site	Operational-, and Decommissioning Phase	±55 ha	<u>Health and Safety Risks</u> - Workers must have access to the correct personal protection equipment (PPE) as required by law. - The surrounding landowners must be informed in writing ahead of each blasting event. - The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event. - A vibro recorder must be used to record all blasts. - Audible warning of a pending blast must be given at least 3 minutes in advance of the blast. - Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.	Health and safety aspects on site must be managed in accordance with the: - MHSA, 1996 - OHSA, 1993 - OHSAS 18001 - HSA,1973	Throughout the operational and decommissioning phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			➢ Upon closure the entrance to the excavation must be blocked (soil berm / oversize rocks) to restrict access.		
➢ Stockpiling and Transporting	Operational Phase	±55 ha	<u>Access Road Management</u> ➢ Vehicular movement must be restricted to the roads and crisscrossing of tracks through undisturbed areas must be prohibited. ➢ Rutting and erosion of the access and internal roads caused as a direct result of the mining activities must be repaired by the MR Holder. ➢ Overloading of the trucks must be prevented, and proof of load weights must be filed for auditing purposes.	The access road must be managed in accordance with the: ➢ NRTA, 1996	Throughout the operational phase.
➢ Excavation	Operational Phase	±55 ha	<u>Cultural and Heritage Environment</u> ➢ All mining must be confined to the development footprint area. ➢ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ➢ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ➢ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on	Cultural/heritage aspects must be managed in accordance with the: ➢ NHRA, 1999	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ꞵ Work may only continue once the go-ahead was issued by SAHRA. ꞵ Should any suspected palaeontological material be at any time encountered during mining, a palaeontologist should likewise be immediately contacted to sample and record such occurrence.		
ꞵ Sloping and landscaping during rehabilitation of the site.	Decommissioning Phase	±55 ha	<u>Rehabilitation / Landscaping of the Excavated Areas</u> ꞵ When possible, excavations and/or disturbed areas must be subject to progressive rehabilitation. ꞵ Rehabilitation must be done to such a standard that the rehabilitated land surrounding the excavation can revert to municipal use. ꞵ The excavated areas must serve as a final depositing area for the placement of overburden. ꞵ Rocks and coarse material removed from the excavations must be dumped into the excavations. ꞵ Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. ꞵ Stockpiles must be removed during the decommissioning phase, the area ripped, and the topsoil returned to its original depth to provide a growth medium. ꞵ No waste may be permitted to be deposited in the excavations. ꞵ Once overburden, rocks and coarse natural materials have been added to the excavations and it was profiled	The mining area must be managed in accordance with the: ꞵ MPRDA, 2002	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area. ঌ The site shall be seeded with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ঌ If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. ঌ Rehabilitation success must be measured by: ▪ At least 70% vegetation cover with indigenous grass species within 12 months of seeding. ▪ Stabilization of slopes to a gradient of 1:3 to prevent erosion. ▪ Regular monitoring for invasive species, with removal interventions implemented quarterly. ঌ The entrance to the excavation must be adequately blocked to prevent unauthorised access to humans and domestic animals.		

c) ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

Copies of this EMPR must be kept at the site office and must be distributed to all senior contract personnel who shall familiarise themselves with its contents. The implementation of the EMPR requires the involvement of all site personnel (including sub-contractors), to ensure sound environmental management during the operational and decommissioning phases of the project.

1. MINING RIGHT HOLDER

The mining right holder, Petra Quarry (Pty) Ltd, and anyone acting on behalf of the MR Holder, is accountable for the potential environmental impacts of all activities undertaken and is responsible for the management of the impacts as well as the implementation of the EMPR.

2. SUB-CONTRACTORS

The sub-contractors must receive a copy of the EMPR and be inducted by the MR Holder's representative prior to commencement on site. All sub-contractors that enter the mining area must comply with the requirements of the EMPR and ensure compliance of his/her employees.

3. ENVIRONMENTAL CONTROL OFFICER (ECO)

The holder of the mining right must appoint a site based environmental control officer. The ECO must be readily available on site at all times to ensure that all activities are conducted in compliance with the approved EMPR.

The ECO must:

- Keep and maintain a detailed incident register (including any spillages or fuel, chemicals and any other materials).
- Keep a compliance register on site indicating the complaint and how the issues were addressed, what measures were taken and what preventative measures were implemented to avoid re-occurrence of complaints.
- Keep records relating to monitoring and auditing and site and avail them for inspection to any relevant authorised officials.
- Keep copies of all environmental reports submitted to the DMRE.
- Keep the records of all permits, licenses and authorisations required by the operation.

- Compile a monthly monitoring report and make it available to the department if requested.
- The duties and responsibility of the ECO must not be seen as exempting the holder of the mining right from the legal obligations in terms of the MPRDA and/or NEMA.

4. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

The holder of the mining right must annually appoint an independent environmental specialist (EAP) to objectively assess the compliance of the mining operations with the conditions of the approved EMPR. The EAP must at least annually report on the compliance of the mine to the DMRE, unless otherwise stipulated by the department.

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

H. IMPACT MANAGEMENT ACTIONS AND OUTCOMES

Table 10: Impact Management Actions and Outcomes.

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
➢ Excavation ➢ Crushing	➢ Visual intrusion associated with the excavation activities. ➢ Visual intrusion associated with the stockpiled material and vehicles transporting the material.	The visual impact may affect the aesthetics of the landscape.	Operational and Decommissioning Phase	Control: Implementing proper housekeeping and progressive rehabilitation (where possible).	Management of the activities must be in accordance with the: ➢ MPRDA, 2008 ➢ NEMA, 1998
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Dust nuisance caused by blasting activities. ➢ Dust nuisance due to excavation activities. ➢ Dust nuisance due to the crushing activities. ➢ Dust nuisance form stockpiled material and vehicles transporting the material. ➢ Dust nuisance caused during sloping and landscaping activities.	Increased dust generation will impact on the air quality of the receiving environment.	Operational- and Decommissioning Phase	Control: Dust suppression methods and proper housekeeping.	Dust generation on site must be managed in accordance with the: ➢ NEM:AQA, 2004 Regulation 6(1) ➢ National Dust Control Regulations, GN No R827 ➢ ASTM D1739 (SANS 1137:2012)
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure	➢ Noise nuisance caused by blasting activities. ➢ Noise nuisance generated by excavation equipment.	Should noise levels become excessive it may have an impact on the noise ambiance of	Operational and Decommissioning Phase	Control: Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: ➢ NEM:AQA, 2004 Regulation 6(1) ➢ NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Noise nuisance generated by the crushing activities. ➢ Noise nuisance caused by vehicles. ➢ Noise nuisance caused by machinery.	the receiving environment.			
➢ Excavation ➢ Crushing ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Contamination of surface and groundwater due to effluent runoff from excavation area. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Excavations)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Crushing)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Stockpiling & Transporting)*. ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Sloping & Landscaping)*.	Contamination of the footprint areas will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the Right Holder.	Operational-, and Decommissioning Phase	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Project related waste must be managed in accordance with the: ➢ NWA, 1998 ➢ NEM:WA, 2008
➢ Excavation	➢ Negative impact on the fauna and flora of the area.	This will impact on the biodiversity of the receiving environment.	Operational Phase	Control: Implementing proper housekeeping and the mitigation measures.	Natural vegetated areas must be managed in accordance with the: ➢ NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
➢ Stockpiling and Transporting ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	➢ Weed and invader plant infestation of the area to the disturbance of the soil *(Operational Phase).* Infestation of the area by weed and invader plants *(Decommissioning Phase).*	Infestation of the footprint by invader plant species may affect the biodiversity of the receiving environment.	Operational, and Decommissioning Phase	Control & Remedy: Implementation of an invasive plant species management plan.	Invasive plant species on site must be managed in accordance with the: ➢ CARA, 1983 ➢ NEM:BA, 2004
➢ Sloping and Landscaping during Rehabilitation of the Site ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	➢ Soil erosion. ➢ Loss of reinstated topsoil due to the absence of vegetation.	This could impact the hydrology of the receiving environment and cause erosion.	Operational and Decommissioning Phase	Control: Implementing a SWMP.	Soil must be managed in accordance with the: ➢ CARA, 1983 ➢ Closure Plan (Appendix D) ➢ MPRDA, 2002 ➢ NEM:BA, 2004 ➢ NWA, 1998
➢ Blasting ➢ Excavation ➢ Sloping and Landscaping during Rehabilitation of the Site	➢ Health and safety risk posed by blasting activities. ➢ Unsafe working conditions for employees. ➢ Health and safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational, and Decommissioning Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: ➢ MHSA, 1996 ➢ OHSA, 1993 ➢ OHSAS 18001 ➢ HSA,1973
➢ Stockpiling and Transporting	➢ Degradation of access roads.	Impacting the condition of public roads may incur public complaints and additional costs to the MR Holder.	Operational Phase	Operational and Expansion Activities: Excavation, processing, loading and hauling of aggregate.	The access road must be managed in accordance with the: ➢ NRTA, 1996
➢ Excavation	➢ Potential damage to cultural and heritage aspects.	This impact (if it occurs) may affect the	Operational Phase	Stop & Control: Adherance to the chance find protocol, and	All heritage related finds must be managed in accordance with the:

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		cultural/heritage aspects of the area.		guidance of an appropriately qualified specialist.	➢ NHRA, 1999

(APPENDIX 4 SECTION 1(1)(g) – (k))

MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING

I. MONITORING OF IMPACT MANAGEMENT ACTIONS

J. MONITORING AND REPORTING FREQUENCY

K. RESPONSIBLE PERSONS

L. TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS

M. MECHANISMS FOR MONITORING COMPLIANCE

Table 11: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
➢ Demarcation of site with visible beacons.	<u>General</u> ➢ Maintenance of beacons.	➢ Visible beacons / fences need to be established at the boundaries of the mining area.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent Environmental Assessment Practitioner (EPA) during the annual environmental audit.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			<u>Mitigation / Monitoring to be Implemented:</u> • Ensure beacons / fences are in place throughout the life of the mine.	
• Excavation • Crushing	<u>Visual Characteristics</u> • Visual intrusion associated with the excavation activities. • Visual intrusion associated with the stockpiled material and vehicles transporting the material.	• Parking- and dedicated storage areas for equipment. • Good housekeeping practices.	<u>Responsible Person:</u> • Site Manager and ECO to ensure day-to-day compliance. • Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> • Ensure that the site has a neat appearance and is always kept in good condition. • Store mining equipment neatly in dedicated areas when not in use. • Limit vegetation removal and only do stripping of topsoil immediately prior to the mining/use of a specific area. • Contain the excavation within the approved footprint of the permitted area. • Upon closure, rehabilitate the site and reduce the residual visual impacts to the minimum. • Leave all buildings, equipment and/or infrastructure that will remain on the property after closure in a good and functional condition and obtain written transfer of liability of the structures to the landowner.	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management and ECO. • Annual compliance monitoring by independent EAP.

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
➢ Blasting ➢ Excavation ➢ Crushing ➢ Lesiure Residential Infrastructure ➢ Stockpiling and Transporting ➢ Sloping and Landscaping during Rehabilitation of the Site	<u>Air Quality and Noise Ambiance</u> ➢ Dust nuisance caused by blasting activities. ➢ Dust nuisance due to excavation activities. ➢ Dust nuisance due to the crushing activities. ➢ Dust nuisance form stockpiled material and vehicles transporting the material.	➢ Dust suppression equipment such as a water car, water dispenser and sprayers on the crusher plant/s. ➢ Signage that clearly reduce the speed on the internal roads. ➢ Maintenance schedule to remove excess dust from the processing area. ➢ Cover crop to re-vegetate denuded areas.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Control the liberation of dust into the surrounding environment using; inter alia, water spraying and/or other dust-allaying agents. ➢ Ensure dust suppression continue during day and night shifts. ➢ Fit water sprayers to the processing plant and stop operations if the sprayers are out of order. ➢ Ensure continuous (daily) assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ➢ Remove excess dust and fines at least weekly from the processing area. ➢ Limit speed on the haul roads to 20 km/h to prevent the generation of excess dust. ➢ Minimise areas devoid of vegetation and only remove vegetation immediately prior to mining. ➢ Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO. ➢ Weekly monitoring of dust and fines at the processing area. ➢ Monthly fallout dust monitoring by qualified service provider. ➢ Annual compliance monitoring by independent EAP.

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
			ꕥ Ensure dust generating activities comply with the National Dust Control Regulations, (GN No R827) under NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). ꕥ Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts. ꕥ Implement monthly fallout-dust monitoring at the site for the duration of the activities and ensure the results are compliant with the standards of the National Dust Control Regulations, 2013 (as amended).	
ꕥ Blasting ꕥ Excavation ꕥ Crushing ꕥ Lesiure Residential Infrastructure ꕥ Stockpiling and Transporting ꕥ Sloping and Landscaping during Rehabilitation of the Site	<u>Air Quality and Noise Ambiance</u> ꕥ Noise nuisance caused by blasting activities. ꕥ Noise nuisance generated by excavation equipment. ꕥ Noise nuisance generated by the crushing activities. ꕥ Noise nuisance caused by vehicles.	ꕥ Personal noise exposure monitoring equipment. ꕥ Signage indicating noise zones.	<u>Responsible Person:</u> ꕥ Site Manager and ECO to ensure day-to-day compliance. ꕥ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ꕥ Do not permit loud music at the work areas. ꕥ Plan the type, duration, and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding landowners in writing prior to each blasting occasion. ꕥ Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.	Applicable throughout operational-, and decommissioning phases. ꕥ Daily compliance monitoring by site management and ECO. ꕥ Quarterly reporting by a qualified occupation hygienist. ꕥ Annual compliance monitoring by independent EAP.

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
	ꕥ Noise nuisance caused by machinery.		ꕥ Make the monitoring of noise pollution during night shift part of the noise monitoring regime of the Quarry. If the noise pollution exceed acceptable limits (according to the monitoring specialist) implement corrective actions within one month. ꕥ Implement best practice measures to minimise potential noise impacts.	
ꕥ Excavation ꕥ Crushing ꕥ Stockpiling and Transporting ꕥ Sloping and Landscaping during Rehabilitation of the Site	<u>Waste Management</u> ꕥ Contamination of surface and groundwater due to effluent runoff from excavation area. ꕥ Contamination of area with hydrocarbons or hazardous waste materials *(Excavations).* ꕥ Contamination of area with hydrocarbons or hazardous waste materials *(Crushing).*	ꕥ Waste management plan. ꕥ Formal waste disposal system with waste registers. ꕥ Drip trays. ꕥ Covered refuse bins for both hazardous- and general waste. ꕥ Oil spill kit. ꕥ Bunded areas with impermeable surface. ꕥ Stormwater management plan.	<u>Responsible Person:</u> ꕥ Site Manager and ECO to ensure day-to-day compliance. ꕥ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ꕥ Ensure regular vehicle maintenance, repairs and services only take place at an off-site workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes.	Applicable throughout operational-, and decommissioning phases. ꕥ Daily compliance monitoring by site management and ECO. ꕥ Annual compliance monitoring by independent EAP.

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
	➢ Contamination of area with hydrocarbons or hazardous waste materials *(Stockpiling & Transporting).* ➢ Contamination of area with hydrocarbons or hazardous waste materials *(Sloping & Landscaping).*		➢ Ensure that regular vehicle maintenance, repairs and services only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, ensure drip trays are present. Dispose all waste products in a closed container/bin and remove it from the emergency service area (same day) to the workshop to ensure proper disposal. Treat this waste as hazardous waste and disposed of it at a licenced hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File the safe disposal certificates for auditing purposes. ➢ If a diesel bowser is used on site, always equip it with a drip tray and ensure that it is parked in a bunded area with impermeable surface. Use drip trays during each refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ➢ Provide ablution facilities to all employees. Ensure that the ablution facilities do not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution may arise from the disposal of refuse or sewage. Any pollution problems arising from the above are to be addressed immediately by the MR Holder. ➢ Ensure drip trays are cleaned after use. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.	

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
			➢ Drain hydrocarbons from equipment/tools/vehicles placed in the salvage yard. Keep the salvage yard clean and remove unwanted materials from the mine as regular as possible. ➢ Obtain an oil spill kit and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. ➢ Clean spills immediately, within two hours of occurrence by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a registered facility. File proof. ➢ Do not discharge water containing waste into the natural environment. ➢ Implement measures to contain the wastewater and safely dispose thereof. ➢ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. ➢ Clean all decommissioned / rehabilitated areas of all waste at the end of the project.	
➢ Excavation ➢ Crushing	<u>Storage / Handling of Hazardous Substances / Chemicals</u> ➢ Contamination of area with hydrocarbons or hazardous waste	➢ Waste management plan. ➢ Formal waste disposal system with waste registers. ➢ Drip trays.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO.

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
	materials *(Excavations).* ꕥ Contamination of area with hydrocarbons or hazardous waste materials *(Crushing).* ꕥ Contamination of area with hydrocarbons or hazardous waste materials *(Stockpiling & Transporting).* ꕥ Contamination of area with hydrocarbons or hazardous waste materials *(Sloping & Landscaping).*	ꕥ Covered refuse bins for both hazardous- and general waste. ꕥ Oil spill kit. ꕥ Bunded areas with impermeable surface. ꕥ Safety Data Sheets ꕥ Formal inspection routine/programme.	<u>Mitigation / Monitoring to be Implemented:</u> ꕥ Ensure that all chemical stores: ▪ are situated on level, impermeable surfaces with secondary containment (bunding). ▪ have a capacity to contain at least 110% of the largest stored volume, per SANS 10228. ▪ Have access to a spill kit and staff must be trained in the emergency response procedures. ꕥ Control access to the chemicals/substances and require prior notification of an appropriate staff member. ꕥ Maintain a Hazardous Substances Register and keep the Safety Data Sheets (SDS) current for all chemicals used on site. ꕥ Ensure all fuel/used oil tanks and/or generators have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. ꕥ Ensure that the outlet valve/s of all bunded areas are always kept closed. ꕥ Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.	ꕥ Annual compliance monitoring by independent EAP.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			➢ Ensure that the bund base slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. Reuse of this water on site is only permitted if verified proof is available confirming that it is free of hydrocarbons. ➢ Use drip trays underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and may not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump, alternatively removed by the hazardous waste handling contractor. ➢ Do not wash mining equipment and/or vehicles on the bare ground. Washing must be done in a formal wash bay with impermeable surface that drains to an operational oil sump. Reuse of the water from the sump is only permitted if verified proof is available confirming that it is free of hydrocarbons.	
Excavation	<u>Terrestrial biodiversity, and groundcover</u> ➢ Negative impact on the flora of the area.	➢ Visible beacons / fences indicating the boundary of the mineable areas. ➢ Environmental awareness training material. ➢ Fire management plan.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit.	Applicable throughout and operational phase. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
		➢ Alien invasive species management plan. ➢ Cover crop to seed rehabilitated areas.	<u>Mitigation / Monitoring to be Implemented:</u> ➢ Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area and educate all staff accordingly. ➢ Commit to a conservation approach and keep the actual footprint of disturbance to a minimum. ➢ Arrange environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated areas, etc. ➢ Do not remove any plant species protected under the NFA, 1998 and/or Free State Nature Conservation Ordinance, such as the Wild Olive (*Olea europaea* subsp *africana*) prior to obtaining all required permits. ➢ Do not burn cleared vegetation but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. ➢ Arrange that the ECO provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment. ➢ Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. ➢ Do not allow fires outside designated areas.	

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
			➢ Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. ➢ Protect all newly vegetated areas against grazing by domestic animals. ➢ Monitor the rehabilitated area/s every six months until mine closure, or for at least one growth season after closure. Take photos at fixed points and keep records available for auditing purposes.	
➢ Stockpiling and Transporting ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	<u>Terrestrial biodiversity, and groundcover</u> ➢ Weed and invader plant infestation of the area to the disturbance of the soil *(Operational Phase).* ➢ Infestation of the area by weed and invader plants *(Decommissioning Phase).*	➢ Alien invasive plant species management plan. ➢ Designated team to cut or pull-out invasive plant species that germinated on site. ➢ Contact details of a Pest Control Officer.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do ongoing clearing of invasive plant species throughout the life of the mining activities. ➢ Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose. ➢ Keep all stockpiles (topsoil & overburden) free of invasive plant species. ➢ Control declared invader or exotic species on the rehabilitated areas through one of the following:	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			▪ The plants can be uprooted, felled, or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) using an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.	
ꕥ Excavation	<u>Fauna</u> ꕥ Negative impact on the fauna of the area.	ꕥ Visible beacons / fences indicating the boundary of the mineable areas. ꕥ Environmental awareness training material. ꕥ Snake posters. ꕥ Refuse bins with lids.	<u>Responsible Person:</u> ꕥ Site Manager and ECO to ensure day-to-day compliance. ꕥ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ꕥ Ensure no fauna is caught, killed, harmed, sold, or played with. ꕥ The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. ꕥ Arrange a suitably qualified individual to handle and relocation any animal perceived to be dangerous/venomous/poisonous. ꕥ Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area.	Applicable throughout operational phase. ꕥ Daily compliance monitoring by site management and ECO. ꕥ Annual compliance monitoring by independent EAP.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			➢ Ensure no snares are set or nests raided for eggs or young. ➢ Prevent litter, food or other foreign material thrown or left around the site. Daily remove such items to the site offices. ➢ Add features (such as sloped edges or escape ramps) to all excavations to ensure any animals entering the area can exit safely.	
➢ Sloping and Landscaping during Rehabilitation of the Site ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	<u>Geology and Soil</u> ➢ Topsoil/Soil Management.	➢ Earthmoving equipment to strip, stockpile and spread the topsoil. ➢ Signage to identify Topsoil Stockpiles. ➢ Stormwater control infrastructure. ➢ Designated team to control invasive and/or alien plant species that may germinate on the topsoil heaps. ➢ Cover crop to vegetate topsoil heaps (when needed) and reinstated soil.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Strip and stockpile the upper 300 mm (if available) of the soil before mining. ➢ Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. ➢ Ensure topsoil stripping, stockpiling, and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. ➢ Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas. ➢ Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants	Applicable throughout operational phase. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			(indigenous grass) on the stockpiles will help to prevent erosion. - Ensure that topsoil heaps do not exceed 2.5 m and not sloped more than 1:2 to avoid collapse. - Keep topsoil stockpiles free of invasive plant species. - Vegetate the topsoil heaps to be stored longer than 3 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. - Divert storm- and runoff water around the on-site stockpile area to prevent erosion. - Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. - Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. - Plant an indigenous grass layer immediately after spreading topsoil to stabilise the soil and protect it from erosion. Rehabilitation extends until the first grass layer is well established. - Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. - Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
➢ Sloping and Landscaping during Rehabilitation of the Site ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	<u>Geology and Soil</u> ➢ Soil erosion. ➢ Loss of reinstated topsoil due to the absence of vegetation.	➢ Stormwater management plan. ➢ Storm water control structures such as berms to direct storm- and runoff water around the stockpiled topsoil area.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Implement a storm water management plan for the duration of the mining activities. ➢ Limit clearing of vegetation to the mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. ➢ Place vegetation clearing on hold when heavy rains are expected. ➢ Divert clean stormwater around the topsoil heaps and mining areas (if possible) to prevent erosion. ➢ Implement the following regarding stockpiles: ▪ Locate on flat, stabilised areas away from drainage lines, ▪ Cover with vegetation to reduce wind and water erosion risks. ➢ Ensure that adequate slope protection is provided when mining within steep slopes. ➢ Regularly monitor roads and other disturbed areas within the project for erosion and ensure problem areas receive follow-up monitoring to assess the success of the remediation.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			➢ Rectify erosion problems within the mining area because of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. ➢ Direct the runoff water from the processing plants to the settling ponds. ➢ Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. ➢ Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ➢ Re-vegetate all exposed/bare surfaces and embankments once shaped. If revegetation of exposed surfaces cannot take place immediately, temporary erosion, and sediment control measures must be installed and maintained until such time that revegetation can commence. ➢ Monitor all erosion and sediment control measures weekly for the life of the operation and repaired immediately when damaged. Only remove the erosion	

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
			and sediment control structures once vegetation cover has successfully recolonised the affected areas. ꕥ After heavy rainfall events, check the site for erosion damage and rehabilitate this damage immediately. Fill in erosion rills and gullies with appropriate material and/or silt fences until vegetation has recolonised the rehabilitated area.	
ꕥ Blasting ꕥ Excavation ꕥ Sloping and Landscaping during Rehabilitation of the Site	<u>Hydrology</u>	ꕥ Copy of Water Use Authorisation (if needed). ꕥ Water quality monitoring results. ꕥ Emergency Response Plan ꕥ Waste Management Plan ꕥ Stormwater Management Plan	<u>Responsible Person:</u> ꕥ Site Manager and ECO to ensure day-to-day compliance. ꕥ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ꕥ Ensure all water uses applicable to the operation, as defined under the NWA, are authorised by the DWS. Keep a copy of the water use authorisation on-site for inspection or auditing purposes. ꕥ Conduct annual water quality monitoring for the following: water within the quarry sump(s), water in the settling pond/s, and water in the final tank of the oil sump. Also test the upstream and downstream water of the drainage line (if available) annually. Address any deviations from acceptable water quality standards that are attributable to mining activities without delay. In addition, test the water from the oil separator specifically for the presence of hydrocarbons. ꕥ To prevent the contamination of the aquatic environment:	Applicable throughout operational-, and decommissioning phases. ꕥ Daily compliance monitoring by site management and ECO. ꕥ Annual compliance monitoring by independent EAP.

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
			▪ Instruct employees to notify site management immediately of pollution incidents. ▪ Prevent discharge of any pollutants, such as cement, concrete, lime chemicals and fuels into natural areas. ꕥ During rehabilitation, aim to restore surface water flow patterns to align with the natural drainage of the area, as far as is practically feasible.	
ꕥ Drilling and blasting. ꕥ Excavation, processing, loading and hauling of aggregate. ꕥ Sloping and landscaping during rehabilitation.	<u>Health and Safety Risks</u> ꕥ Health and safety risk posed by blasting activities. ꕥ Unsafe working conditions for employees. ꕥ Health and safety risk posed by un-sloped areas.	ꕥ Stocked first aid box. ꕥ Level 1 certified first aider.	<u>Responsible Person:</u> ꕥ Site Manager and ECO to ensure day-to-day compliance. ꕥ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ꕥ Ensure that workers have access to the correct PPE as required by law. ꕥ Inform the surrounding landowners and communities in writing ahead of any blasting event. ꕥ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ꕥ Record all blasts with a vibro recorder. ꕥ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ꕥ Limit fly rock and collect and remove flyrock and rock spill that falls beyond the working area. ꕥ Block the entrance into the excavation upon closure to restrict access.	Applicable throughout operational-, and decommissioning phases. ꕥ Daily compliance monitoring by site management and ECO. ꕥ Annual compliance monitoring by independent EAP.

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
➢ Stockpiling and Transporting	<u>Existing Infrastructure</u> ➢ Degradation of access roads.	➢ Earthmoving equipment to maintain the gravel pavement structure of the roads. ➢ Road signage to control traffic speed. ➢ Proof of load weights to prevent overloading.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ➢ Repair rutting and erosion of the access road caused as a direct result of the mining activities. ➢ Prevent the overloading of the truck and file proof of load weights for auditing purposes.	Applicable throughout operational phase. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.
➢ Excavation	<u>Cultural and Heritage Environment</u> ➢ Potential damage to cultural and heritage aspects.	➢ Contact number of an archaeologist & palaeontologist that can be contacted when a discovery is made on site.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ Confine all mining to the development footprint area. ➢ Implement the following change find procedure when discoveries are made on site:	Applicable throughout operational phase. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			▪ If during the operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA. ▪ Should any suspected palaeontological material be at any time encountered during mining, a palaeontologist should likewise be immediately contacted to sample and record such occurrence.	
➢ Excavation ➢ Crushing ➢ Stockpiling and Transporting	<u>Fire Management</u> ➢ Increased fire risk during operational phase.	➢ Fire beaters and -extinguishers. ➢ Toolbox talks and emergency preparedness plan.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit.	Applicable throughout operational phase. ➢ Daily compliance monitoring by site management and ECO.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
➢ Sloping and Landscaping during Rehabilitation of the Site		➢ Contact number of the fire association/-brigade.	<u>Mitigation / Monitoring to be Implemented:</u> ➢ Restrict contained fires for heating and cooking (i.e. in a fire drum) to designated areas at the site camp, ➢ Prevent employees from setting fires randomly outside designated areas. ➢ Do not store fuel or chemicals under trees. ➢ Do not store gas in the same storage area as liquid fuel. ➢ Designate smoking to specific areas (>3 m from fuel or chemical storage areas) equipped with sand buckets for the disposal of cigarette buds. ➢ Ensure the mine is equipped with adequate firefighting equipment. This includes at least rubber beaters when working in veld areas, and fire extinguishers of the appropriate type. ➢ Implement specific fire safety precautions during welding activities associated with construction work. Ensure a working fire extinguisher is immediately at hand if any “HOT WORK” is undertaken e.g. welding, grinding, gas cutting etc, ➢ Report any fires noted on site to the responsible SHE rep and/or fire officer. ➢ Implement fire emergency procedures for the duration of the operational-, and decommissioning phases. ➢ In the event of large fires ensure that all personnel assemble at a safe assembly point to be transported from site. Inform the fire department or local fire watch of the fire to ensure that the fire is brought under control as soon as possible.	➢ Annual compliance monitoring by independent EAP.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
➢ Sloping and Landscaping during Rehabilitation of the Site ➢ Replacing the Topsoil and Re-vegetating of the disturbed area	<u>Topography</u> ➢ Alteration of the topography.	➢ Earthmoving equipment to rehabilitate mined areas.	<u>Responsible Person:</u> ➢ Site Manager and ECO to ensure day-to-day compliance. ➢ Compliance to be monitored by the independent EAP during the annual environmental audit. <u>Mitigation / Monitoring to be Implemented:</u> ➢ When possible, implement progressive rehabilitation of the excavations and/or disturbed areas. ➢ Implement rehabilitation to such a standard that the rehabilitated land surrounding the excavation can revert to municipal use. ➢ Use the excavated areas for the final depositing of overburden. ➢ Dump rocks and coarse material removed from the excavations into the excavations. ➢ Remove coarse natural material used for the construction of ramps and dump it into the excavations. ➢ Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. ➢ Do not permit any waste to be deposited into the excavations. ➢ Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavations and it was profiled with acceptable contours and erosion control measures.	Applicable throughout operational-, and decommissioning phases. ➢ Daily compliance monitoring by site management and ECO. ➢ Annual compliance monitoring by independent EAP.

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
			➢ Seed the site with a local or adapted indigenous seed mix to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. ➢ If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. ➢ Measure rehabilitation success by: ▪ At least 70% vegetation cover with indigenous grass species within 12 months of seeding. ▪ Stabilization of slopes to a gradient of 1:3 to prevent erosion. ▪ Regular monitoring for invasive species, with removal interventions implemented quarterly. ➢ Adequately block the entrance to the excavation to prevent unauthorised access to humans and domestic animals.	

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

N. FREQUENCY OF SUBMISSION OF THE PERFORMANCE ASSESSMENT / ENVIRONMENTAL AUDIT REPORT

The Environmental Performance Assessment / -Audit Report in accordance with Appendix 7 as prescribed in Section 34 of the EIA Regulations, 2014 (as amended) must annually be submitted to the DMRE for compliance monitoring purposes or in accordance with the period stipulated by the department.

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

O. ENVIRONMENTAL AWARENESS PLAN

Once the 2025 EMPR is approved by the DMRE a copy of the approved document will be handed to the site manager for him/her to familiarise him/herself with. Issues such as activity boundaries, waste management, dust and vegetation principals will be discussed. The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any activities take place. The Environmental Control Officer must daily check compliance of the activities with the management programmes described in the EMPR.

An initial environmental induction meeting must be held with all the site employees to inform them of the Basic Rules of Conduct regarding the environment, and proof of attendance must be filed for auditing purposes. Each new employee (including those of sub-contractors) must attend the environmental induction meeting prior to commencement of his/her responsibilities. Subsequently, all employees must attend an annual environmental training refresher.

The environmental awareness plan must be a living document that is regularly reviewed and updated as relevant environmental concerns arise. The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management**

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

- **Water Management and Erosion**

  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.
  - Check that dirty water is kept from clean water.

- Do not swim in or drink from quarry pits / excavations.

ꕥ Waste Management

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins.
- Place waste in containers and always close lid.
- Don't burn waste.
- Pick-up any litter laying around.

ꕥ Hazardous Waste Management (Petrol, Oil, Diesel, Grease)

- Never mix general waste with hazardous waste.
- Use only sealed, non-leaking containers.
- Keep all containers closed and store only in approved areas.
- Always put drip trays under vehicles and machinery.
- Empty drip trays after rain.
- Stop leaks and spills, if safe:
  - ✓ Keep spilled liquids from moving away.
  - ✓ Immediately report the spill to the site manager/supervision.
  - ✓ Locate spill kit/supplies and use to clean-up, if safe.
  - ✓ Place spill clean-up wastes in proper containers.
  - ✓ Label containers and move to approved storage area.

ꕥ Discoveries

- Stop work immediately.
- Notify site manager/supervisor.
- Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

ꕥ Air Quality

- Wear protection when working in very dusty areas.
- Implement dust control measures:
  - ✓ Water all roads and work areas.
  - ✓ Minimize handling of material.
  - ✓ Obey speed limit and cover trucks.

ꕥ Driving and Noise

- Use only approved access road.

- Respect speed limits.
- Only use turn-around areas – no crisscrossing through undisturbed areas.
- Avoid unnecessary loud noises.
- Report or repair noisy vehicles.

Vegetation and Animal life

- Do not remove any plants or trees without approval of the site manager.
- Do not collect firewood.
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
- Report any animal trapped in the work area.
- Do not set snares or raid nests for eggs or young.

Fire Management

- Do not light any fires on site, unless contained in a drum at demarcated area.
- Put cigarette butts in a rubbish bin.
- Do not smoke near gas, paints, or petrol.
- Know the position of firefighting equipment.
- Report all fires.
- Don't burn waste or vegetation.

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

P. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

The Financial Provision Regulations, 2015 read with the National Environmental Management Act, 1998 (Act No 107 of 1998) stipulates that a mining right holder must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of mining as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources.

Therefore, apart from the information required in terms of Appendix 4 of the EIA Regulations, 2014 (as amended), this EMPR includes information regarding the financial provision of the mine as well as the most recent Closure Plan (see Appendix D).

Apart from the above, no other specific information was requested by the DMRE that had to be incorporated into this document.

a) FINANCIAL PROVISION

The most recent reassessment of the financial provision of the Quarry was for the year 2025 that is attached to this document as Appendix F. The MR Holder must annually review and update the

financial provision, upon which it must be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

Q. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.

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

R. UNDERTAKING BY EAP

The EAP herewith confirms

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

Christine Fouché

Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

24 July 2025

Date:

S. UNDERTAKING BY MINING RIGHT HOLDER

I,…….……the undersigned and duly authorised thereto by……*Petra Quarry (Pty) Ltd*……..……hereby undertake to implement all the aspects contained in the EMPR and accept full responsibility therefore.

SIGNED at ……..…….. this ……..…… day of ……..…..…… 2025

FINAL DOCUMENT TO BE SIGNED BY MR HOLDER

_____

SIGNATURE

WITNESSES:

1……..

2……..

Official use

APPROVAL

Approved in terms of the National Environmental Management Act (NEMA), 1998 (Act 107 of 1998), as amended.

SIGNED at …… this …… day …… 202…….

_____

REGIONAL MANAGER
FREE STATE

Undertaking/eg **-END-**

APPENDIX A

REGULATION 42 MINE PLAN

APPENDIX B1

GENERAL LAYOUT PLAN PART 1

APPENDIX B2

GENERAL LAYOUT PLAN PART 2

APPENDIX B3

PLANT FLOW DIAGRAM

APPENDIX C

ENVIRONMENTAL IMPACT STATEMENT

APPENDIX D

CLOSURE PLAN

APPENDIX E

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX F

FINANCIAL PROVISION CALCULATION
NON-PUBLIC DOCUMENT

APPENDIX G

WATER QUALITY PARAMETERS

APPENDIX H

CV AND EXPERIENCE RECORD OF EAP